CATALOG CONTENT NON-BINDING, SUBJECT-TO-CHANGE STATEMENT

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.”

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 the Registrar, Room 201, Twamley Hall.
Welcome to the University of North Dakota!

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

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

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

Sincerely,

Charles E. Kupchella
President
### FALL SEMESTER 1999-2000 (001) 2000-2001 (011)

<table>
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<td>Beginning of Instruction</td>
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<tr>
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<tr>
<td>Planning to Graduate in December</td>
<td>August 24</td>
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<tr>
<td>Holiday, Labor Day</td>
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<tr>
<td>Last Day to Add a Full-Term Course</td>
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<td>September 12</td>
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<tr>
<td>Last Day on Which Candidates May Apply for a Degree</td>
<td>September 21</td>
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<tr>
<td>Last Day for Graduate Students to Remove Incompletes</td>
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<td></td>
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<td>or Dissertation in the Graduate School</td>
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<td>November 22</td>
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<tr>
<td>Thanksgiving Recess</td>
<td>November 25-26</td>
<td>November 23-24</td>
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<tr>
<td>Last Day to Submit Final Copy of Thesis or Dissertation to the Graduate School</td>
<td>December 2</td>
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<tr>
<td>Last day to File Final Report on Degree Examinations and Independent Study Completion in the Graduate School</td>
<td>December 9</td>
<td>December 14</td>
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<tr>
<td>Reading and Review Day</td>
<td>December 10</td>
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<td>December 27</td>
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<td>January 11</td>
<td>January 9</td>
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<tr>
<td>Students Planning to Graduate in May</td>
<td>January 11</td>
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<td>January 17</td>
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<tr>
<td>Last Day to Add a Full-Term Course</td>
<td>January 25</td>
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<tr>
<td>Last Day on Which Candidates May Apply for a Degree</td>
<td>February 9</td>
<td>February 6</td>
</tr>
<tr>
<td>Last Day for Graduate Students to Remove Incompletes</td>
<td>February 15</td>
<td>February 13</td>
</tr>
<tr>
<td>Holiday, Presidents’ Day</td>
<td>February 21</td>
<td>February 19</td>
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<td>Spring Recess</td>
<td>March 13-17</td>
<td>March 12-16</td>
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<td>Last Day to Drop</td>
<td>March 31</td>
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<tr>
<td>or Dissertation in the Graduate School</td>
<td>April 13</td>
<td>April 12</td>
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<tr>
<td>Last Day to Submit Final Copy of Thesis or Dissertation to the Graduate School</td>
<td>April 27</td>
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<tr>
<td>Reading and Review Day</td>
<td>May 5</td>
<td>May 4</td>
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<td>Last day to File Final Report on Degree Examinations and Independent Study Completion in the Graduate School</td>
<td>May 4</td>
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<td>Semester Examination Period</td>
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<tr>
<td>Grades Due</td>
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<td>Beginning of Instruction</td>
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<td>May 26</td>
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<td>Last Day on Which Candidates May Apply for a Degree</td>
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<td>Holiday, Independence Day</td>
<td>July 4</td>
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<tr>
<td>Last Day to File Preliminary Approval of Thesis</td>
<td>July 6</td>
<td>July 5</td>
</tr>
<tr>
<td>or Dissertation in the Graduate School</td>
<td>July 7</td>
<td>July 5</td>
</tr>
<tr>
<td>Last Day to Drop</td>
<td>July 14</td>
<td>July 13</td>
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<tr>
<td>Last Day to Change to/from S/U</td>
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<tr>
<td>Last Day to Submit Final Copy of Thesis or Dissertation to the Graduate School</td>
<td>July 20</td>
<td>July 19</td>
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<tr>
<td>Last day to File Final Report on Degree Examinations and Independent Study Completion in the Graduate School</td>
<td>July 27</td>
<td>July 26</td>
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<tr>
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<tr>
<td>Summer Commencement and Official Graduation Day</td>
<td>August 4</td>
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<tr>
<td>Grades Due</td>
<td>August 8</td>
<td>August 7</td>
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*All academic deadline dates apply to full-term, on-campus courses.*
Satisfactory Progress

Any time you drop a course or withdraw from the University, you may be jeopardizing your federally funded student financial aid, now or in the future. You must successfully complete at least two-thirds of all the courses in which you enroll. Dropping after the first 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 Twamley 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, heritages, 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.

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 J. Page, Affirmative Action Officer, 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 Office, the Office of Civil Rights, U.S. Department of Education, 10220 North Executive Hills Blvd., 8th Floor, Kansas City, MO 64153-1367.

Measles/Rubella Immunization

All students attending North Dakota colleges and universities must prove immunization against measles and rubella. Proof of 2 MMR shots after the age of 1 year or proof of immunity to measles/rubella through antibody level testing. 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.

Disability Access on Campus

The ADA Line

The University of North Dakota is committed to providing access to all people using the campus facilities, programs, and services and encourages people with disabilities to report their concerns about access by calling The ADA Line at (701) 777-2591 (voice) or 777-2796 (TDD). Callers will be asked to explain the access problem. A written report will be forwarded to the department responsible for dealing with that particular issue. Callers who would like to know how their concern was handled will be asked to give their name and phone number.

Other Resources

Other sources for reporting access concerns and/or requesting accommodations include departmental supervisors or the Affirmative Action Office (701) 777-4171 (voice/Tdd) for employment related accommodations; Disability Support Services (701) 777-3425 (voice/TDD) for classroom accommodations; building supervisors for physical access issues; the Housing Office (701) 777-4251 for access concerns in University housing units; the Transportation Office (701) 777-4030 for accessible campus bus service and 777-4122 for State Fleet service; and the Traffic Division (701) 777-3551 for accessible parking permits.

Security Compliance

The University of North Dakota is in compliance with the Campus Security Act of 1990. For more information, contact the UND Police Department, telephone 777-3491.
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(Also see the Index beginning on page 250 of this Catalog to find the location of more specific subject matter than is listed in this contents.)
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 10,500 students.

The University’s academic programs are offered in 160 fields through 11 major academic units: College of Arts and Sciences, Odegard School of 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 46 programs. The state’s only law and medical degree programs also are located at UND.

The campus itself includes 570 acres, 240 buildings, and 5.4 million square feet of space.

The full-time faculty and research staff numbers 592, non-instructional staff 1,819, for a total of 2,411 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, 1999, was $249 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 originally established as a university, with all of the implications of that title. A university has an obligation to preserve knowledge, to disseminate knowledge, and to create new knowledge. The University of North Dakota has served as a capstone for the entire system of public education in the state, and from its earliest year has embraced all levels of higher education—undergraduate, professional and graduate—and maintained an active program of research and service. Through these 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 1999 enrollment, 10,392, included 8,499 undergraduate students, 1,459 graduate students, 205 law and 228 medical students. About 57 percent of the on-campus students identified themselves as North Dakotans, 25 percent as Minnesotans. Non-residents represented all of the states and 65 foreign countries. About half of the students were older than age 21. Fifty percent were women and about 8 percent were married.

In the fall of 1999, the University enrolled 1,501 new freshmen, 716 new transfer students and 527 new graduate and graduate professional students, bringing the total number of students matriculated during its history to more than 193,000. Degrees granted during fiscal 1997-98 included 1,607 undergraduate degrees, 436 graduate degrees, and 113 graduate professional degrees, 58 law and 55 in medicine. The number of degrees granted since the first commencement in 1889 total 87,319.

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. Most individual colleges, schools and departments are members of accrediting associations in their respective fields. The address and telephone number of the North Central Association are: 30 N. LaSalle St., Suite 2400; Chicago, IL 60602-2504; telephone (800) 621-7440 or (312) 263-0456; Fax (312) 263-7462.

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 37, and to the listings of the departments and program areas beginning on page 61 (undergraduate) and page 182 (graduate). See also the index at the back of the catalog.
VISITOR INFORMATION

Visitors always are welcome at the University of North Dakota.

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

Visitor Information: Stop at the Info-Center desk in the UND Memorial Union, the 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 Hyslop Sports Center (fieldhouse) Ticket Office, hours 8:30 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; Burtness Theatre (site of Theatre Arts Department and touring productions) Box Office open approximately two weeks prior to each production, 2 to 5 p.m., Monday through Friday (telephone 777-2587 for tickets; 777-3446 for information); Chester Fritz Auditorium Box Office open from 9 a.m. to 4:30 p.m., Monday through Friday (telephone 777-4090 for information, 772-5151 to purchase tickets or visit any Ticketmaster 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 911 from both on and off campus phones. The University Police Department provides statistical information upon request in accordance with the Campus Security Act of 1990.

Dining facilities: Convenience stores service is available from Wilkerson Convenience Store, Wilkerson Hall, 4 p.m.-11 p.m., Monday-Sunday; North Bank Convenience Store, lower level, Walsh Hall, 4-11 p.m., Monday-Sunday; and Twamley Snack Bar, Twamley Hall fourth floor, 8 a.m.-3:30 p.m., Monday-Friday. Parents are welcome to dine in the three dining centers with their student (guest meal prices available or student may use Pass Port Bucks for guests). Residence dining centers are in Wilkerson, Squires, and the Memorial Union (Terrace). Fast food service available at Memorial Union Food Court, 7 a.m.-11 p.m. (summer/holiday hours may vary), with franchised operations such as Subway, TCBY, Juice Works and Little Caesars Pizza menu selections available. Other eating facilities: Espresso Express Coffee House, Memorial Union, located in the University Bookstore, 7 a.m.-3 p.m., Monday-Friday, for espresso and homemade pastry; Subway, Johnstone-Fulton Hall, 11 a.m.-midnight, seven days a week; Wings (Airport) Cafe, fifth floor, Administrative Aerospace Center, Airport, 7:30 a.m.-2:30 p.m., providing subs, sandwiches, hot meal entrees, various other offerings, The North Dakota Museum of Art Coffee Bar on the main floor of the North Dakota Museum of Art building serves capuccino, 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 the Union Station (traffic and parking administrative office) in the lower level of the Memorial Union to obtain a free visitor’s permit. The only parking restrictions that apply to visitors are metered and time zones, reserved parking in University Residence Halls or Apartments, Service Vehicle areas, towable offenses, and handicap violations. Any other infractions will be waived for visitors.

Simply complete the visitor section on the ticket and return it to the Union Station within seven calendar days. For further information, call 701-777-3551.

Books and Memorabilia: The University Bookstore 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 and Foundation (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 the Traffic Division — Union Station (lower level of Memorial Union). It is the responsibility of the individual to properly display the permit and comply with University Motor Vehicle Regulations at all times.

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

STUDENT RECORDS

The student records maintained by the University fall into two general categories —public directory information and educational records. As the custodian of student records and in compliance with the Family Educational Rights and Privacy Act of 1974, 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 Office of Compliance, 307 Tumley 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, political, cultural, religious, 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, and co-recreational.

Sports include: aerobics, badminton, basketball, sand volleyball, broomball, flag football, golf, hockey, in-line hockey, racquetball, soccer, softball, tennis, and volleyball. Intramural-Recreational Sports is administrated and officiated by students, with facilities including the Engladstad Arena, Hyslop Sports Center, Intramural-Recreational Fields, Ray Richards Golf Course, and use of Grand Forks Parks and Apollo Park Softball Complex.

Intramural-Recreational Sports fosters a spirit of competition and sportsmanship within an avant-garde recreation program with activities to enhance 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, cross country and swimming. The women’s program includes competition in basket-

ball, cross country, golf, track and field, swimming, soccer, softball, tennis, and volleyball. Many club and intramural activities are also available.

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

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

American Indian Symbols

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 and Outreach Services, the Office of University Relations, or the Athletic Department.

Religious Activities at UND

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

Some of the other groups active on campus are Inter-Varsity Christian Fellowship, Campus Crusade for Christ International, Baha’i, Chi Alpha, Collegians for Life, and Muslims. These groups have members of the University faculty as advisors.

Off-Campus Trips

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

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 Twamley Hall, the Museum and Museum Shop hours are Monday through Friday, 9 a.m. to 5 p.m., and Saturday and Sunday, 1 p.m. to 5 p.m. There is no admission charge.
RESEARCH

Research is a critical component of the mission of the University of North Dakota. As a result of research activities conducted by the faculty, UND undergraduate and graduate students have 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 through University research programs and individual faculty members working within their own departments. Several of the UND research programs are involved in public service activities which provide an opportunity for faculty and students to conduct research projects directly benefiting the public.

Financial support for research activities is provided either from University sources, such as the University Senate Scholarly Activities Committee and the Office of Research and Program Development, or through funds provided from external agencies such as Federal or State government, private foundations, and industry. In fiscal year 1998, $34.8 million of external support was received for sponsored program activities, of which $22.6 million was for research.

Major UND research 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 17.

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).

ORAU Membership: Since 1989, students and faculty of the University of North Dakota have benefited from its membership in Oak Ridge Associated Universities (ORAU). ORAU is a consortium of 87 colleges and universities and a contractor for the U.S. Department of Energy (DOE), located in Oak Ridge, Tennessee. ORAU works with its member institutions to help their students and faculty gain access to federal research facilities throughout the country; to keep its members informed about opportunities for fellowship, scholarship, and research appointments; and to organize research alliances among its members.

Through the Oak Ridge Institute for Science and Education, the DOE facility that ORAU operates, undergraduates, graduates, postgraduates, as well as faculty have access to a multitude of opportunities for study and research. Students can participate in programs covering a wide variety of disciplines including business, earth sciences, epidemiology, engineering, physics, geological sciences, pharmacology, ocean sciences, biomedical sciences, nuclear chemistry, and mathematics. Appointment and program length range from one month to four years. Many of these programs are especially designed to increase the numbers of under-represented minority students pursuing degrees in science and engineering-related disciplines. A comprehensive listing of these programs and other opportunities, their disciplines, and details on locations and benefits can be found in the Resource Guide, which is available at <http://www.orau.gov/orise/resgld.htm> or by calling either of the contacts below.

ORAU’s Office of Partnership Development seeks opportunities for partnerships and alliances among ORAU’s members, private industry, and major federal facilities. Activities include faculty development programs, such as the Ralph E. Powe Junior Faculty Enhancement Awards, the Visiting Industrial Scientist Program, and various services to chief research officers. For more information about ORAU and its programs, contact: Dr. Carl A. Fox, ORAU Councilor for University of North Dakota (701-777-4278); Ms. Monnie E. Champion, ORAU Corporate Secretary (423-576-3306); or visit the ORAU Home Page <http://www.orau.gov>.

THE HONORS PROGRAM

I. General

The Honors Program brings together motivated 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 courses, 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 creating an individually-designed major through 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 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
Delta Sigma Rho (1911) limits membership to students who have distinguished themselves in public-speaking activities.

Delta Theta Phi (1967) promotes awareness of the role of the lawyer in the community and to further the objectives of the fraternity.

Epsilon Pi Tau (1911) is the international honorary professional fraternity for education in technology.

Eta Kappa Nu (1962) elects to membership a limited number of academically outstanding students in electrical engineering from the School of Engineering and Mines.

Gamma Sigma Alpha is a national greek honor society which recognizes juniors and seniors with a GPA greater than 3.5.

Gamma Theta Upsilon (1948) a professional fraternity, has for its purpose the recognition of merit among those enrolled in the study of geophysics.


International Honorary for Leaders in University Apartment Community (HILUAC) 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 (1923) elects to membership a limited number of academically outstanding students from the School of Engineering and Mines.

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

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

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

Pi Theta Epsilon (1968) junior and senior students majoring in occupational therapy selected on the basis of scholarship.

Psi Chi is a national honor society in psychology.

Sigma Alpha Iota (1916) endeavors to uphold standards of music education.

Sigma Gamma Epsilon (1950) is a professional fraternity dedicated to the advancement of its members in the earth sciences, geology, mining, metallurgy, ceramics, and petroleum engineering.

Sigma Iota Epsilon (1996) is a national honorary society for students in the field of management.


Sigma Xi (1919) chooses its members from the faculty and graduate students on the basis of their aptitude in scientific research. Undergraduates are eligible for associate membership.

Society of Professional Journalists (1922), formerly Sigma Delta Chi, encourages the maintenance of high standards for journalists.

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, 1999-00*
(Per semester, 12 or more credits)**

<table>
<thead>
<tr>
<th></th>
<th>Resident</th>
<th>Minnesota***</th>
<th>States</th>
<th>Non-resident</th>
</tr>
</thead>
<tbody>
<tr>
<td>Undergraduate</td>
<td>$1,478.00</td>
<td>$1,489.50</td>
<td>$2,098.00</td>
<td>$3,549.00</td>
</tr>
<tr>
<td>Graduate</td>
<td>1,583.00</td>
<td>1,770.00</td>
<td>2,256.00</td>
<td>3,829.00</td>
</tr>
<tr>
<td>Law</td>
<td>1,688.00</td>
<td>1,770.00</td>
<td>2,413.00</td>
<td>4,110.00</td>
</tr>
<tr>
<td>Medicine</td>
<td>5,716.00</td>
<td>5,561.00</td>
<td>14,863.00</td>
<td>14,863.00</td>
</tr>
<tr>
<td>Physical Therapy</td>
<td>2,569.00</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 1998-99 totaled $234.00 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 inter-collegiate athletics, $78.00; health fee, $63.00; 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 by 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.

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

***Minnesota 99-00 tuition rates were not established at time of printing. These are the 98-99 tuition rates.

OTHER FEES

Application Fee (Undergraduate)...............$25.00*
Payable by all undergraduate students applying for admission.
Application Fee for Graduate Students...........$25.00*
Application Fee for Medical Students..........$35.00*

Auditing Fee
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 a semester will be assessed to Undergraduate Students in Engineering with less than 60 accumulated credits.

Graduate Student Continuing
Enrollment Fee ..............................................$30.00 per semester*
$15.00 per summer*
Payable by each student registering for 996 (Continuing Enrollment).

Graduate Student Thesis Fee.......................$20.00*
Charged for binding and microfilming the original copy of a thesis.
Graduate Student Dissertation Fee.................$70.00*
Charged for binding and microfilming a dissertation and publishing the abstracts in Dissertation Abstracts.
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 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.)

Paying 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 ......................................$7.50 the regular credit hour fee

*Non-refundable; subject to change

ESTIMATED YEARLY EXPENSES

The following table gives an estimate of the expenses of a single, undergraduate student residing on campus during the nine month, 1998-1999 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>States</th>
<th>Non-resident</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tuition and Fees</td>
<td>$2,956.00</td>
<td>$2,979.00</td>
<td>$ 4,196.00</td>
<td>$ 7,098.00</td>
</tr>
<tr>
<td>Room and Board</td>
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<td>3,282.00</td>
<td>3,282.00</td>
<td>3,282.00</td>
</tr>
<tr>
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<td>600.00</td>
<td>600.00</td>
<td>600.00</td>
</tr>
<tr>
<td>Personal Expenses</td>
<td>2,000.00</td>
<td>2,000.00</td>
<td>2,000.00</td>
<td>2,000.00</td>
</tr>
<tr>
<td>Total Estimated Costs</td>
<td>$8,838.00</td>
<td>$8,861.00</td>
<td>$10,078.00</td>
<td>$12,980.00</td>
</tr>
</tbody>
</table>

* Plus matriculation fees ($25.00 one time)
** Costs based on UND residence hall rates (double room and 14 meal contract)
*** Minnesota 99-00 tuition rates were not established at time of printing. These are 98-99 rates.

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).
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 universities. 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, Arizona, California, Colorado, Hawaii, Idaho, Montana, Nevada, New Mexico, Oregon, South Dakota, Utah, Washington, and Wyoming at a special tuition level. For example, those attending the University of North Dakota under the WUE program pay an amount equal to one and one-half times the North Dakota in-state tuition and fees, which in 1998-99 would have totaled $4,012 instead of the normal $6,774 in non-resident tuition and fees for that year.

DEPENDENTS AND SPOUSES OF NORTH DAKOTA UNIVERSITY SYSTEM GRADUATES

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

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. The Minnesota Student Educational Loan Fund (SELF), Canadian Higher Education Loan Program (Can Help) and commercial educational loans are also available at UND. Many of the commercial education loan programs are available to students who are not degree-seeking or are enrolled less than half-time. A more complete listing of private loans is available at the Financial Aid Office.

Federal requirements 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.

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.

**Cultural Diversity Tuition Waivers.** UND awards several tuition waivers to broaden the cultural diversity on campus. Cultural diversity for this waiver is defined as individuals who come from historically under-represented groups (African American, American Indian, Asian American, Hispanic American, and the economically disadvantaged). 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 1999-2000 school year, grants range from $400 to $3,150. 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 1999-2000 students who were awarded a Student Financial Assistance Grant received $600 for the academic year. Additional information may be obtained from the Student Financial Assistance Program, North Dakota University System, 600 E. Boulevard, Bismarck, ND 58505.

**Other Sources of Aid.** The United States Army and U.S. Air Force provide scholarships to students pursuing studies in the Army ROTC program. Four year scholarships are offered on a competitive basis to outstanding students entering college for the first time. ROTC also offers two and three year scholarships to students who have successfully completed one or two years of college and have been selected as the most qualified applicants for the available awards. Enrollment in ROTC is not a prerequisite to applying for a two or three year scholarship. For information, contact the Military Science Department.
American Indian students should contact their local tribal agency concerning their eligibility for BIA/Tribal Scholarship funds. The awarding of BIA/Tribal Scholarships will be dependent upon the availability of funds.

Any active member of the North Dakota National Guard presently serving in either the Army Guard or the Air Guard may receive a tuition reimbursement up to 100% of the cost of in-state tuition charges. Loan repayment assistance is also available. For information on eligibility requirements, contact your local National Guard unit or the Office of the Adjutant General, PO Box 551, Bismarck, ND 58502-5511 or (701) 224-5110.

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

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

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

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

The Student Financial Aid Office awards aid to the neediest students whose FAFSA is on file by April 15. After that date, students’ files are considered by date of FAFSA processing until all funds are awarded. 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 30 days after receiving notice of the award.

Verification. The Department of Education or UND may ask students to prove the information they provided on their applications for financial aid is correct. If students are selected, they may be asked to verify such information as income, federal income tax paid, household size, number in college, status as a dependent or independent student and citizenship. As part of this process, students must provide the Student Financial Aid Office with their and/or their parents’ Federal Income Tax Return and in some cases, statements from 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 may be requested to provide 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 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 years (4 semesters or more) must have a minimum cumulative grade point average of 2.00. All other undergraduate students who meet the University’s 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 on or after the tenth 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 three dining centers serving meals on a contract basis (board is required in all residence halls). They are located in the two hall complexes — Wilkerson and Squires. The third, 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 three dining centers.

Snack Bars or fast food dining are available at the Food Court, located on the main level of the Memorial Union. The Food Court menu selections are from nationally known franchised foods like Subway, TCBY, Juice Works and Little Caesars Pizza. The Twamley Snack Bar, is located on the fourth floor of Twamley Hall, the Subway located in Johnstone Hall, and the Wilkerson Complex and Walsh Hall offer a Convenience Store on the basement level.

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 diverse 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 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 $3,294 for the 1998-99 academic year. Room and board rates are revised annually and are subject to change.

A student vacating his or her assigned room before the end of his or her contract term 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. Residents have easy access to the University Children’s Center and enjoy a variety of social and cultural events at the University Apartment Community Center. Applications and information about the specific types of apartments and current rates is available from the Housing Office, University of North Dakota, Box 9029, Grand Forks, ND 58202-9029. Early application is encouraged. Assignments are made in accordance with the established priority system which is determined by the date of receipt 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 $239 to $447 for the 1998-99 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 $239 to $570 for the 1998-99 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.

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 and Outreach Services

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

The Division of Student and Outreach Services upholds and complements the mission of the University of North Dakota by providing support for quality educational opportunities while taking a leadership role if offering services to a diverse student body of lifelong learners and in communicating and extending the resources of the University to local, state, national, and international constituents.

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. 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, and provides job referral information to employment openings listed with Job Service. Our resource library houses labor market information, audiovisual materials, company literature, computerized job information systems, and direct on-line access to the Internet.

Students in all disciplines are encouraged to register. Registration is done on-line via the Career Services homepage. Once registered students will have access to job openings, become available to employers searching our data base, sign up for Cooperative Education opportunities and on-campus interviews.

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 200 McCannel Hall anytime between 8:00 a.m. and 4:30 p.m., Monday through Friday, or by calling (701) 777-2127. A receptionist will direct your request or inquiry to the appropriate staff person and 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, LSAT, 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 drop-in tutoring, credit courses, and workshops in skill development areas. In addition, the center employs peer tutors for the drop-in tutoring program.

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

The University Learning Center is located in 210A Memorial Union. The Center is open Monday through Friday between 8:00 a.m. and 4:30 p.m. and between 8:00 a.m. and 8:00 p.m., Tuesday and Thursday. 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 AND ASSOCIATE VICE PRESIDENT FOR STUDENT SERVICES
McCannel Hall
Phone 777-2664

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

The Dean of Students Office provides the following services:
• Advocacy for Student Issues
• Student Judicial Affairs
• Crisis Programs
• Initiation of Programs
• Special Circumstances Withdrawal from UND
• Programs to Increase Student Satisfaction
DISABILITY SUPPORT SERVICES
McCannel Hall
Phone 777-3425 (Voice or TTY)

Disability Support Services provides academic accommodations to eligible students with disabilities, including physical, psychological and learning disabilities. To be eligible to use an accommodation, the student must fill out an Application for Services at DSS and submit recent documentation of the disability. Documentation should not be submitted with the admission application or to any other campus department. It is strongly recommended that students begin the application process immediately after being admitted to UND so there is adequate time to determine eligibility and arrange for reasonable accommodations.

Documentation from an appropriate professional should be no older than three years and include a statement of the diagnosis, how the disability impacts the academic environment, and recommendations for accommodations which address the limitations of the disability. The elements DSS requires in the documentation are based on a national standard in post secondary education, which is meant to ensure that the appropriate accommodations, academic adjustments and/or auxiliary aids are provided to students. For specific information on what an individual student’s documentation should include, call DSS at 777-3425.

It is the student’s responsibility to request accommodations. Students who plan to use accommodations at UND should contact DSS before talking to faculty about the accommodations they will need. The specific accommodation provided to an individual student is based on the functional limitations of the disability as described in the requested documentation. General categories of accommodations provided include adaptive testing, textbooks and course materials in alternate format, and auxiliary aids such as notetakers, taped texts, interpreters, etc.

OFFICE OF INTERNATIONAL PROGRAMS
International Centre, 2908 University Avenue
Phone (701) 777-4231
Fax (701) 777-4773
oip@sage.und.nodak.edu
www.und.nodak.edu/dept/iconline

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

To achieve these goals, the Office provides the following services:
- Advises international students on immigration, personal and acculturation needs;
- Sponsors intercultural events and promotes International Organization activities;
- Coordinates the International Student Exchange Program (ISEP), through which UND students may study at one of more than 100 universities throughout the world;
- Coordinates UND exchange programs in Norway, Costa Rica & Quebec;
- Advises students on study abroad programs not associated with UND;
- Provides information on Fulbright grants and other international faculty exchanges and development programs;
- Advises International Studies majors and minors;
- Sells International Student Identification Cards and Hosteling International cards.

The Office of International Programs is composed of a Director, International Student & Scholar Specialist, and an administrative secretary.

The Office of International Programs is located in the International Centre. Office staff are available from 8 a.m. to 4:30 p.m. The International Center is open daily from 8 a.m. to 11 p.m., including weekends and holidays. Computers, comfortable study space, coffee and tea are always available. All are welcome.

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: Subway, TCBY, Juice Works, Little Caesars, the Terrace Dining Center, and Campus Catering. Space in the Union for meetings or displays may be reserved by calling Central Scheduling at 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, 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, University Credit Union, the Union Station parking services office, and Campus Barbers.

MULTICULTURAL STUDENT SERVICES
2800 University Avenue
Phone 777-4259

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

MSS is located in the Vice President of Outreach and Student Services Office, Twamley Hall 307.

NATIVE AMERICAN PROGRAMS
317 Cambridge Street
Phone 777-4291

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

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

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

STUDENT FINANCIAL AID OFFICE
216 Twamley Hall
Phone 777-3121
E-mail: sfa@mail.und.nodak.edu

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

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

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
200 McCannel Hall
Phone 777-2127
A.D.A.P.T. 777-4165

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

TRIO PROGRAMS
(Student Support Services/Upward Bound/ Educational Talent Search/Educational Opportunity Center/ Ronald E. McNair Program)
McCannel
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 assurance 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 under represented 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.

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) Drop-in tutoring, (3) Credit courses, (4) Workshops in skill development areas, (5) Study skills videos, (6) Resource material and handouts. The services provided by the University Learning Center are free of charge to students.

The University Learning Center accepts applications for peer tutors throughout the year.
VETERAN SERVICES  
211 Twamley 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.

ADMISSIONS OFFICE  
Twamley Hall  
Phone 777-3821  

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

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

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 Viet Nam era and disabled veterans in the mainstream of University employment, education, and services where these individuals as a class may have had limited opportunities in the past. 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 friends support. Alumni and friend involvement has provided a “margin of excellence” for many of the programs offered by the University of North Dakota. Two private, non-profit organizations, the UND Alumni Association and the UND Foundation, have responsibility for coordinating alumni relations and fund raising programs. Policies for the Association and the Foundation are set by a 24-member Board of Directors. Program and office operations are under the direct supervision of an Executive Vice President. The Association and Foundation are headquartered in the J. Lloyd Stone Alumni Center (formerly Oxford House), the historic, restored home of early UND presidents.

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 90,000 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 conducting 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 $100 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, Burtness 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 1,700 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.

**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, and the literature of theatre, 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 sessions. Children in first through third grade are also served at the Center during the summer. Daily attendance is limited to a full-time equivalency of 81 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 UND Computer Center is a member of the North Dakota Higher Education Computer Network (ND-HECN) which provides faculty, staff, and students the ability to communicate around the globe via electronic mail; access to the Internet; run mathematical, statistical, and programming languages; use NSF supercomputers; as well as supplement research by examining databases and current information throughout the world.

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

The Help Center provides a single contact point for users who need help with computing problems or questions. Services from the Help Center include telephone (777-2222) and drop-in (Upson II, room 366) problem determination, assistance, and answers to users’ common computing questions. The Help Center telephone is answered 24 hours a day, seven days a week. Most forms needed to request access to any ND-HECN or UND system are available online, at the reception counter in the Computer Center Office, or call the Help Center for further information.

**ENROLLMENT SERVICES**  
Home Economics Building (Carnegie)  
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 office 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.

**OFFICE OF GENERAL COUNSEL**  
Room 104, O’Kelly Hall  
Phone 777-6345

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

**OFFICE OF INSTRUCTIONAL DEVELOPMENT**  
Twamley Hall  
Phone 777-3325

The Office of Instructional Development (OID) assists 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 for faculty workshops and seminars, 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/trouble-shoot 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 50 plus sites throughout North Dakota. The program is an important link for life long 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, including periodical subscriptions.

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 instruction sessions, a one credit class “Research in the University Library,” and Interlibrary Loan services.

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 14) should be contacted by students seeking part-time employment.

REGISTRAR’S OFFICE
Twamley Hall
Phone 777-2711

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

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

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

The Director of ORPD is the official authorized by the University to sign all proposals submitted to external agencies. Before proposals are submitted to ORPD for administrative review, the proposed budgets are checked and approved for compliance with the financial policies of funding agencies by 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 policies and regulations involve human subjects, animal care and use, copyrights, intellectual property, radioactive materials and recombinant DNA. The negotiation of contracts, grants, subcontracts, and subgrants is a joint process involving BGA, ORPD, and the Principal Investigator.

ORPD also provides administrative support to the Faculty Research and Creative Activity 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 777-3232**

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

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 on registration for first time students may be found beginning on page 60.

Orientation 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 CENTER**

**Rural Technology Center**

**Phone 777-4346**

**Fax 777-4342**

The mission of the University of North Dakota Television Center is to promote student learning in the field of television and offer quality production services to the university community. Several goals enable the center to accomplish this mission:

- Provide students with quality internships through programs such as Studio One, which is a student-produced one-hour broadcast of news, entertainment, weather, and sports segments, with local, national, and international guests.
- Support technology needs for broadcast courses offered through the School of Communication.
- Provide video production services to campus clients.
- Provide technical support for the Corporate Engineering Degree Program.
- Program and operate Grand Forks Cable Channel 3 and the University of North Dakota Residence Hall Network.
- Develop partnerships that will enhance the university through the use of television.

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

- Studio Production (four camera production with computer graphics and digital effects).
- Remote Production (one camera production with special lighting effects).
- Editing (post production services with computer graphics system, digital video effects, narration, and music library).
- Script development (research and writing services for documentary, promotional, and news projects).

Written estimates will be provided after clients submit a Project Request form. The Television Center does not rent or loan equipment to groups, organizations or individuals.

**UNDInfo**

UNDInfo is the University’s home page. It contains a wide range of information on many UND areas and topics, including 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 — NORTHERN LIGHTS PUBLIC RADIO**

**KJFM 90.7 FM**

**KUND 1370 AM**

**Conflict Resolution Center Building**

**Phone 777-2577**

The University operates two radio frequencies. First licensed in 1923 as a “land wireless” station, KPJM began primarily for the purpose of giving students the advantage of observation and practice in operating a radio transmitter.

Northern Lights Public Radio offers music programming highlighting local arts, culture, issues and events important to the listeners in the Greater Grand Forks Community. The stations’ format is a mix of contemporary music including blues, jazz, pop, folk, world music and emphasizes locally hosted and programmed shows.

Northern Lights Public Radio works locally to provide listeners with a unique public radio service, building on a history of public radio
that began on the UND campus more than 75 years ago. Northern Lights offers professional radio opportunities for students as well as opportunities for volunteers to get involved in local radio.

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 constituents, 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. Part of the Vice Presidential Division of Student and Outreach Services and also occupying a reporting line 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, 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 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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New Undergraduate Student Information

ENROLLMENT INFORMATION ABOUT UND

The following pages of the catalog contain information about admission policies, costs, student financial aid, and housing. The Office of Enrollment Services serves as the central contact point for enrollment information about the University. It provides information to prospective students through printed materials, visitations at schools and college fairs, tours of the UND campus, and personal contact over 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 entirely satisfied 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 or 397, 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 while they enroll in a course(s) for purposes other than the completion of a degree may enroll as Undergraduate Non-Degree students. Students enrolling with this status are not eligible for federal financial aid and may not exceed a total of twelve semester hours of credit as Undergraduate Non-Degree students. Enrollment in courses beyond twelve semester credits will be contingent upon Regular Admission after satisfying all entrance requirements.

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

Admission of New Freshmen

Students applying for admission to UND are required to take one of the 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 criteria. 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, Minot State University–Bottineau, Lake Region State College, and Williston State College. Upon successful completion of 24 transferable semester credits at these campuses, students are eligible for transfer to a four-year campus. These transfer students are exempt from the high school course requirements.

A student who has not graduated from high school 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. TOEFL computerized tests completed after June 1998 require a minimum score of 195. The International Programs Office provides assistance and counseling to students from countries other than the United States. International students should write to the International Program Director as well as to the Office of Admissions.

Canadian students are required to 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 Director of Admissions 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 33.

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

Note to students intending to enroll in mathematics courses: Students planning to take entry-level mathematics courses at UND (Math 102*, 103, 104, 105, 146, 165, 208) shall be enrolled in their beginning mathematics courses only after taking a math placement test or receiving a sufficiently high score on the ACT Mathematics test. Students who have received college mathematics credit need not take the placement exam. 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), Applied Calculus I (Math 165), Discrete Mathematics (Math 208), Calculus I (Math 165) 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 33.

Enrollment in the University. All students will be enrolled, based on their declared major, in one of UND’s academic colleges. Students who have an “undecided” major will receive assistance from the Office of Student Academic Services. Once a student declares a major, he/she will be enrolled in the appropriate academic college. Enrollment in an academic college does not guarantee admission to the college or specific academic programs. (For more information regarding additional requirements for admission to colleges and programs, see the listings beginning on page 37).

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 official test scores be sent directly from ACT in Iowa City to the University of North Dakota, Grand Forks, ND 58202.

3. 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 Director of Admissions.

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 College of Education and Human Development, the School of Engineering and Mines, the John D. Odegard School of Aerospace Sciences, the College of Nursing, and the School of Medicine and Health Sciences (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 the University Registrar evaluates and records transfer credit. Students with unsatisfactory records, as well as students who have been asked to withdraw from other institutions due to unsatisfactory scholarship or behavior, ordinarily will not be allowed to enter the University. If special permission for admission is granted, the student is placed on academic probation.

International Students applying for transfer admission from United States colleges must, in addition to the application for admission, complete a foreign student application form and a certification of finances form. The Test of English as a Foreign Language (TOEFL), with a score of 850 for undergraduate students, is required for all students whose native language is not English. TOEFL computerized tests completed after June, 1998, require a minimum score of 195.

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, provided (a) the courses are 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. Credits not successfully completed (grades of F) that would transfer if successfully completed will also transfer to the University and will affect the students’ cumulative grade point average.

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 Director of Admissions 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 Registrar’s Office. Those who have enrolled in other institutions must submit official transcripts for evaluation before they will be considered for re-readmission. (Returning graduate students should refer to the Graduate Bulletin.)

The completed Request for Readmission form should be returned to the Registrar’s Office 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.
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 education 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 37-60; 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 students. The faculty reserves the right to make changes in curricula at any time when in its judgment such changes are for the best interests of the students. Courses listed in this catalog are subject to change through normal academic channels. New courses and changes in existing course work are initiated by the responsible departments or programs and are approved by the appropriate dean and college or school curriculum committee, the University Curriculum Committee, the University Senate, the Vice President for Academic Affairs, and the Board of Higher Education.

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

DEGREES GRANTED

The University of North Dakota offers both undergraduate and graduate courses of study leading to degrees in many academic disciplines. 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 61.

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 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 offered 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 among 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.

I. 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 help students 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, enable 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 choices about technology.

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, philosophers, sculptors and musicians in giving voice to human understanding and aspiration. These courses may also help students to comprehend their personal 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) General Education Requirement (GERTA) Transfer Agreement was developed to assist students who transfer within the NDUS. If you have completed your general education coursework at a NDUS institution with at least 36 credits of general education courses and transfer to another NDUS institution, normally your general education requirement will have been met. If you have not completed your general education coursework 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 Registrar’s Office or the Registrar at another NDUS institution.

UNIVERSITY GRADUATION REQUIREMENTS

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

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 the immediately preceding section of the catalog. (Note: engineering students should pay special attention to General Education requirements for the immediately preceding section of the catalog.

I. Communication 9 sem. credits min.

Choose one course from each of the three areas:

(1) Engl 110 College Composition I (ND:ENGL) (3)
(2) Engl 120 College Composition II (ND:ENGL) (3)
(3) CHE 331 Chemical Engineering Lab I (3)
(4) CHE 332 Chemical Engineering Lab II (3)
(5) CHE 431 Chemical Engineering Lab IV (3)

Class 101 First Year Latin (4)
Class 141 First Year Greek (4)
Comm 110 Fundamentals of Public Speaking (ND:SPCH) (3)
Comm 120 College Composition II (ND:ENGL) (3)
Engl 125 Technical and Business Writing (ND:ENGL) (3)
Engl 308 Advanced Composition I (3)
Engl 408 Advanced Composition II (3)
E E 482 Technical Presentation and Portfolio (3)
Fren 101 First Year French (4)
Germ 101 First Year German (4)
Hist 240 The Historian’s Craft (3)

IS 240 Research and Writing in Indian Studies (4)
Ital 101 First Year Italian (4)
ME 480 Mechanical Engineering Seminar (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)
Norw 101 First Year Norwegian (4)
Nurs 230 Personal and Group Dynamics (2)
Russ 101 First Year Russian (4)
Span 101 First Year Spanish (4)

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

Anthropology

+Anth 101 . . . Introduction to Anthropology (3)
+Anth 171 . . . Introduction to Cultural Anthropology (ND:SS) (3)

World History (ND:SS) (3)

Cultural Dynamics (3)

Old World Prehistory (3)

North American Indians (ND:SS) (3)

North American Archaeology (3)

Culture Area Studies (ND:SS) (3)

History

+Hist 101 . . . Western Civilization I (ND:Hist) (3)
+Hist 102 . . . Western Civilization II (ND:Hist) (3)
+Hist 103 . . . United States to 1877 (ND:Hist) (3)
+Hist 104 . . . United States since 1877 (ND:Hist) (3)
+Hist 106 . . . Middle Eastern Civilization from Islam to present time (ND:Hist) (3)

+Hist 220 . . . History of North Dakota (3)
+Hist 221 . . . The Scandinavian Countries since 1500 (ND:Hist) (3)
+Hist 230 . . . The States: Early Frontier (3)
+Hist 236 . . . The United States: Western Frontier (3)
+Hist 332 . . . Women in American History (3)

+Hist 333 . . . Women in American History Since 1865 (3)

+Hist 335 . . . Nuclear Weapons and the Modern Age (3)

Hist 339 . . . The United States and Vietnam, 1945-75 (3)

Hist 351 . . . Europe: Age of Absolutism, 1648-1789 (3)

Hist 352 . . . Europe: French Revolution and Napoleon (3)

Hist 353 . . . Europe: 1815-1918 (3)

Hist 355 . . . Europe Since 1918 (3)

Hist 362 . . . Modern China (3)

Hist 364 . . . Modern Japan (3)

Hist 405 . . . The United States: Age of Jefferson and Jackson, 1789-1850 (3)

Hist 406 . . . The United States: Civil War and Reconstruction, 1850-1877 (3)

Hist 407 . . . The United States: Rise of Industrial America, 1877-1917 (3)

Hist 408 . . . The United States, 1920-1945 (3)

Hist 413 . . . The United States Since 1945 (3)

Hist 414 . . . France Since 1815 (3)

Hist 415 . . . Germany Since 1815 (3)

Hist 416 . . . Russia to 1855 (3)

Hist 417 . . . Russia since 1855 (3)

Hist 419 . . . Great Britain Since 1815 (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.

Honors

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 201 . . . History of the Sioux (3)

IS 330 . . . Contemporary Plains Indian Culture (ND:SS) (3)

IS 331 . . . Traditional Plains Indian Culture (ND:SS) (3)

IS 345 . . . Contemporary American Indian Issues (3)

IS 370 . . . North American Indians (3)

IS 371 . . . Reservation Government and Politics (3)

Nursing

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

Nutrition and Dietetics

+N&ND 335 . . . World Food Patterns (3)

Political Science

Pols 115 . . . American Government I (ND:SS) (3)

Pols 116 . . . State and Local Government (ND:SS) (3)

Pols 220 . . . International Politics (ND:SS) (3)

Pols 221 . . . Comparative Politics (ND:SS) (3)

Pols 225 . . . Public Administration (ND:SS) (3)

Pols 226 . . . Political Behavior (3)

Pols 423 . . . Public Policy Making Process (3)

Pols 305 . . . American Constitution-Governmental Powers (3)

Pols 306 . . . American Constitution-Civil Liberties and Practice (3)

Pols 309 . . . The Legislative and Executive Processes (3)

Pols 318 . . . American Political Thought (3)

Pols 329 . . . Foreign Policy (3)

Pols 332 . . . Issues in Comparative Politics (3)

Pols 339 . . . Survey of Public Administration (3)

Pols 404 . . . Urban Politics and Administration (3)

Pols 405 . . . Political Behavior (3)

Pols 432 . . . Public Policy Making Process (3)

Psychology

Psyc 11 . . . Introduction to Psychology (ND:SS) (3)

Psyc 250 . . . Developmental Psychology (ND:SS) (4)

Psyc 270 . . . Abnormal Psychology (ND:SS) (3)

Psyc 360 . . . Introduction to Personality (ND:SS) (3)

Psyc 361 . . . Social Psychology (ND:SS) (4)
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### Teaching & Learning

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### III. Arts and Humanities

This course fulfills the world cultures general education requirement.

#### Education and Human Development

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#### English

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### Fine Arts

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#### History

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**Theatre Arts**

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Thea 110</td>
<td>Introduction to Theatre Arts</td>
<td>(3)</td>
</tr>
<tr>
<td>Thea 130</td>
<td>The Art and Craft of Theatre</td>
<td>(3)</td>
</tr>
<tr>
<td>Thea 161</td>
<td>Acting I</td>
<td>(3)</td>
</tr>
<tr>
<td>Thea 201</td>
<td>Theatre Practice</td>
<td>(3)</td>
</tr>
<tr>
<td>Thea 223</td>
<td>Beginning Oral Interpretation</td>
<td>(3)</td>
</tr>
<tr>
<td>Thea 250</td>
<td>Readings in Dramatic Literature</td>
<td>(3)</td>
</tr>
<tr>
<td>Thea 270</td>
<td>Stagecrafts I</td>
<td>(3)</td>
</tr>
<tr>
<td>Thea 330</td>
<td>Contemporary Theatre</td>
<td>(3)</td>
</tr>
<tr>
<td>Thea 422</td>
<td>American Theatre History</td>
<td>(3)</td>
</tr>
<tr>
<td>Thea 423</td>
<td>History of the Theatre: Classical and Renaissance</td>
<td>(3)</td>
</tr>
</tbody>
</table>

**Visual Arts**

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Art 100</td>
<td>Introduction to Sculpture</td>
<td>(3)</td>
</tr>
<tr>
<td>Art 110</td>
<td>Introduction to the Visual Arts</td>
<td>(3)</td>
</tr>
<tr>
<td>Art 120</td>
<td>Introduction to Drawing and Color Materials</td>
<td>(3)</td>
</tr>
<tr>
<td>Art 122</td>
<td>Two-Dimensional Design</td>
<td>(3)</td>
</tr>
<tr>
<td>Art 130</td>
<td>Drawing</td>
<td>(3)</td>
</tr>
<tr>
<td>Art 131</td>
<td>Drawing II</td>
<td>(3)</td>
</tr>
<tr>
<td>Art 151</td>
<td>Introduction to Ceramics</td>
<td>(3)</td>
</tr>
<tr>
<td>Art 210</td>
<td>History of Art I</td>
<td>(3)</td>
</tr>
<tr>
<td>Art 211</td>
<td>History of Art II</td>
<td>(3)</td>
</tr>
<tr>
<td>Art 260</td>
<td>Slide Photography</td>
<td>(3)</td>
</tr>
</tbody>
</table>

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

**IV. Mathematics, Science and Technology** 12 sem. hours min.

(must be taken in a minimum of 2 departments and must include a 4 hour science course with a lab)

**Anthropology**

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Anth 200</td>
<td>Introduction to Biological Anthropology</td>
<td>(3)</td>
</tr>
</tbody>
</table>

**Atmospheric Sciences**

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Atsc 100</td>
<td>Meteorology</td>
<td>(3)</td>
</tr>
</tbody>
</table>

**Biology**

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Biol 111 &amp; 111L</td>
<td>Concepts of Biology (with lab)</td>
<td>(4)</td>
</tr>
<tr>
<td>Biol 124</td>
<td>Environmental Science</td>
<td>(3)</td>
</tr>
<tr>
<td>Biol 150 &amp; 150L</td>
<td>General Biology I (with lab)</td>
<td>(4)</td>
</tr>
<tr>
<td>Biol 151 &amp; 151L</td>
<td>General Biology II (with lab)</td>
<td>(4)</td>
</tr>
<tr>
<td>Biol 240</td>
<td>Wildlife Conservation</td>
<td>(2)</td>
</tr>
<tr>
<td>Biol 251</td>
<td>Plants and People</td>
<td>(3)</td>
</tr>
</tbody>
</table>

**Chemistry**

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chem 100</td>
<td>Survey of Chemistry</td>
<td>(3)</td>
</tr>
<tr>
<td>Chem 115 &amp; 115L</td>
<td>Introductory Chemistry and Laboratory</td>
<td>(4)</td>
</tr>
<tr>
<td>Chem 116 &amp; 116L</td>
<td>Introductory to Organic and Inorganic Chemistry and Laboratory</td>
<td>(4)</td>
</tr>
<tr>
<td>Chem 112 &amp; 112L</td>
<td>General Chemistry I and General Chemistry Laboratory</td>
<td>(4)</td>
</tr>
<tr>
<td>Chem 222</td>
<td>General Chemistry II and General Chemistry Laboratory</td>
<td>(4)</td>
</tr>
<tr>
<td>Chem 330</td>
<td>Quantitative Analysis</td>
<td>(3)</td>
</tr>
</tbody>
</table>

**Computer Science**

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Csci 101 &amp; 101L</td>
<td>Introduction to Computers</td>
<td>(3)</td>
</tr>
<tr>
<td>Csci 120</td>
<td>Computer Programming I</td>
<td>(3)</td>
</tr>
<tr>
<td>Csci 170</td>
<td>Computer Programming II</td>
<td>(3)</td>
</tr>
<tr>
<td>Csci 160</td>
<td>Computer Science I</td>
<td>(3)</td>
</tr>
<tr>
<td>Csci 161</td>
<td>Computer Science II</td>
<td>(3)</td>
</tr>
<tr>
<td>Csci 260</td>
<td>Advanced Programming Languages</td>
<td>(3)</td>
</tr>
<tr>
<td>Csci 289</td>
<td>Social Implications of Computer Technology</td>
<td>(3)</td>
</tr>
</tbody>
</table>

**Economics**

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Econ 210</td>
<td>Introduction to Business and Economic Statistics</td>
<td>(3)</td>
</tr>
</tbody>
</table>

**Geography**

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Geog 121</td>
<td>Physical Geography</td>
<td>(3)</td>
</tr>
<tr>
<td>Geog 122 &amp; 122L</td>
<td>Physical Geography (with lab)</td>
<td>(4)</td>
</tr>
<tr>
<td>Geog 134</td>
<td>Intro to Global Climate</td>
<td>(3)</td>
</tr>
<tr>
<td>Geog 134 &amp; 134L</td>
<td>Intro to Global Climate (with lab)</td>
<td>(4)</td>
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</tbody>
</table>

**Geology**

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Geol 100</td>
<td>Earth Science</td>
<td>(3)</td>
</tr>
<tr>
<td>Geol 101</td>
<td>Introduction to Geology</td>
<td>(3)</td>
</tr>
<tr>
<td>Geol 101L</td>
<td>Introduction to Geology Lab</td>
<td>(1)</td>
</tr>
<tr>
<td>Geol 102</td>
<td>The Earth Through Time</td>
<td>(3)</td>
</tr>
<tr>
<td>Geol 102L</td>
<td>The Earth Through Time Lab</td>
<td>(1)</td>
</tr>
<tr>
<td>Geol 103</td>
<td>Introduction to Environmental Issues</td>
<td>(3)</td>
</tr>
<tr>
<td>Geol 104</td>
<td>Geography of National Parks</td>
<td>(3)</td>
</tr>
<tr>
<td>Geol 111</td>
<td>Views of the Earth and Planets</td>
<td>(3)</td>
</tr>
<tr>
<td>Geol 111R</td>
<td>Views: Recitation</td>
<td>(1)</td>
</tr>
<tr>
<td>Geol 322</td>
<td>Environmental Geology</td>
<td>(3)</td>
</tr>
</tbody>
</table>

**Honors**

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
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</thead>
<tbody>
<tr>
<td>Hon 103</td>
<td>Inquiry in the Sciences</td>
<td>(3)</td>
</tr>
<tr>
<td>Hon 293</td>
<td>Colloquium in the Sciences</td>
<td>(2-4)</td>
</tr>
<tr>
<td>Hon 393</td>
<td>Advanced Colloquium in the Sciences</td>
<td>(2-4)</td>
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</tbody>
</table>

**Industrial Technology**

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
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</thead>
<tbody>
<tr>
<td>It 300</td>
<td>Technology and Society</td>
<td>(3)</td>
</tr>
</tbody>
</table>

**Mathematics**

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Math 103</td>
<td>College Algebra</td>
<td>(3)</td>
</tr>
<tr>
<td>Math 104</td>
<td>Finite Mathematics</td>
<td>(3)</td>
</tr>
<tr>
<td>Math 105</td>
<td>Trigonometry</td>
<td>(3)</td>
</tr>
<tr>
<td>Math 115</td>
<td>Introduction to Mathematical Thought</td>
<td>(3)</td>
</tr>
<tr>
<td>Math 146</td>
<td>Applied Calculus I</td>
<td>(3)</td>
</tr>
<tr>
<td>Math 165</td>
<td>Calculus I</td>
<td>(4)</td>
</tr>
<tr>
<td>Math 166</td>
<td>Calculus II</td>
<td>(4)</td>
</tr>
</tbody>
</table>

**Nutrition and Dietetics**

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nut 240</td>
<td>Fundamentals of Nutrition</td>
<td>(3)</td>
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</table>

**Philosophy**

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Phil 350</td>
<td>Symbolic Logic</td>
<td>(3)</td>
</tr>
</tbody>
</table>

**Physics**

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Phys 110 &amp; 110L</td>
<td>Introductory Astronomy (with lab)</td>
<td>(4)</td>
</tr>
<tr>
<td>Phys 130 &amp; 131L</td>
<td>Natural Science — Physics</td>
<td>(4)</td>
</tr>
<tr>
<td>Phys 140</td>
<td>Physics for Poets</td>
<td>(3)</td>
</tr>
<tr>
<td>Phys 161 &amp; 161L</td>
<td>Introductory College Physics I (with lab)</td>
<td>(4)</td>
</tr>
</tbody>
</table>
XI. 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.)

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

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

Formal Application for the Degree Sought. Candidates for degrees must make written application to the Registrar or to the Dean of the college of the degree within the first baccalaureate degree. A list of all courses designated to fulfill the laboratory science requirement.

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

VI. Majors
The specific requirements of a major or related fields concentration are determined by the department or program responsible for the major or concentration subject to approval by the University Curriculum Committee.

Students desiring to have more than one major listed on the transcript must have the written approval of the dean(s) of the college(s) offering the majors.

VII. Minors
Minors shall consist of a minimum of 20 semester hours of course work with the course distribution established by the appropriate department or departments with the approval of the University Curriculum Committee. Minors may consist of courses associated with a department or discipline (e.g. Chemistry); a collection 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 “Extradepartmental 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.)

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32

University of North Dakota
COMMON COURSE NUMBERS (continued)

COMMON COURSE NUMBERS (continued)

OLD COURSE PREFIX, NUMBER TITLE

CCN COURSE PREFIX, NUMBER, TITLE

OLD COURSE PREFIX, NUMBER TITLE

CCN COURSE PREFIX, NUMBER, TITLE

CHEM 107 Introduction to Organic &
Biochemistry

CHEM 116 Introduction to Organic &
Biochemistry
CHEM 116L Introduction to Organic &
Biochemistry Laboratory
CHEM 330 Quantitative Analysis
CHEM 240 Survey of Organic Chemistry
CHEM 240L Survey of Organic Chemistry
Laboratory
CHEM 341 Organic Chemistry I
CHEM 341L Organic Chemistry I Laboratory
CHEM 342 Organic Chemistry II
CHEM 342L Organic Chemistry Laboratory
ENGR 201 Statics
ENGR 203 Mechanics of Materials I
ENGR 202 Dynamics
COMM 110 Fundamentals of Public Speaking
COMM 200 Introduction to Media Writing
COMM 212 Interpersonal Communication

LANG C201 Second Year College Latin
LANG C202 Second Year College Latin
LANG C251 Introduction to Greek
LANG C252 Introduction to Greek
LANG C351 Greek Prose & Poetry
LANG C352 Greek Poetry: Homer
LANG C471 Seminar in Latin Literature
LANG C491 Individual Greek Readings
LANG F101 Beginning French
LANG F102 Beginning French
LANG F201 Second Year French
LANG 5202 Second Year French
LANG F471 Seminar in French
LANG F490 Individual French Readings
LANG G101 Beginning German
LANG G102 Beginning German
LANG G201 Second Year German
LANG G202 Second Year German
LANG G490 Individual German Readings
LANG R101 Beginning Russian
LANG R102 Beginning Russian
LANG R201 Second Year Russian
LANG R202 Second Year Russian
LANG R490 Individual Russian Readings
LANG S101 Beginning Spanish
LANG S102 Beginning Spanish
LANG S201 Second Year Spanish
LANG S202 Second Year Spanish
LANG S440 Senior Seminar
LANG S490 Individual Hispanic Readings

CLAS 201 Second Year Latin I
CLAS 202 Second Year Latin II
CLAS 151 First Year Greek I
CLAS 152 First Year Greek II
CLAS 251 Second Year Greek I
CLAS 252 Second Year Greek II
CLAS 491 Seminar in Latin Literature
CLAS 494 Individual Greek/Latin Readings
FREN 101 First Year French I
FREN 102 First Year French II
FREN 201 Second Year French I
FREN 202 Second Year French II
FREN 491 Seminar in French
FREN 494 Individual French Readings
GERM 101 First Year German I
GERM 102 First Year German II
GERM 201 Second Year German I
GERM 202 Second Year German II
GERM 494 Individual German Readings
RUSS 101 First Year Russian I
RUSS 102 First Year Russian II
RUSS 201 Second Year Russian I
RUSS 202 Second Year Russian II
RUSS 494 Individual Russian Readings
SPAN 101 First Year Spanish I
SPAN 102 First Year Spanish II
SPAN 201 Second Year Spanish I
SPAN 202 Second Year Spanish II
SPAN 491 Senior Seminar
SPAN 494 Individual Hispanic Readings

MATH 102
MATH 103
MATH 104
MATH 105
MATH 204
MATH 211
MATH 212
MATH 213
MATH 342
MATH 351

Intermediate Algebra
College Algebra
Finite Mathematics
Trigonometry
Survey of Calculus
Calculus I
Calculus II
Calculus III
Elementary Linear Algebra
Introduction to Differential
Equations
MBIO 491 Directed Studies
MSCI 495 Special Topics

MATH 102
MATH 103
MATH 104
MATH 105
MATH 146
MATH 165
MATH 166
MATH 265
MATH 327
MATH 266

NURS 286
NURS 337
NURS 350
NURS 398
NURS 399
NURS 488
NURS 498

NURS 360
NURS 397
NURS 392
NURS 394
NURS 389
NURS 498
NURS 488

CHEM 153 Analytical Chemistry
CHEM 212 Organic Chemistry

CHEM 305 Organic Chemistry
CHEM 306 Organic Chemistry
CIEN 300 Analytical Mechanics (Statics)
CIEN 301 Mechanics of Materials I
CIEn 305 Analytical Mechanics (Dynamics)
COMM 161 Fundamentals of Public Speaking
COMM 200 Writing for Media
COMM 210 Introduction to Interpersonal
Communication
COMM 221 Reporting
COMM 361 Persuasion
CSCI 110 Computer Programming I
CSCI 111 Computer Programming II
CSCI 300 Topics in Computer Science
CSCI 337 Cooperative Education
CSCI 472 Seminars in Computer Science
CSCI 491 Special Projects in Computer Science
CJS 251 Introduction to Criminal Justice
CJS 252 Introduction to Law Enforcement
CJS 301 Criminological Theory
CJS 331 Victimology
CJS 337 Cooperative Education
CJS 360 Administration of Justice
CJS 393 Problems in Criminal Justice Studies
CJS 480 Administrative Internship
CJS 491 Readings in Criminal Justice Studies

COMM 244 Reporting and Feature Writing
COMM 313 Persuasion
CSCI 120 Computer Programming I
CSCI 170 Computer Programming II
CSCI 300 Topics in Computer Science
CSCI 397 Cooperative Education
CSCI 491 Seminars in Computer Science
CSCI 494 Special Projects in Computer Science
CJ 201 Introduction to Criminal Justice
CJ 210 Introduction to Policing
CJ 330 Criminological Theory
CJ 361 Victimology
CJ 397 Cooperative Education
CJ 401 Administration of Criminal Justice
Systems
CJ Problems in Criminal Justice
CJ 497 Administrative Internship
CJ 494 Readings in Criminal Justice

ECON 105 Elements of Economics
ECON 201 Principles of Microeconomics
ECON 202 Principles of Macroeconomics
EE 206 Electrical Engineering Fundamentals
ENGR 101 Introduction to Engineering &
Design
ENGR 201 Computer Application in Engineering
ENGL 101 Composition I
ENGL 102 Composition II
ENGL 200 Topics in Language and Literature
ENGL 209 Technical & Business Writing
ENGL 207 Introduction to Linguistics
ENGL 211 Introduction to Fiction
ENGL 213 Introduction to Poetry
ENGL 217 Introduction to Drama
ENGL 219 Introduction to Film
ENGL 151 Masterpieces of European Literature
ENGL 152 Masterpieces of European Literature
ENGL 251 Analysis of Literature I
ENGL 252 Analysis of Literature II
ENGL 367 American Indian Literature
ENGL 398 Independent Study

ENGR 200
ENGL 110
ENGL 120
ENGL 299
ENGL 125
ENGL 209
ENGL 224
ENGL 222
ENGL 221
ENGL 225
ENGL 241
ENGL 242
ENGL 271
ENGL 272
ENGL 265
ENGL 394

FIN 210 Personal Financial Management
FMED 490 Directed Studies in Sports Medicine
FMED 495 Seminar in Athletic Training
FMED 482 Internship in Athletic Training

BADM 251 Personal Finance
FMED 494 Directed Studies in Athletic Training
FMED 491 Seminar in Athletic Training
FMED 497 Internship in Athletic Training

GEOG 121 Physical Geography
GEOG 121L Physical Geography Laboratory
GEOG 134 Introduction to Global Climate
GEOG 151 Human Geography
GEOG 152 Economic Geography
GEOG 161 World Regional Geography
GEOG 262 Geography of North America
GEOG 271 Map Reading & Interpretation
GEOG 369 Geography of North Dakota

GEOG 121 Physical Geography
GEOG 121L Physical Geography Laboratory
GEOG 134 Introduction to Global Climate
GEOG 151 Human Geography
GEOG 352 Economic Geography
GEOG 161 World Regional Geography
GEOG 262 Geography of North America
GEOG 271 Map Reading & Interpretation
GEOG 263 Geography of North Dakota

HIST 101
HIST 102
HIST 239
HIST 495
HUM 101
HUM 102

HIST 101
HIST 102
HIST 269
HIST 499
HUM 101
HUM 102

Western Civilization to 1500
Western Civilization since 1500
World War II
Readings in History
Introduction to Humanities I
Introduction to Humanities II

ECON 105 Elements of Economics
ECON 201 Principles of Microeconomics
ECON 202 Principles of Macroeconomics
EE 206 Circuit Analysis
ENGR 101 Graphical Communication
Computer Application in Engineering
College Composition I
College Composition II
Special Topics
Technical & Business Writing
Introduction to Linguistics
Introduction to Fiction
Introduction to Poetry
Introduction to Drama
Introduction to Film
World Literature I
World Literature II
Literary Analysis I
Literary Analysis II
Native American Literature
Independent Study

Western Civilization I
Western Civilization II
World War II
Readings in History
Introduction to Humanities I
Introduction to Humanities II

IS 491 Independent Study in Indian Studies
IS 497 Directed Readings in Indian Studies

IS 494 Independent Study in Indian Studies
IS 492 Directed Readings in Indian Studies

LANG 399 Honors Tutorial
LANG 499 Senior Honors Thesis
LANG C101 First Year College Latin
LANG C102 First Year College Latin
LANG C161 Introduction to Classical
Mythology

LANG 389 Honors Tutorial
LANG 489 Senior Honors Thesis
CLAS 101 First Year Latin I
CLAS 102 First Year Latin II
CLAS 185 Introduction to Classical
Mythology


Health Assessment Techniques
Cooperative Education
Nursing Research
Independent Study
Honors Tutorial
Nursing Practicum Clinical
Nursing Practicum Theory

Intermediate Algebra
College Algebra
Finite Mathematics
Trigonometry
Applied Calculus I
Calculus I
Calculus II
Calculus III
Applied Linear Algebra
Elementary Differential Equations

MBIO 494 Directed Studies
MSCI 499 Special Topics
Health Assessment Techniques
Cooperative Education
Nursing Research
Independent Study
Honors Tutorial
Nursing Practicum Clinical
Nursing Practicum Theory

PATH 226 Orientation to Medical Lab Science
PHTX 304 Human Pharmacology
PHTX 490 Readings in Pharmacology &
Toxicology
PHTX 493 Research in Pharmacology &
Toxicology
PHIL 101 Introduction to Philosophy
PHIL 210 Contemporary Moral Issues
PHIL 220 Logic and Critical Thinking
PHIL 283 Oriental Philosophy
PHIL 310 Ethics
PHIL 395 Philosophic Themes
PHIL 472 Seminar in Philosophy
PHIL 492 Independent Study in Philosophy

CLS 101 Introduction to Medical Lab Science
Phrm 315 Introduction to Pharmacology
PHTX 499 Readings in Pharmacology &
Toxicology
PHTX 492 Research in Pharmacology &
Toxicology
PHIL 101 Introduction to Philosophy
PHIL 215 Contemporary Moral Issues
PHIL 220 Introduction to Logic
PHIL 283 Oriental Philosophy
PHIL 310 Ethics
PHIL 399 Philosophic Themes
PHIL 491 Seminar in Philosophy
PHIL 494 Independent Study in Philosophy

REL 101
REL 102
REL 103
REL 109
REL 116
REL 120
REL 203
REL 228
REL 238
REL 247
REL 250
REL 395
REL 470
REL 480

RELS 101 Introduction to Religion (West)
RELS 102 Introduction to Religion (East)
RELS 230 New Testament
RELS 220 Old Testament
RELS 116 Women in Religion
RELS 130 Religion in America
RELS 203 World Religions
RELS 228 Early Christian Traditions
RELS 238 Christianity in the Modern World
RELS 247 Introduction to Judaism
RELS 250 East & West Religion
RELS 399 Selected Topics
RELS 491 Seminar on Religion
RELS 494 Independent Study in Religion

Introduction to Religion (West)
Introduction to Religion (East)
Introduction to New Testament
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Women in Religion
Religion in America
World Religions
Early Christian Traditions
Christianity in the Modern World
Introduction to Judaism
East & West Religion
Selected Topics
Seminar on Religion
Independent Study in Religion

PHYS 223/223L Introduction to Astronomy
PHYS 101 Introductory College Physics
PHYS 102 Introductory College Physics
PHYS 171 Natural Science-Physics
PHYS 200 Physics for Poets
PHYS 203 General Physics
PHYS 204 General Physics

PHYS 110/110L Introductory Astronomy
PHYS 161/161L Introductory College Physics I
PHYS 162/162L Introductory College Physics II
PHYS 130/130L Natural Science-Physics
PHYS 140 Physics for Poets
PHYS 211/211L College Physics I
PHYS 212/212L College Physics II


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 the 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.

### 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

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. Minimum CLEP scores are under review by the North Dakota University System. Credit earned through CLEP Subject Exams may be used to fulfill University General Education requirements as outlined on pages 27-31; 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.

### 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.

### COOPERATIVE EDUCATION

Cooperative Education is an academic program that provides students with opportunities to both integrate and combine their course learning with practical, professional work experience in their chosen field of study. Cooperative Education experiences allow students to secure salaried, career-related work experiences under the supervision of both a sponsoring employer and the appropriate academic department, while at the same time receiving academic credit. The program is based on the belief that learning extends beyond the classroom and that the combination of course learning and practical work experience provides an innovative and comprehensive education.
Students spend from 3-9 months on Cooperative Education assignment. Academic credit is granted by the participating academic department through the student’s enrollment in the department’s course titled, Cooperative Education 337.

Students enrolled in Cooperative Education 337, irrespective of the number of actual credit hours, are granted full time equivalent student status by the University.

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

REGISTRATION

The academic year calendars giving the dates of registration appear 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 indication of enrollment is made on the student’s permanent academic record. If a course is dropped after the first 10 days of the semester, the enrollment is recorded on the student’s permanent academic record and a W is entered in the grade column. However, all courses for which the student is enrolled after the tenth day of the term will count toward their satisfactory progress for financial aid.

No change in registration involving addition of a new course or a change of sections is permitted after the tenth day of instruction of the semester (except during Summer Session). Changes from credit to audit or to or from S-U grading are permitted to the last day to drop 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 the Registrar where personnel will direct the student through the withdrawal process.

The last day a student may cancel registration without grades is the Friday five weeks preceding the last class day of the term. (See also Summer Sessions deadlines 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 Services agree to this course of action. Please note: Anytime a student withdraws after the first 10 days of the semester, a “W” indicating the withdrawal will appear on the student’s transcript. All courses in which the student was enrolled on the first day of the term will be considered when assessing satisfactory progress for financial aid purposes.

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

STUDENT LOAD

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 minimum 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 is the normal load. A student wishing to enroll in more than 21 semester hours must obtain approval from her/his 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:

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

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 semester 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 the Registrar 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 class to substitute or (c) request the Registrar’s Office to change the S or U to the letter grade submitted by the instructor.

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

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

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

Class rolls and grade sheets will not identify students who are enrolled for S-U grading. Grades of A, B, and C will be converted by the Office of the Registrar to a grade of S. Grades of D and F will be converted to U. Changes in registration to or from S-U grading 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, both grades will be recorded on the student’s permanent record, with the last grade being marked as duplication and not being counted in the student’s GPA. If a course repetition is 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 is not to 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 by 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 the Registrar, Box 8382, Grand Forks, ND 58202. Questions about the Family Educational Rights and Privacy Act (FERPA) should be directed to the Office of the Registrar.

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 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.

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

FINAL EXAMINATION POLICY

An examination is held at the end of most courses according to the published examination schedule. Alternate evaluation methods and schedules may be used when recommended by the departmental faculty and approved by the dean of the college offering the course. Any change in time from the published schedule requires the recommendation of
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 obliged to write three or more finals on the same day. If the student has three or more finals scheduled the same day, the student wishing an accommodation regarding final exams should contact his/her 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 show, both within and outside of the University, respect for law and order, personal honor, and the rights of others. To further strengthen the sense of community at the University of North Dakota, we affirm the following: (1) That everyone be allowed to work, learn, and live in a safe, caring environment; (2) That everyone learn about, understand, appreciate, and respect varied cultures; (3) That everyone matters; (4) That all individuals be respected and treated with dignity and civility; (5) That everyone continue to share in the responsibility of making UND a better place. Within the University, the student is subject to specific policies, rules and regulations promulgated by student governing groups, student-faculty committees, University Senate and the State Board of Higher Education. The student is subject to civil law and civil authority.

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

The Code of Student Life is available from the Vice President for Student and Outreach Services, and the Student Services 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 Student Office, the Vice President of Student and Outreach Services, or through direct consultation with the Student Policy Committee.

SCHOLASTIC HONESTY

Students are expected to maintain scholastic honesty. Scholastic dishonesty includes but is not limited to cheating on a test, plagiarism, and collusion.

A. Cheating on a test includes, but is not restricted to:
1. Copying from another student’s test.
2. Possessing or using material during a test not authorized by the person giving the test.
3. Collaborating with or seeking aid from another student during a test without authority.
4. Knowingly using, buying, selling, stealing, transporting, or soliciting in whole or in part the contents of an unadministered test.
5. Substituting for another student or permitting another student to substitute for oneself to take a test.
6. 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 an overall cumulative grade point average of 3.80 or higher. The student must also have earned a minimum of 30 semester hours and have completed a minimum of 12 hours at the close of the semester, eight of which must be for traditional letter grades.

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

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

MISSION AND HISTORY

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

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

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

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

SCOPE

The College is comprised of four academic departments and five major research and support organizations. The Department of Aviation offers undergraduate degrees in aerospace fields including flight, air traffic control, aviation business and management, and aviation education. With its roots in research, the Department of Atmospheric Sciences undergraduates 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 within the Department of Space Studies offers an interdisciplinary approach to space exploration, research, and development. The Department uses extra-terrestrial resources in its study of the broad area of activities beyond earth’s atmosphere. In addition to presenting the current and future technology needs, the program examines the social, political, economic, and legal issues of this new human experience. Computers are transforming almost every industry, especially the aerospace industry. To meet this challenge, the Department of Computer Science became a part of the Center in 1982 offering undergraduate and Master’s degrees.

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

FACILITIES

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

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

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

ADMISSION

To be eligible for admission to programs within the School of Aerospace Sciences, a 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 by the School of Aerospace Sciences upon a student who successfully fulfills the following requirements. A student must:

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 GPA of 2.50 for studies completed at the University of North Dakota).
3. Complete the curriculum for the major as outlined in the departmental listings (see pages 65-71), and
4. Make formal application to the Registrar for the degree sought within four weeks of the beginning of the semester the student expects to graduate.

The Department of Atmospheric Sciences offers both a major and a minor. The curriculum for each can be found under the appropriate departmental listings.

The Department of Aviation, working with the College of Business and Public Administration, also offers the degree of Bachelor of Business Administration with majors in Aviation Management or Airport Management. The curriculum for each of these programs is outlined under the specific departmental listings on page 38.

The Department of Computer Science, in conjunction with the College of Arts and Sciences, awards the degree of Bachelor of Science with major in Computer Science as well as the degree of Bachelor of Arts with major in computer science. The curriculum for each of these programs is outlined under Computer Science. A minor in Computer Science may also be completed.

The Department of Space Studies offers an undergraduate program leading to a minor in space studies. This program introduces students to the variety of space related projects and issues that will affect their careers and lifestyles in the coming decades. At other universities, it is rare to find courses at the undergraduate level dealing with such topics as space mission design, life support systems, space commercialization, and space law.

OTHER PROGRAMS

Cooperative Education. The School 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 participate as weather modification pilots for the program must have a Commercial Pilot Certificate with instrument and multi-engine ratings.

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

Youth Programs. Special aviation 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 School sponsors a 4-day Aviation Career Education Academy for North Dakota high school students.

STUDENT ORGANIZATIONS

Alpha Eta Rho. The Delta Chapter of Alpha Eta Rho, an international aviation fraternity, stresses closer ties between students and the industry through education. The group annually sponsors Parents’ Day, an opportunity for parents to experience the excitement of aviation education. The group also sponsors the American Meteorological Society Student Chapter of the American Meteorological Society seeks to promote advancement and understanding of meteorology.

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.

Aviation Safety Association. Organized in 1998, this aviation student group is interested in supporting and educating students in all of the areas related to aviation safety.

Flying Team. The UND Flying Team has won the National Championship title of the National Collegiate Flying Association ten times. Students compete in regional and national events oriented to increasing piloting skill, knowledge, and safety.

Military Pilots Association. This student aviation organization is for those students who desire to make military aviation a career, or who have an interest in military aviation.

Organizations of Minority Aviation Professionals. This organization encourages minority students in their efforts to pursue careers within the aerospace industry. It supports the school’s efforts to recruit and retain minority students and faculty.

Student Air Traffic Control Association. Students interested in Air Traffic Control get involved with this organization to have a voice in the policies and procedures affecting their program, and to provide a forum for hiring information and job opportunities.

Student Aviation Advisory Council. This six-member student advisory council is elected by their peers to act as a liaison between students and aviation faculty and administration.

Student Aviation Management Association. Founded in 1975, this organization became the first student chapter of the American Association of Airport Executives. It sponsors professional development activities and hosts an annual aviation seminar.

Women with Wings. A student organization for women pilots, the group provides opportunities for women students to learn more about their chosen profession and participate in a variety of aviation-related activities.

Wilderness Pilots Association. Floatplane enthusiasts have a group to promote air safety as it relates to flying into remote areas. Activities include fly-ins, field trips, a wilderness survival program, and first aid courses.

SERVICE

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

During times of severe weather, atmospheric sciences faculty and their student assistants staff the School’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.
The College of ARTS AND SCIENCES

Albert Fivizzani, Acting Dean

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 Witmer of the Physics Department, who was dean until 1965. Philip A. Rognlie of the Mathematics Department was interim associate dean in 1965-66. Bernard O’Kelly, English, was dean from 1966-1995. John Ettling became dean in 1995.

As a faculty of Arts and Sciences, the College structurally includes at present 18 academic departments: Anthropology, Biology, Chemistry, Communication, Communication Sciences and Disorders, English Languages and Literature, Geography, History, Indian Studies, Mathematics, Modern and Classical Languages, Music, Philosophy and Religion, Physics, Psychology, Sociology, Theatre Arts, and Visual Arts. 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 — Computer Science, Economics, Geology, and Political Science — are regularly consulted on an associate faculty basis, since the disciplines of those departments are historically associated with the liberal arts. Many of the liberal arts faculty are involved in various ways in the work of the College of Education and Human Development.

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. 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.

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 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 with both science and non-science majors (double majors) may choose either degree.

By following certain specified programs, students may also obtain one of the following special degrees: Bachelor of Fine Arts, Bachelor of Music, B.S. in 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 27-31.

II. Language Requirements. Certain programs within the College require proficiency in another language, either two semesters of College level work (Level II) or 4 semesters (Level IV). Students are
advised to consult the requirements for a given major under the heading “Required in Other Departments.” Students who are unsure about what their major will be are advised to establish language proficiency as early as possible.

III. The Major or Concentration. Majors, basically a minimum of 33 credit hours in a single field, are offered in a variety of subjects. The requirements for these may be found in the departmental and interdepartmental listings beginning on page 61. Students should note particularly the requirements not only of the majors and concentrations, but, where appropriate, the accompanying prerequisites 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

<table>
<thead>
<tr>
<th>Major</th>
<th>General Requirements</th>
</tr>
</thead>
<tbody>
<tr>
<td>Anthropology</td>
<td>History</td>
</tr>
<tr>
<td>Applied Physics</td>
<td>International Studies</td>
</tr>
<tr>
<td>Biology</td>
<td>International Studies</td>
</tr>
<tr>
<td>Chemistry</td>
<td>Mathematics</td>
</tr>
<tr>
<td>Classical Studies</td>
<td>Music</td>
</tr>
<tr>
<td>Communication</td>
<td>Norwegian</td>
</tr>
<tr>
<td>Communication Sciences and Disorders</td>
<td>Philosophy</td>
</tr>
<tr>
<td>Computer Science</td>
<td>Physics</td>
</tr>
<tr>
<td>Criminal Justice</td>
<td>Political Science</td>
</tr>
<tr>
<td>Economics</td>
<td>Psychology</td>
</tr>
<tr>
<td>English</td>
<td>Religion</td>
</tr>
<tr>
<td>Fisheries and Wildlife Biology</td>
<td>Sciology</td>
</tr>
<tr>
<td>French</td>
<td>Spanish</td>
</tr>
<tr>
<td>Geography</td>
<td>Theatre Arts</td>
</tr>
<tr>
<td>Geology</td>
<td>Visual Arts</td>
</tr>
<tr>
<td>German</td>
<td></td>
</tr>
</tbody>
</table>

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 or her advisor, 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. 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&H. 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 54.

Medical School Preparation. Like law schools, medical schools generally require a B.A. or B.S. No particular major is preferred, but a broad, liberal education is expected. In addition, the candidate should fit into his or her program the following courses: Biology 150-151, Chemistry 121-122, Chemistry 341-342, and Physics 211-212. Biochemistry 301 is now strongly recommended by most medical schools and even required by some. Math, English and Social/Behavioral Science requirements vary somewhat, but students should have the following at the very least: Math 103 and 146 (or 165 or Psychology 241); English 110 and 120 (or 125); Psychology 111 or Sociology 110. Other selected courses in Biology may also be helpful. Because tomorrow’s physician not only must be accomplished in medicine, but also concerned with the social problems of people, he/she needs to have a broad-based education encompassing in some depth the natural sciences, the social and behavioral sciences, and the arts and the humanities. The student must therefore select a curriculum with these goals in mind. See also the School of Medicine listing on page 55.

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

PRE-PROFESSIONAL PROGRAMS

Students in pre-professional programs normally enroll in the College of Arts and Sciences. Following are recommended curricula for the various pre-professional programs.

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>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Engl 110, 120</td>
<td></td>
</tr>
<tr>
<td>Chem 121, 122</td>
<td></td>
</tr>
<tr>
<td>Biol 150, 151</td>
<td></td>
</tr>
<tr>
<td>Math 103</td>
<td></td>
</tr>
<tr>
<td>Elective (Comm 110)</td>
<td>(3)</td>
</tr>
</tbody>
</table>

Sophomore Year

<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Phys 161, 162</td>
<td>(8)</td>
</tr>
<tr>
<td>or Phys 211, 212</td>
<td></td>
</tr>
<tr>
<td>Chem 341, 342</td>
<td></td>
</tr>
<tr>
<td>Psych 111</td>
<td>(3)</td>
</tr>
<tr>
<td>Elective (literature, Latin words, history, science, etc.)</td>
<td>(3)</td>
</tr>
</tbody>
</table>

Pre-Medical

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

Freshman Year

<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Biol 150, 151</td>
<td>(8)</td>
</tr>
<tr>
<td>Chem 121, 122</td>
<td></td>
</tr>
<tr>
<td>Math 103</td>
<td></td>
</tr>
<tr>
<td>Other Requirements*</td>
<td></td>
</tr>
</tbody>
</table>

Sophomore Year

<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chem 341, 342</td>
<td>(10)</td>
</tr>
<tr>
<td>Other Requirements*</td>
<td></td>
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</tbody>
</table>

Junior Year

<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Physics 211, 212</td>
<td>(8)</td>
</tr>
<tr>
<td>Electives**</td>
<td></td>
</tr>
</tbody>
</table>

Senior Year

<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Biochemistry 301</td>
<td>(3)</td>
</tr>
<tr>
<td>Biochemistry 303***</td>
<td>(3)</td>
</tr>
</tbody>
</table>

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

** Electives: should be people-centered subjects or chosen to support the specific area of interest in medicine

*** Currently required only by UM Twin Cities Medical School
**Pre-Mortuary Science**

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

<table>
<thead>
<tr>
<th>Course</th>
<th>Description</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>BVED 320</td>
<td>Business Communications</td>
<td>(3)</td>
</tr>
<tr>
<td>Comm 110</td>
<td>Fundamentals of Public Speaking</td>
<td>(3)</td>
</tr>
<tr>
<td>Electives</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Sophomore Year**

<table>
<thead>
<tr>
<th>Course</th>
<th>Description</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chem 121, 122</td>
<td>General Chemistry I &amp; II</td>
<td>(8)</td>
</tr>
<tr>
<td>Elective</td>
<td></td>
<td>(3)</td>
</tr>
<tr>
<td>Anat 204</td>
<td>Anatomy for Paramedical Personnel</td>
<td>(3-5)</td>
</tr>
<tr>
<td>Soc 110</td>
<td>Introduction to Sociology</td>
<td>(3)</td>
</tr>
<tr>
<td>Acct 200</td>
<td>Elements of Accounting I</td>
<td>(3)</td>
</tr>
<tr>
<td>BVED 320</td>
<td>Business Communications</td>
<td>(3)</td>
</tr>
</tbody>
</table>

**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.

<table>
<thead>
<tr>
<th>Course</th>
<th>Description</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Engl 110, 120</td>
<td>College Composition I &amp; II</td>
<td>(6)</td>
</tr>
<tr>
<td>Math 103</td>
<td>College Algebra</td>
<td>(3)</td>
</tr>
<tr>
<td>Math 105</td>
<td>Trigonometry</td>
<td>(2)</td>
</tr>
<tr>
<td>Biol 150, 151</td>
<td>Introduction to Biology I &amp; II</td>
<td>(8)</td>
</tr>
<tr>
<td>Electives</td>
<td></td>
<td></td>
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</tbody>
</table>

**Senior Year**

<table>
<thead>
<tr>
<th>Course</th>
<th>Description</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Eng 110 and 120 (or 125)</td>
<td></td>
<td>(6)</td>
</tr>
<tr>
<td>Engl 311</td>
<td>Technical &amp; Business Writing (elective)</td>
<td>(3)</td>
</tr>
<tr>
<td>Chem 121, 122</td>
<td>General Chemistry I &amp; II</td>
<td>(8)</td>
</tr>
<tr>
<td>Phys 211, 212</td>
<td>College Physics I &amp; II</td>
<td>(8)</td>
</tr>
<tr>
<td>Soc 110</td>
<td>Sociology or Social Sciences</td>
<td>(3)</td>
</tr>
<tr>
<td>Psy 111</td>
<td>Introduction to Psychology</td>
<td>(3)</td>
</tr>
</tbody>
</table>

**Pre-Veterinary Medicine**

Most veterinary schools prefer or require the completion of an undergraduate degree. Although most require no specific major, the vast majority of students entering veterinary school complete degrees in Biology, Zoology or Agriculture. All veterinary schools require successful completion of courses in the basic sciences, advanced biological sciences, social/behavioral sciences, math and English. Some schools require or strongly recommend additional specific courses. For information on specific veterinary schools and their requirements, consult with the Health Sciences Advisor in the Dean’s Office of the College of Arts and Sciences.

<table>
<thead>
<tr>
<th>Course</th>
<th>Description</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Biol 150, 151</td>
<td>Introduction to Biology I &amp; II</td>
<td>(8)</td>
</tr>
<tr>
<td>Chem 121, 122</td>
<td>General Chemistry I &amp; II</td>
<td>(8)</td>
</tr>
<tr>
<td>Math 103</td>
<td>College Algebra</td>
<td>(3)</td>
</tr>
<tr>
<td>Other Requirements*</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Sophomore Year**

<table>
<thead>
<tr>
<th>Course</th>
<th>Description</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chem 341, 342</td>
<td>Organic Chemistry</td>
<td>(10)</td>
</tr>
<tr>
<td>Biology 357</td>
<td>Genetics</td>
<td>(3)</td>
</tr>
<tr>
<td>Other Requirements*</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Other Biology Requirements and Electives**</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**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.

**SPECIAL FACILITIES AND SERVICES**

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

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) the International Association for Management Education since 1984, and the MBA program has had AACSB accreditation since 1990.

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

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

WE SERVE FACULTY
By nurturing an intellectually stimulating teaching and research environment, combined with appropriate resources, the College seeks innovative, interactive, and interdisciplinary approaches toward learning and timely contributions to knowledge consistent with the needs of business, government, and society.

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

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

CURRICULA IN THE COLLEGE OF BUSINESS AND PUBLIC ADMINISTRATION
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, Airport Management, Aviation Management, Banking and Financial Economics, Business Economics, Financial 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 61. 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 75) and the College of Arts and Sciences offers minor programs in languages, including some (e.g., French) that have an orientation in business.

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

Beginning in Fall 1999, the College will be offering the Introduction to Business course (BAdm 101). This course provides a study of business and its environment, organization, operation, and the interrelationships with government and society. Students will become familiar with the American enterprise system and issues facing society today. The Introduction to Business course will be open to anyone enrolled at the University and will fulfill a portion of the Social Science General Education Requirement.

ENTREPRENEURSHIP
Starting in Fall 1999, the College anticipates offering a group of five courses in entrepreneurship for students who are non-business majors. Upon fulfilling the courses students will have completed a track in entrepreneurship at the College of Business and Public Administration. The courses are: Entr 201 — The Entrepreneur and the Economy, Entr 301 — Accounting and Financial Concepts for Entrepreneurs, Entr 302 — Marketing and Management Concepts for Entrepreneurs, Entr 385 — Venture Initiation, and Entr 387 — Venture Growth. Entr 201, 301, and 302 cannot be used by students toward a degree program. Admission to this program is open to anyone enrolled at the University. Business students interested in the entrepreneurship track will be required to complete Entr 385, 387, and internship requirement in their field of study.

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 Admin-
istration 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 144 for Core course listing).

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

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

**Freshman Year**

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>Engl 110</td>
<td>College Composition I</td>
<td>(3)</td>
</tr>
<tr>
<td>Engl 120</td>
<td>College Composition II</td>
<td>(3)</td>
</tr>
<tr>
<td>Math 104</td>
<td>Finite Math</td>
<td>(3)</td>
</tr>
<tr>
<td>Math 146</td>
<td>Applied Calculus I</td>
<td>(3)</td>
</tr>
<tr>
<td>Pols 115</td>
<td>American Government I</td>
<td>(3)</td>
</tr>
<tr>
<td>Comm 110</td>
<td>Fundamentals of Public Speaking</td>
<td>(3)</td>
</tr>
<tr>
<td>Soc 110</td>
<td>Introduction to Sociology</td>
<td>(3)</td>
</tr>
<tr>
<td>Anth 171</td>
<td>Introduction to Cultural Anthropology</td>
<td>(3)</td>
</tr>
<tr>
<td>Arts &amp; Humanities Electives</td>
<td>(see notes)</td>
<td>(6)</td>
</tr>
<tr>
<td>Free Elective</td>
<td></td>
<td>(3)</td>
</tr>
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</table>

**Sophomore Year**

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Units</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 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>Econ 210</td>
<td>Intro to Business and Economic Statistics</td>
<td>(3)</td>
</tr>
<tr>
<td>Lab Science</td>
<td>(see notes)</td>
<td>(4)</td>
</tr>
<tr>
<td>BVED 217</td>
<td>Fundamentals of Management</td>
<td>(4)</td>
</tr>
<tr>
<td>Arts &amp; Humanities Electives</td>
<td>(see page 28 and notes)</td>
<td>(3)</td>
</tr>
</tbody>
</table>

**Notes**

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

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

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

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

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

Students planning to take their first two years of work at a junior college should take only those courses in business that are offered as freshman or sophomore courses at the University of North Dakota. 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.

**ACADEMIC DIVISIONS**

The College of Business and Public Administration is organized into three academic divisions. They are the Division of Accounting and Finance with Faculties of Accounting and Business Law and Finance; the Division of Economics and Public Affairs with Faculties of Economics, Political Science, and Public Administration; and the Division of Organizational Systems and Technology with Faculties of Business and Vocational Education, Industrial Technology, Management, and Marketing.

**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 2.50 GPA in all work completed at the University of North Dakota that applies toward the degree.)
3. Earn a minimum 2.50 GPA in business administration courses that apply toward the degree and major.
4. Earn a minimum 2.50 GPA in all UND business administration courses that apply toward the degree and major.
5. Complete at least 50% of the semester hours required for the degree in non-business courses.
6. Complete at least half of the business courses that apply toward the degree and major at the University of North Dakota.

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

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

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

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

PROGRAMS BEYOND THE CLASSROOM

Internships. The College of Business and Public Administration, through its internship 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 faculty, while at the same time receiving academic credit. Students desiring Cooperative Education positions should contact the division 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 AACSB, the International Association for Management Education. 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. As an example of the best of today’s learning technology, the Cargill Room on the third floor of Gamble Hall has a versatile design which makes it comparable to a corporate board room. The room has kidney-shaped tables that rotate to facilitate small group discussion, board room atmosphere, or a classroom environment. Equipped with video camera, projection devises, and laptop computer, this room allows both students and faculty to make professional presentations with ease. This classroom was built in 1998 with a grant from Cargill Inc. primarily for use by students enrolled in the capstone course. Cargill has committed to a $150,000 donation to renovate the third floor of Gamble Hall. 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.

BUREAU OF GOVERNMENTAL AFFAIRS

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

THE CENTER FOR INNOVATION

The Center for Innovation (Rural Technology Center) helps entrepreneurs and small manufacturers launch new products and companies, expand existing operations, bring new products to market, develop business and marketing plans, and manages the Rural Technology Incubator. To date, over 230 new products and companies have launched with assistance from the Center.

THE SMALL BUSINESS DEVELOPMENT CENTER

The North Dakota Small Business Development Center (Gamble Hall, Room 118) provides counseling and technical assistance to potential and existing small business owners. It serves as a link between the North Dakota University System and the private sector by providing one-to-one counseling, training and outreach assistance 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.

BPA STUDENT COUNCIL

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

STUDENT ORGANIZATIONS

Student organizations in the College of Business and Public Administration include the following clubs, associations, and profes-
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 University Continuing Education 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. A restructuring in 1998 resulted in Continuing Education becoming a member of the newly formed Division of Student and Outreach Services.

The mission of the Division of Continuing Education is to promote 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, a Resident Center at the Grand Forks Air Force Base, evening and weekend classes and off-campus Graduate degree programs at the UND Graduate Center at Bismarck and other locations in the state, region, and nation.

DEPARTMENT OF ACADEMIC PROGRAMS

Extension Classes

Extension classes are University of North Dakota classes/workshops 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 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.

Evening and Weekend Classes

The Division of Continuing Education provides evening classes at the Grand Forks Air Force Base. 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 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 an off-campus B.B.A. in Business Administration. The College of Education and Human Development in connection with the Division of Continuing Education offers an off-campus Bachelors degree in Education.

Further information on the courses 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) 777-2661 or the toll-free number 1-800-342-8230.

Correspondence Study

Correspondence Study offers more than 80 courses from 25 UND departments. Correspondence Study is flexible. Students may enroll in courses at any time. They study and learn at their own pace and within the constraints of their individual lifestyles.

Additional information on credit correspondence courses may be obtained by writing or calling the Department of Correspondence Study, Division of Continuing Education, University of North Dakota, Box 9021, Grand Forks, ND 58202-9021, (701) 777-3000 or toll-free 1-800-342-8230. Information on non-credit courses may be obtained by calling (701) 777-4204 or toll-free 1-800-342-8230 or writing to the address above.

HONOR SOCIETIES

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

The Division of Continuing Education

James Shaeffer, Dean
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
- 345 Forensic Science, 3 credits

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

**Chemical Engineering**
- 201 Stoichiometry, 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**
- 110 College Composition I, 3 credits
- 120 College Composition II, 3 credits
- 125 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
- 305 Creative Writing, 2 credits
- 365 Black American Writers, 3 credits

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

**Geography**
- 134 Global Climate, 3 credits
- 151 Human Geography, 3 credits
- 161 World Regional Geography, 3 credits
- 253 Geography of North Dakota, 3 credits
- 319 Geography for Teachers, 2 credits
- 362 Geography of Canada, 3 credits

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

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

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

**Languages: Modern and Classical**

**French (Fren)**
- 101 First Year French I, 4 credits
- 102 First Year French II, 4 credits
- 201 Second Year French I, 4 credits
- 202 Second Year French II, 4 credits

**German (Germ)**
- 101 First Year German I, 4 credits
- 102 First Year German II, 4 credits

**Norwegian (Norw)**
- 101 First Year Norwegian I, 4 credits
- 102 First Year Norwegian II, 4 credits
- 201 Second Year Norwegian I, 4 credits
- 202 Second Year Norwegian II, 4 credits

**Spanish (Span)**
- 101 First Year Spanish I, 4 credits
- 102 First Year Spanish II, 4 credits
- 201 Second Year Spanish I, 4 credits
- 202 Second Year Spanish II, 4 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

**Philosophy and Religion**
- Phil 101 Introduction to Philosophy, 3 credits
- Rels 101 Introduction to Religion (West), 3 credits
- Rels 203 World Religions, 3 credits
- Rels 345 Death and Dying, 2 credits

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

**Sociology**
- 110 Introduction to Sociology, 3 credits
- 115 Social Problems, 2 credits
- 309 Selected Topics: Sociology of Military, 3 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**
- 110 Introduction to Visual Arts, 3 credits
- 120 Introduction to Drawing and Color Materials, 3 credits
- 391 Special Topics: Visual Thinking, 3 credits

**Non credit Courses**

**Food Service and Nutrition**
- Basics of Nutrition, 3.5 Continuing Education Units
- 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**
- Developing the Art of Negotiating, 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

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, 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.

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; Physical Education, and Exercise Science; Social Work; and Teaching and Learning. Also affiliated with the College are the Bureau for Educational Services and Applied Research, the University Children’s Center, and three bureaus of the Department of Social Work: Child Welfare Research Bureau; Resource Center on Gerontology; and the Children and Family Services Training Center.

MISSION

The College of Education and Human Development 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 scholarship, 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 College of Education and Human Development

University Within the University

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

Work Force Development

The Office of Work Force Development is based on the concept that the University would become the long-term strategic partner of business and industry and the preferred provider of workforce development services and training throughout the region. Services available to businesses include facilitation services, strategic planning services, research for business and industry, human resources consulting, the management of training departments, the development of training plans, and even revenue procurement (grantsmanship) on behalf of business and industry to support their individual workforce development initiatives.

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

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

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

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

ACCRREDITATION

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. In 1998, it grew to include UND’s program in Recreation and Leisure Services. The Doctoral Program in Counseling is accredited by the American Psychological Association.

DEGREE PROGRAMS, MAJORS, AND MINORS

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

Physical Education and Exercise Science
B.S. in Physical Education

Social Work
B.S. in Recreation and Leisure Services
B.S. in Social Work

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

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

B.A. with major in Communication
B.A. with major in English
B.A. with major in French
B.A. with major in German
B.A. with major in Spanish
B.S. with major in Industrial Technology
B.S. with major in Biology
B.S. with major in Chemistry
B.S. with major in Geology
B.S. with major in Geography
B.S. with major in Mathematics
B.S. with major in Physics
B.F.A. with major in Visual Arts

Students preparing to teach music or physical education in the schools may fulfill requirements to teach grades 1 through 12 by completing the following degree programs and the professional education program in the Department of Teaching and Learning.

B.S. in Physical Education

Bachelor of Music

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

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

ADMISSION REQUIREMENTS

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

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

Admission to Teacher Education

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 30 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.

DESIGN OF THE CURRICULUM

Undergraduate Programs: Progressive Education

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

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

Overall goals of basic programs have been defined by the Teacher Education Committee as follows:

1. Responding to diversity that exists among students and to the challenges of living in an increasingly diverse society.
2. Responding to the learning needs and interests of individual students.
3. Creating a safe and stimulating environment for learning.
4. Engaging students in authentic interactions with one another and with the wider community to promote learning.
5. Developing curriculum that is interdisciplinary and demonstrates depth of content knowledge as well as breadth in approach.
6. Developing curriculum that is developmentally appropriate.
7. Involving students in solving problems and addressing issues which are important for consideration in a democracy.
8. Incorporating assessment of student learning and evaluation of learning processes as natural elements of the curriculum.
9. Responding to the norms, values, and changing dynamics of the school and community while maintaining a vision of good practice that is personally meaningful and professionally grounded.
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 which include a satisfactory criminal background check, 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 teaching 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 the third Friday in September and for the fall semester by the third Friday in January. Late applicants cannot be guaranteed placement in the preferred semester.

Acceptance for student teaching requires that students in all majors which include Elementary Education and in Middle Level Education complete each course in Teacher Education through Applied Methods (TEAM) with a minimum grade of C, satisfactorily complete a field experience, present a minimum overall GPA of 2.50 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 studies 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 a major in Physical Education is offered by the faculty in the Department of Physical Education, and Exercise Science. The Department of Counseling offers graduate programs leading to the M.A. with a major in Counseling and to the Ph.D. with a major in Counseling Psychology.

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

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

MISSION

The primary mission of SEM is to provide students a broad general education coupled with strong engineering fundamentals that prepare graduates to successfully fill important positions in professional practice in industry and government. Program completers will have a solid background in technical subjects, (i.e. mathematics, science, engineering science and design), 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 discovery to enhance student learning while being of benefit to the state, region and nation.

The School of Engineering and Mines further provides engineering programs of equal quality, via distance education, to industry through the Corporate Engineering Degree Program (CEDP).

Continuous and on-going assessment of student learning in accordance with specific program outcomes, including input from program constituents such as students, alumni, employers and industry advisory groups, provides opportunity to measure success 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 serves the public through the promotion and advancement of engineering, technology and applied science education.

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

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

DEGREES

The following baccalaureate degrees are conferred upon engineering students who have successfully completed the prescribed courses of study and who have complied with all the other requirements established by the University, including the General Education Requirements for engineering students listed on page 52: Bachelor of Science in Chemical Engineering, Bachelor of Science in Civil Engineering, Bachelor of Science in Electrical Engineering, Bachelor of Science in Geological Engineering, and Bachelor of Science in Mechanical Engineering. The School of Engineering and Mines also offers a Bachelor of Science in Environmental Geology and Technology.

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

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

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

ADMISSION POLICY

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

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

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

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

**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 should normally be received by March 1. Applications are usually reviewed once per year, but may be reviewed at other times as positions are available.

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

**Selection and Admission Process for 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
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 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 work 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 121, 122........General Chemistry I, II.................</td>
<td>(4)</td>
<td>(4)</td>
</tr>
<tr>
<td>Engl 110.............College Composition I..................</td>
<td>(3)</td>
<td></td>
</tr>
<tr>
<td>Engl 101..............Graphical Communications..............</td>
<td>(3)</td>
<td></td>
</tr>
<tr>
<td>Math 165, 166........Calculus I, II.........................</td>
<td>(4)</td>
<td>(4)</td>
</tr>
<tr>
<td>Phys 251, 251L........University Physics I..................</td>
<td>(4)</td>
<td></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>Engr 201..............Statics ............................</td>
<td>(3)</td>
<td></td>
</tr>
<tr>
<td>Engr 202..............Dynamics ............................</td>
<td>(3)</td>
<td></td>
</tr>
<tr>
<td>Engr 203..............Mechanics of Materials..............</td>
<td>(3)</td>
<td></td>
</tr>
<tr>
<td>Econ 201..............Principles of Economics I............</td>
<td>(3)</td>
<td></td>
</tr>
<tr>
<td>EE 206.................Electrical Engineering Fundamentals.</td>
<td>(3)</td>
<td></td>
</tr>
<tr>
<td>Engr 125..............Technical and Business Writing......</td>
<td></td>
<td>(3)</td>
</tr>
<tr>
<td>or College Composition II.............</td>
<td></td>
<td></td>
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</tbody>
</table>
Outlines for all four-year curricula are found in the Courses of Instruction section of the catalog beginning on page 61. 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 27-31). 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 Society of Civil Engineers (ASCE), Association of Engineering Geologists (AEG); Society of Energy Alternatives (SEA); American Society of Mechanical Engineers (ASME), Association of Undergraduate Geologists, Institute of Electrical and Electronics Engineers (IEEE), IEEE Computer Society; the Society of Manufacturing Engineers (SME) and the Society of Women Engineers (SWE).

**Honor Societies.** Eta Kappa Nu, Sigma Gamma Epsilon, and Tau Beta Pi are engineering 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 SME; the vice presidents of Eta Kappa Nu, Sigma Gamma Epsilon, and Tau Beta Pi; and the engineering student senator.

**UND SCHOOL OF ENGINEERING AND MINES FOUNDATION**

The School of Engineering and Mines (SEM) 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. The Foundation is the asset management unit for the School’s intellectual properties working with research, faculty, and staff in securing patents, copyrights, and other protection. The assets of the Foundation are dedicated to the financial support of the academic and research programs of the UND School of Engineering and Mines. For further information, contact the UND School of Engineering and Mines Foundation, P.O. Box 8155, University Station, Grand Forks, ND 58202.

**CORPORATE ENGINEERING DEGREE PROGRAM**

The Corporate Engineering Degree Program (CEDP) offers baccalaureate degrees in chemical, electrical and mechanical engineering via video tape and on-campus laboratories. This program is offered in cooperation with the School of Engineering and Mines and the Division of Continuing Education at the University of North Dakota.

On-campus courses are video taped and the tapes are distributed to each student enrolled in CEDP. Students enrolling in CEDP courses are employees of companies who have joined a consortium. Currently the consortium consists of 33 companies. Through this program, students are able to complete their degree programs while taking the majority of their courses at their “home site.” Students are required to travel sometime during the summer months to the UND campus to complete the laboratory portions of their programs.

Students have opportunities to interact with faculty through phone, fax and E-mail. Faculty members are exploring further use of the Internet for student interaction and course delivery.

For further information please contact the Division of Continuing Education at 1-800-342-8230.
The
GRADUATE SCHOOL
Harvey R. Knoll, 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 Leadership.

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 to the Graduate School Section of this Catalog. Courses with 500 series numbers are graduate courses and are normally open only to graduate students. All courses listed in the Graduate School Section of this Catalog carry graduate credit. Courses numbered over 300 in the Undergraduate section of this Catalog may, in certain instances, may be included in a cognate area.

For a listing of the fields in which graduate degrees may be obtained, see the table below.

ADDITIONAL INFORMATION
For detailed information students should consult the Graduate School Section of this Catalog or address inquiries to the Dean of the Graduate School, Box 8178, University of North Dakota, Grand Forks, ND 58202; Telephone (701) 777-2784.

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<td>Visual Arts</td>
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*Non-thesis option is available.
1 Non-thesis degree only.*
**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 1998-99 entering class had an average undergraduate Grade Point Average (GPA) of 3.14 and an average LSAT score of 151.

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 255,991 volumes and equivalents, including 100,000 microform volumes and over 2,400 serial subscriptions. The facility is a research library designed to serve the legal resource needs of the students and faculty of the School of Law and of the University. In addition, the law library serves the practicing bar and citizens throughout the state of North Dakota and the northern plains region. The library subscribes to LEXIS® and WESTLAW® computer assisted legal research services.

**ADDITIONAL INFORMATION**

A separate catalog for the School of Law describing degree requirements, course offerings, financial aid and scholarships, student organizations and activities, faculty biographies, placement and other miscellaneous information may be requested from the office of the Dean, School of Law, University of North Dakota, P.O. Box 9003, Grand Forks, ND 58202.
The School of

MEDICINE AND HEALTH SCIENCES

H. David Wilson, M.D., Dean

HISTORY AND MISSION

The School of Medicine and Health Sciences consists of medical, biomedical research and other health-related academic components, which work together to address our mission of educating and preparing North Dakota residents as physicians, medical scientists and other health professionals for service to the people of this region and the nation, and to advance medical and biomedical knowledge through research. These components include:

1. A statewide, four-year curriculum for medical students leading to the M.D. degree;
2. A set of postgraduate medical education programs of three to four years in duration (residencies) leading to certification in family medicine, internal medicine, general 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 of physicians and other health care personnel for continued learning;
4. Graduate programs in the biomedical sciences leading to the 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 the following degrees: B.S. in Athletic Training, B.S. in Cytotechnology, B.S. in Clinical Laboratory Science, and B.S. in Occupational Therapy;
8. Undergraduate and graduate course work in anatomy and cell biology, biochemistry and molecular biology, microbiology and immunology, pharmacology and toxicology, and physiology.
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 transferred to other medical schools for the last two years of medical education to earn 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 by which 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, established in 1970, 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. pro-
Athletic Training

Students can pursue a Bachelor of Science degree in Athletic Training through the Division of Sports Medicine, Department of Family Medicine. This four-year degree is designed to prepare entry-level athletic training professionals. The academic program is currently accredited by 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 January 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 is 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 school 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 family practice centers, library facilities, and campus offices. Affiliates 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 construction of two additions to house the basic sciences departments, the Harley French Library of the Health Sciences, classrooms and offices at the north end of the campus at the site of what was formerly known as St. Michael’s Hospital. The new additions provide state-of-the-art research laboratories and learning space for programs in health sciences. In 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 “coordination, improvement, expansion, and unification of health and welfare activities of the State, its agencies, its political subdivisions and its private practitioners.” The center is “concerned with the training of physicians, nurses and all other personnel concerned with the improvement and preservation of the health of the people of North Dakota.”

The Medical Center includes the School of Medicine and Health Sciences and the USDA Human Nutrition Research Center.
HISTORY AND MISSION

Baccalaureate education in nursing began at UND in 1949 with the College of Nursing being founded in 1959. In 1996 the programs in nutrition and dietetics joined the College. The College of Nursing now offers professional programs in nursing and nutrition and dietetics. Undergraduate degrees are offered in nursing, community nutrition, and dietetics. Graduate specialties within the masters program include: adult health, parent child, rural health, anesthesia nursing, health care administration, 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 for registered nurses (NCLEX-RN).

The baccalaureate program in dietetics offered as a coordinated program, combines academic preparation with clinical experiences for students who wish to become Registered Dietitians. Upon completion of this degree, students are eligible to take the examination for professional registration (RD). A degree in community nutrition is also available.

The mission of the College of Nursing is to educate individuals for professional roles in nursing and nutrition. The College strives to enhance the health of people in the region by preparing leaders in nursing and nutrition through innovative, accessible programs, and significant faculty and student scholarship and service.

The College is committed to fostering critical thinking and intellectual inquiry in a caring environment 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. 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 promotes improvement of nursing and health care through the conduct and dissemination of research and scholarship regionally, nationally, and internationally. The College further contributes to the well being of society through the participation of faculty, students, and graduates in service activities concerned with the quality of nursing and health care. The College of Nursing has a particular commitment to advancing the quality of health care in North Dakota.

ACCREDITATION

The graduate and undergraduate nursing programs are approved by the State Board of Nursing and accredited by the National League for Nursing Accreditation commission and have initial approval from the Commission on Collegiate Nursing Education.

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 129). 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 Undergraduate Nursing Program. Students must complete a formal application to the College of Nursing and be approved for admission by the College before enrolling in the nursing curriculum. To be eligible for consideration for admission to the nursing 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 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 and 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 adviser for the specifics of the selection process and procedures.

Students may petition to establish credit through special examinations according to University policy (see page 33). 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 Capograph 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 27-31, 129.
2. A minimum of 129 semester hours.
3. A minimum grade point average of 2.50 overall.

PROGRESSION REQUIREMENTS
1. A 2.50 GPA 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 clinics:
   a. current CPR certification by the American Red Cross or American Heart Association to include adult, child and infant;
   b. negative annual 2-step tuberculin skin tests or, if positive, medically certified absence of symptoms; and
   c. current medical/hospitalization insurance or certification of assumption of full responsibility for any health treatment costs incurred.
   d. A hepatitis B vaccine series.
   e. proof of immunity to measles (Rubeola), mumps, and rubella.
   f. proof of immunity to chicken pox (varicella).
   g. 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, and health care insurance costs are the responsibility of the student. There are additional expenses related to uniforms and clinical equipment, graduation, and licensure. An estimated expense sheet is available at the College of Nursing.

Students are responsible for transportation related to clinical experience. Use of a car, especially for parent-child and community health nursing is necessary. Students 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 with a major 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 131). 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 131). 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 precedence in planning other time commitments, thus limiting employment opportunities. Definite plans for financing the costs of the two years of the professional phase should be arranged prior to application. An estimate of expenses is available from the Department of Nutrition and Dietetics. Financial aid and scholarships are available from various sources. The UND Financial Aid Office can assist in determining which resources are available to individual students.

Community Nutrition

The Community Nutrition curriculum is designed to allow students to develop an in-depth understanding of nutrition based on the biological and social sciences; the ability to communicate nutrition principles effectively and accurately to the public; and the ability to participate as a team member with other community and health care professionals. Graduates will be skilled in conducting community nutrition assessments, identifying problems, developing and conducting effective interventions and collaborating with other professionals involved to improve the overall health of individuals and communities.

Students majoring in Community Nutrition select from two options (see page 131). 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 seven colleges and schools which offer undergraduate degrees. These include the John D. Odegard School of Aerospace Sciences, College of Arts and Sciences, the College of Education and Human Development, the School of Engineering and Mines, the School of Medicine and Health Sciences, and the College of Nursing.

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 the appropriate four-year, degree-granting college.

To declare a major and advance their records, the student must call or go to the office of the college which grants the degree the student
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 communication; 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 fall and spring by the Office of Student Academic Services in recognition of academic excellence by freshman students. These students must achieve a 4.00 grade point average and have completed a minimum of 12 semester hours of traditionally graded course work.

THOMAS J. CLIFFORD OUTSTANDING FRESHMAN AWARD

The Thomas J. Clifford Outstanding Freshman Award recognizes the freshman student who best exemplifies the highest academic standards and demonstrates leadership through participation in University extra-curricular activities and/or community service.

To qualify for the Thomas J. Clifford Outstanding Freshman Award, the student must have completed a minimum of 24 semester hours in two semesters preceding the award. Also, the student must not have completed more than 40 semester hours. This excludes credit earned while in high school and/or credit established through other special examinations. The student must be a present and/or previous recipient of the D.J. Robertson Academic Achievement award.

“GETTING STARTED” FRESHMAN REGISTRATION PROGRAM

The Office of Student Academic Services conducts a special summer registration program each year to allow incoming freshmen to arrange their fall semester class schedules and learn about the University. This procedure allows each student to obtain individual attention from academic advisers. Students accepted for admission to the University are invited to participate in the Getting Started Program. The individual advisement and registration process takes one full day, with activities beginning at 8:00 a.m. and concluding at approximately 3:30 p.m. Appointments are required and can be scheduled by contacting the Office of Student Academic Services.

SUMMER SESSION

SCOPE

Summer Session is an integral part of the academic program at the University of North Dakota. Both undergraduate and graduate courses are taught during the twelve-week Summer Session. In addition to regular classes, special classes, programs, field trips, workshops, conferences, and other short-term activities are conducted.

More than 200 faculty, as well as distinguished visitors, contribute to a quality educational program during the Summer Session. All facilities of the UND campus — including libraries, galleries, music facilities, theatres, lecture halls, dining rooms, and residence halls — are utilized by students attending the Summer Session.

SUMMER SESSION STUDENT BODY

Summer course offerings are for everyone, from juniors in high school to senior citizens. During the Summer Session, courses are offered for students who have completed their junior year in high school and wish to get an early start toward earning college credit. Other typical groups of students found on campus during the summer include: teachers and administrators working toward advanced degrees, students from other colleges, freshman students beginning their academic careers, 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 four, six or eight 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.

Some courses will be one, two, four, or 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 Director of Summer Sessions. For detailed information on the summer program, students should consult the Summer Session Bulletin/Time Schedule of Classes, which is published in the spring of each academic year and provided on the UND home page at www.und.nodak.edu, 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.

Accounting

H. Wilde (Division Director), Beard, Carlson, Ellingson, Hansen, Harmeson, Hiltner, Loyland, Medalen, Ness and Wambgsans

College of Business and Public Administration

The Faculty of Accounting and Business Law has prepared individuals for careers in commerce, including professional accounting, since 1927. The Faculty have a long-standing tradition of interaction with a wide range of accounting professionals. Faculty were instrumental in establishing the North Dakota Society of Certified Public Accountants.

Professional accountants face a variety of challenges and opportunities in their careers. To achieve success as a professional accountant, individuals must have a sound foundation in the liberal arts and sciences, a broad general understanding of business, a solid technical base in accounting, and a well developed ability to communicate in oral and written form. The accounting programs offered by the faculty provide the range of experience and knowledge needed for success as a professional accountant. The faculty’s programs also fulfill general University and College of Business graduation requirements.

Mission

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

Programs

The Faculty offer 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 CMA examination are established by the Institute of Management Accountants, a private nongovernmental organization. In contrast, the requirements to sit for the CPA 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 or 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 credits (36 of which must be numbered 300 or above, and 60 of which must be from a 4 year institution) including:

I. General Education Requirements, see pages 27-31.

II. College of Business and Public Administration Requirements, see page 42 and including:

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Acct 200, 201</td>
<td>Elements of Accounting I &amp; II</td>
<td>(6)</td>
</tr>
<tr>
<td>Acct 315</td>
<td>Business in the Legal Environment</td>
<td>(3)</td>
</tr>
<tr>
<td>BVED 217</td>
<td>Fundamentals of Management Information Systems</td>
<td>(4)</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>Econ 303</td>
<td>Money and Banking</td>
<td>(3)</td>
</tr>
<tr>
<td>Math 104</td>
<td>Finite Mathematics</td>
<td>(3)</td>
</tr>
<tr>
<td>Math 146</td>
<td>Applied Calculus I</td>
<td>(3)</td>
</tr>
<tr>
<td>Mgmt 300</td>
<td>Principles of Management</td>
<td>(3)</td>
</tr>
<tr>
<td>Mgmt 301</td>
<td>Production Management</td>
<td>(3)</td>
</tr>
<tr>
<td>Fin 310</td>
<td>Principles of Financial Management</td>
<td>(3)</td>
</tr>
<tr>
<td>Mgmt 475</td>
<td>Strategic Management</td>
<td>(3)</td>
</tr>
<tr>
<td>Mkt 305</td>
<td>Marketing Foundations</td>
<td>(3)</td>
</tr>
<tr>
<td>Peds 115</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>

One course selected from the following:

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Anth 171</td>
<td>Introduction to Cultural Anthropology</td>
<td>(3)</td>
</tr>
<tr>
<td>Psy 111</td>
<td>Introduction to Psychology</td>
<td>(3)</td>
</tr>
<tr>
<td>Soc 110</td>
<td>Introduction to Sociology</td>
<td>(3)</td>
</tr>
</tbody>
</table>

III. The following Major Requirements:

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Acct 218</td>
<td>Computer Applications in Business</td>
<td>(2)</td>
</tr>
<tr>
<td>Acct 301, 302</td>
<td>Intermediate Accounting I &amp; II</td>
<td>(8)</td>
</tr>
<tr>
<td>Acct 309</td>
<td>Accounting Information Systems</td>
<td>(3)</td>
</tr>
<tr>
<td>Acct 316</td>
<td>Business Law</td>
<td>(3)</td>
</tr>
<tr>
<td>Acct 320</td>
<td>Accounting for Production</td>
<td>(3)</td>
</tr>
</tbody>
</table>
Acct 401. Advanced Accounting ..........................................................(3)
Acct 405. Auditing ..............................................................................(3)
Acct 411. Business Income Taxation ..................................................(3)

Two courses selected from the following:
Acct 306. Cost Accounting II .................................................................(3)
Acct 312. Fund 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)

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.

B.B.A. WITH MAJOR IN ACCOUNTING

Required 125 credits, (36 of which must be numbered 300 or above, and 60 of which must be from a 4 year institution) including:

I. General Education Requirements, see pages 27-31.

II. College of Business and Public Administration Requirements, see page 42 and including:
Acct 200, 201. Elements of Accounting I & II ........................................(6)
Acct 315. Business in the Legal Environment ........................................(3)
BVED 217. Fundamentals of Management .............................................(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 146. Applied Calculus I ...............................................................(3)
Mgmt 300. Principles of Management ..................................................(3)
Mgmt 301. Production Management ....................................................(3)
Fin 310. Principles of Financial Management .......................................(3)
Mgmt 475. Strategic Management .......................................................(3)
Mkt 305. Marketing Foundations .........................................................(3)
Pols 115. American Government I .......................................................(3)
Comm 161. Fundamentals of Public Speaking .......................................(3)

One course selected from the following:
Pscy 111. Introduction to Psychology ...................................................(3)
Soc 110. 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 309. Accounting Information Systems .........................................(3)
Acct 320. Accounting for Production ...................................................(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)

BUSD 320. Professional Communication for Business .........................(3)

Upper division courses in Mgmt, Mkt, Econ, Fin.

Courses in the Department of Computer Science (except Csci 101)

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 the requirement.

THE CERTIFIED PUBLIC ACCOUNTANT EXAMINATION

According to North Dakota law and rules of the North Dakota State Board of Accountancy, 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 bachelor’s degree and at least 150 semester hours to be eligible to sit 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.

Both the B.Acc. and the B.B.A. programs meet the current and year 2000 requirements for accounting, business law and business courses. 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 changing work conditions, both programs should be considered as minimum necessary for future success.

Courses

200. Elements of Accounting I. (CCN) 3 credits. Basic principles of the complete accounting cycle. F,S

201. Elements of Accounting II. (CCN) 3 credits. Prerequisite: Acct 200 or Acct 295. Special emphasis on partnership, corporate accounting, and the uses of accounting information by managers. F,S

207. Managerial Accounting. (CCN) 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. (CCN) 2 credits. Prerequisite: BVED 217. Prerequisite or Corequisite: Acct 201. The fundamentals of digital computer programming using Electronic Spreadsheets with special emphasis on business applications. F,S

275. Accounting for Pre-MBA. (CCN) 3 credits. No credit allowed to students who have completed Acct 201. Financial and managerial accounting concepts and practices oriented towards the decision maker. F,S

301. Intermediate Accounting I. 4 credits. Prerequisites: Acct 201 and 218. Concepts, time value of money, current assets, current liabilities, plant and equipment, and intangibles. F,S


306. Cost Accounting II. 3 credits. Prerequisite: Acct 305, Econ 210. Analytical applications of accounting information for product costing, financial reporting, executive 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

320. Accounting for Production. (CCN) 3 credits. Prerequisites: Acct 201 and 218. Principles and techniques used to account for and analyze costs incurred to produce products or services. F,S

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 only. F,S

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

403. Contemporary Accounting Theory. 3 credits. Prerequisites/Corequisites: Acct 401 or consent of instructor. A study of the emerging issues and the problems facing the accounting profession with special emphasis on the authoritative pronouncements as designated by the American Institute of CPAs and the Financial Accounting Standards Board. S-U grading not allowed. F,S

405. 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. Prerequisites: Acct 405 or consent of instructor. The application of auditing theory to practical problems. F,S

410. Federal Individual Income Tax. 3 credits. Prerequisites: Acct 201. Federal income tax relating to individuals to include the more complex tax situations. A computerized individual income tax preparation is used as a part of the course. F,S

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,S

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.

Business Law

315. Business in the Legal Environment. 3 credits. The legal environment of business, governmental regulation, contracts, and property. F,S

316. Business Law. 3 credits. Prerequisite: Acct 315. Commercial paper, secured transactions, business organizations, and liability of professionals. F,S
Anatomy and Cell Biology  
(Anat)

E. Carlson (Chair), Atkinson, Carr, Grove, Hunt, Jackson, McCormack, Olson, Rada, Rieke, Ruit, and Symser

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,SS

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,SS

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 main sub-areas—archaeology, cultural anthropology, linguistics, and physical anthropology. Undergraduate training includes work in all four areas. Anthropology at UND is especially strong in physical anthropology and most students have an opportunity to work on archaeological excavations or in the laboratory. Both a major and a minor are offered in anthropology.

B.A. WITH A MAJOR IN ANTHROPOLOGY

Required 125 credits (36 of which must be numbered 300 or above and 60 of which must be from a 4 year institution) including:

I. General Education Requirements, see 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)

3 hours from (Cultural)

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)

Anth 378 ..................................Physical Anthropology and Theory ..............................(3)

Anth 380 ..................................Field Techniques in Archaeology .................................(1-6)

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

Electives in Anthropology ......................................................................................(9)

100. Introduction to Anthropology. 3 credits. An introduction to the breadth of inquiry pursued by anthropologists, including the origins and biological evolution of humans, the prehistoric development of world cultures, and the interplay of biological, social, and cultural factors in present day societies. On demand.

170. Introduction to Biological Anthropology. 3 credits. An introduction to the field of biological or physical anthropology. This course will provide a general background in human evolutionary biology. F,S

171. Introduction to Cultural Anthropology. 3 credits. 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 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 lifestyle, the origins of agriculture, and the rise and collapse of civilizations. F,S

209. Special Topics. 1-4 credits. Repeatable when topics vary. 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,S

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. S

309. Special Topics. 1-4 credits. Repeatable when topics vary. F,S

325. Human Origins. 3 credits. Prerequisites: Anth 170 or consent of instructor. An in-depth study of the fossil record and human evolution with an emphasis on the origins and evolution of the hominid and human lines. On demand.

330. Human Variation. 3 credits. An examination of the range of human physical variation, with a special emphasis on its adaptive nature. On demand.

335. Primates. 3 credits. A survey of the biology and behavior of the living primates, with a special emphasis on similarities and differences to humans. On demand.

340. Medical Anthropology. 3 credits. An examination of the human biological and cultural responses to health and disease as seen in an anthropological perspective. F,S

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

346. Analysis of Forensic Evidence. 2 credits. Prereq. or Coreq.: Anth 345. Emphasis on the practical applications of the forensic sciences. Whenever possible and practical hands-on exercises will reinforce course topics. F,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. A course in the study of language and culture, with an emphasis on the origins and evolution of the hominid and human lines. On demand.

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 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 least 9 of which must be numbered 300 or above, in any single subject matter taught at this university.

MINOR IN ANTHROPOLOGY

Required 21 credits including:

Anth 170 ..................................Introduction to Biological Anthropology .............................(3)

Anth 171 ..................................Introduction to Cultural Anthropology .............................(3)

Anth 172 ..................................Introduction to Archaeology and World Prehistory ..............(3)

3 hours from ...................................(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 and Theory ..............................(3)

Anth 380 ..................................Field Techniques in Archaeology .................................(1-6)

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

Electives in Anthropology ......................................................................................(9)

Courses
the beginning of farming communities. Major archaeological sites will be critically examined and an interdisciplinary approach will be stressed.

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 people 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 a maximum of 6 credits. A survey of peoples and cultures of selected areas. Selections based upon staff and student interest. F, S

380. Field Techniques in Archaeology. 1-6 credits. Prerequisites: Anth 172, and consent of instructor. S

388. Method and Theory in Archaeology. 3 credits. Prerequisites: Anthro 172 or consent of instructor. This course explores the reconstruction of the past: how they formulate research problem and conduct field work; what field and laboratory analytical tools they employ; and how they use data, models, and theory to explain culture change. Techniques, methods, and theoretical frameworks used in modern prehistoric archaeology are examined. Readings in the professional literature, case studies, and guest lectures provide vivid examples of archaeologists in thought and action. S

426. Lithic Technology. 3 credits. Prerequisite: Anth 300 and consent of instructor. Study of prehistoric stone tool technology and examination of the analytical methods used by archaeologists in lithics research. S

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

435. 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 topic varies with interests of staff and students; projected topics include: technology and culture, Central Asian ecology, economy 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

492. Independent Studies. (CCN) 1-4 credits. Consent of instructor. Independent research conducted under advisement with department faculty. Research is student originated and developed. F, S

494. Readings in Anthropology. (CCN) 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

**Sports and Sciences (A & S)**

The College of Arts and Sciences offers a limited number of non-departmental courses. Arts and Sciences 250 and 294 are non-departmental, and are intended to serve a variety of purposes. They provide for on-demand courses in areas of particular relevance when students or faculty members wish to initiate them. They can provide special-interest courses for particular groups of students. They can serve as a curricular laboratory for experimental courses which may later be established as regular offerings within departments or programs. Students and faculty members wishing to initiate course offerings under Arts and Sciences are encouraged to present proposals to the Dean of the College. No more than 21 credits may be earned in any combination of these courses over four years.

**Courses**

225. Introduction to the Study of Women. 3 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 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, S

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.

294. Arts and Sciences. (CCN) 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 practices.

492. Senior Study, Women Studies. (CCN) 1-4 credits. Prerequisite: A&S 225. Supervised independent study involving a theory paper, practicum experience, or a combination of the two.

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**Athletic Training**

(See Family Medicine, p. 99)

**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 John D. Odegard School of 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, transportation meteorology, climate analysis, cloud physics, aviation meteorology and weather modification.

**Center for Aerospace Sciences**

**B.S. IN ATMOSPHERIC SCIENCES**

Requires 125 credits (36 of which must be number 300 or above, and 60 of which must be from a 4 year institution) including:

I. General Education Requirements, see pages 27-31.

II. Center for Aerospace Sciences requirements, see page 37.

III. The Following curriculum:

<table>
<thead>
<tr>
<th>Freshman</th>
<th>First Semester</th>
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<tr>
<td>Engl 110, 125 College Composition I, Technical &amp; Bus. Writing</td>
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<td>Phys 251/251L University Physics I and Laboratory</td>
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<td>Free Electives</td>
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University of North Dakota
**Aviation**

Lovelace (Chair), Bridewell, DeRemer, Jensen, Karim, Lindseth, Marshall, Robertson, Schumacher, Skramstad, and Trapnell

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 John D. Odegard School of Aerospace Sciences.

The Business degree is fully accredited by the American Assembly of Collegiate Schools of Business (AACSB). The Aviation degree is fully accredited by the Council on Aviation Accreditation (CAA).
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-long cooperative internships are available offering opportunities at major airports, general aviation manufacturers, airlines, and weather modification research operational contractors. Students can apply four elective credits through the cooperative internship program toward their graduation requirements. At the same time, students can obtain valuable on-the-job experience to supplement their formal education.

Career services include the UND Career Planning and Placement Center, the John D. Odegard School of Aerospace Science’s Student Services Center, and an industry and alumni career database, which is maintained by JDOSAS. 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 courses 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. It is the responsibility of each student 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 B—paragraph 3, and Appendix D—paragraph 3. Failure to meet these attendance requirements will disqualify the student for FAA pilot certification. The following courses are Federal Aviation Regulation, Part 141, approved: Avit 102; 221; 222; 323; 324; 325; 414; 415; and 416.

Students enrolled in flight courses are required to finish those flight lessons prescribed to each individual course, in order to complete the course. Failure to complete the flight lessons within an acceptable time frame 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 221, Basic Attitude Instrument Flying.

Students who hold Commercial Pilot certificates and/or Flight Instructor Certificates obtained without college credit, and are majoring in a program that requires the commercial/instrument courses, are required to take Avit 221, 222, 323, 324, 325, 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**

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. 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 required as part of a student’s course of study, must be completed in residence at UND. Flight training completed away from UND, which is required under a specific curriculum, will not be granted credit for the corresponding UND course, and the student will be subject to dismissal from the program.

**MEDICAL CERTIFICATES**

A current medical certificate is required for all students prior to beginning flight training. The physical examination must be performed by an M.D. who is a designated FAA medical examiner.

There are three types of medical certificates—Class I, Class II, and Class III. Students are advised to get a Class I certificate if they are planning to pursue a career as a professional pilot. Any physical limitation which may alter career plans should become evident at that time.

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

**DRUG POLICY**

The John D. Odegard School of 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 taking part in flight training at UND will be required to participate in a random drug testing program. This program runs continuously throughout the year for all flight students.

**FINANCIAL AID INFORMATION**

Students are encouraged to explore all financial aid options as outlined on page 8. 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 early each fall semester; therefore, students are encouraged to pick up their applications as soon as they arrive for fall classes.

Financial aid is available only for those flight courses required 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 flight-related activities of the aviation industry. Emphasis is placed on the relationship of modern management practices to airline, airport and general aviation management. A Commercial Pilot Certificate with instrument and multi-engine ratings is required.

The Airport Management curriculum is offered to those students seeking administrative positions with companies specializing in and related to the ground 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. A Private Pilot Certificate is required.
The Air Transport curriculum combines the School’s SPEC-TRUM™ ab initio pilot training with the baccalaureate degree to give the student an alternative method to prepare for a career as an airline pilot. A Commercial Pilot Certificate with instrument and multi-engine ratings, plus a Certified Flight Instructor Certificate, are required. A type rating may be required in order to participate in an internship.

The Commercial Aviation curriculum is designed for a variety of flight-related careers. Commercial Aviation combines a solid background in aviation courses with a Certified Flight Instructor Certificate, with appropriate ratings, to give the student the education necessary for entry-level positions in the aviation industry. A commercial pilot certificate with instrument and multi-engine ratings, plus a Certified Flight Instructor Certificate with airplane and instrument rating are required.

The Flight Education curriculum is designed for students interested in aviation education as a profession. This program combines a Certified Flight Instructor Certificate, 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. A Commercial Pilot Certificate with instrument and multi-engine ratings, plus a Certified Flight Instructor Certificate with instrument and multi-engine ratings are required.

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. A Private Pilot Certificate is required.

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. A Private Pilot Certificate is required.

Note: The Aviation Faculty highly recommends that Aviation Students use the elective credits to pursue a minor or a second major in another discipline.

College of Business and Public Administration

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

Required: 125 credits (36 of which must be numbered 300 or above, and 60 of which must from a 4 year institution) including:

II. College of Business and Public Administration Requirements, page 42.
III. The following curriculum:

PRE-BUSINESS CURRICULUM

<table>
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<td>Avit 303</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 404</td>
<td>Airport Operations and Administration</td>
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<td>Avit 407</td>
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ADVANCED BUSINESS COURSES

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<td>Fin 310</td>
<td>Principles of Finance</td>
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<td>Mgmt 300</td>
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<td>Mgmt 301</td>
<td>Production Management</td>
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<td>Mgmt 302</td>
<td>Human Resource Management</td>
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<td>Mgmt 475</td>
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<tr>
<td>Mkt 305</td>
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Plus electives to total 125 credits.

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

Required: 125 credits (36 of which must be numbered 300 or above, and 60 of which must be from a 4 year institution) including:

II. College of Business and Public Administration Requirements, page 42.
III. The following curriculum:

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<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>
</tbody>
</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>
</tr>
</thead>
<tbody>
<tr>
<td>Acct 315</td>
<td>Business in the Legal Environment</td>
<td>(3)</td>
</tr>
<tr>
<td>Econ 303</td>
<td>Money and Banking</td>
<td>(3)</td>
</tr>
<tr>
<td>Fin 310</td>
<td>Principles of Finance</td>
<td>(3)</td>
</tr>
<tr>
<td>Mgmt 300</td>
<td>Principles of Management</td>
<td>(3)</td>
</tr>
<tr>
<td>Mgmt 301</td>
<td>Production Management</td>
<td>(3)</td>
</tr>
<tr>
<td>Mgmt 302</td>
<td>Human Resource Management</td>
<td>(3)</td>
</tr>
<tr>
<td>Mgmt 475</td>
<td>Strategic Management</td>
<td>(3)</td>
</tr>
<tr>
<td>Mkt 305</td>
<td>Marketing Foundations</td>
<td>(3)</td>
</tr>
</tbody>
</table>

Plus electives to total 125 credits.
Center for Aerospace Sciences

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

Required: 125 credits (36 of which must be numbered 300 or above, and 60 of which must be from a 4 year institution) including:


II. Center for Aerospace Sciences Requirements, page 37.

III. The following curriculum:

GENERAL EDUCATION COURSES
AtSc 110............................Meteorology I .....................................................(4)
Comm 110..........................Fundamentals of Public Speaking .........................(3)
Econ 201..........................Principles of Microeconomics ..............................(3)
Engl 110..........................College Composition I ........................................(3)
Engl 120..........................College Composition II .......................................(3)
Lang 101..........................Foreign Language ...............................................(4)
Lang 102..........................Foreign Language ...............................................(4)
Math 146..........................Applied Calculus I ...............................................(3)
Phys 150/150L..................Physics for Aerospace Sciences ...............................(5)
Arts & Humanities (other than language) Electives .............................................(1)
Social Science Electives .........................................................................................(6)

AVIATION COURSES
Avit 100..........................Aviation Orientation ...............................................(1)
Avit 102..........................Introduction to Aviation ............................................(5)
Avit 221..........................Basic Aircraft Instrument Flying .................................(3)
Avit 222..........................IFR Regulations and Procedures ...............................(3)
Avit 250..........................Human Factors .........................................................(2)
Avit 302..........................Aircraft Transportation ...........................................(3)
Avit 303..........................Introduction to Air Traffic Control .................................(2)
Avit 308..........................Aviation Safety .........................................................(3)
Avit 309..........................Flight Physiology .......................................................(3)
Avit 323..........................Aircraft Systems .......................................................(3)
Avit 325..........................Multi-Engine Systems and Procedures .......................(2)
Avit 326..........................Gas Turbine Engines ...............................................(3)
Avit 327..........................Aerospace Law ..........................................................(3)
Avit 403..........................Certified Flight Instructor .........................................(3)
Avit 411..........................International and Long-range Navigation ....................(3)
Avit 414..........................Human Factors .........................................................(2)
Avit 421..........................Advanced Aerodynamics .........................................(3)
Avit 422..........................Advanced Flight Lab I .............................................(1)
Avit 428..........................Transport Category Aircraft Systems .........................(3)
Avit 430..........................Air Traffic Control ....................................................(2)

One of the following:
Avit 402..........................Airport Planning and Administration .........................(3)
Avit 405..........................Airline Operations and Management .........................(3)
Avit 407..........................General Aviation Operations and Management ..........(3)

One of the following:
Avit 409..........................Advanced Aircraft Operations ...............................(3)
Avit 429..........................Turbojet Propulsion ...............................................(3)

OTHER REQUIREMENTS
AtSc 231..........................Aviation Meteorology I ...........................................(4)
BVEd 320..........................Business Communication .......................................(3)
Approved Computer Elective .................................................................(1-4)

Plus electives to 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 credits (36 of which must be numbered 300 or above, and 60 of which must be from a 4 year institution) including:


II. Center for Aerospace Sciences Requirements, page 37.

III. The following curriculum:

GENERAL EDUCATION COURSES
AtSc 110............................Meteorology I .....................................................(4)
Comm 110..........................Fundamentals of Public Speaking .........................(3)
Econ 201..........................Principles of Microeconomics ..............................(3)
Engl 110..........................College Composition I ........................................(3)
Engl 120..........................College Composition II .......................................(3)
Lang 101..........................Foreign Language ...............................................(4)
Lang 102..........................Foreign Language ...............................................(4)
Math 146..........................Applied Calculus I ...............................................(3)
Phys 150/150L..................Physics for Aerospace Sciences ...............................(5)
Arts & Humanities (other than Language) Electives .............................................(1)
Social Science Electives .........................................................................................(6)

AVIATION COURSES
Avit 250..........................Aviation Operations ...............................................(3)
Avit 302..........................Air Transportation ....................................................(3)
Avit 303..........................Introduction to Air Traffic Control .................................(2)
Avit 308..........................Aviation Safety .........................................................(3)
Avit 361..........................ATC En Route Non-Radar Operations .......................(4)
Avit 362..........................ATC Advanced Tower Operations .........................(4)
Avit 402..........................Airport Planning and Administration .........................(3)
Avit 403..........................Aerospace Law .........................................................(3)
Avit 463..........................Advanced Air Traffic Control .....................................(4)
Avit 464..........................Advanced Air Traffic Control .....................................(4)
Avit 465..........................Advanced Air Traffic Control .....................................(4)

OTHER REQUIREMENTS
BVEd 320..........................Business Communication .......................................(3)
Comm 212..........................Interpersonal Communication ...............................(3)
Mgmt 305..........................Managerial Concepts ...........................................(3)
Approved Computer Elective .................................................................(1-4)

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, Atmospheric Sciences, 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 seeking a profession in Aviation Maintenance are required to have an FAA Mechanic Certificate with airframe and powerplant ratings. 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 credits (36 of which must be numbered 300 or above, and 60 of which must be from a 4 year institution) including:


II. Center for Aerospace Sciences Requirements, page 37.

III. The following curriculum:

AtSc 110............................Meteorology I .....................................................(4)
Comm 110..........................Fundamentals of Public Speaking .........................(3)
Econ 201..........................Principles of Microeconomics ..............................(3)
Engl 110..........................College Composition I ........................................(3)
Engl 120..........................College Composition II .......................................(3)
Math 146..........................Applied Calculus I ...............................................(3)
Phys 150/150L..................Physics for Aerospace Sciences ...............................(5)
Arts & Humanities General Education Requirements .................................................(9)
Social Science General Education Requirements .................................................(6)
BLANKET CREDITS ALLOWED FOR TECHNICAL COURSEWORK .........................(40)

AVIATION REQUIREMENTS
Avit 102..........................Introduction to Aviation ............................................(5)
Avit 302..........................Air Transportation ....................................................(3)
Avit 308..........................Aviation Safety .........................................................(3)
Avit 403..........................Aerospace Law .........................................................(3)

One of the following:
Avit 402..........................Airport Planning & Administration .........................(3)
Avit 405..........................Airline Operations & Management .........................(3)
Avit 407..........................General Aviation Operations & Management ..........(3)

MANAGEMENT COMPONENT
Select 15 credits from:
Acct 200..........................Elements of Accounting I .......................................(3)
Acct 315..........................Business Law ..........................................................(3)
BVEd 308..........................Office Management .................................................(3)
BVEd 309..........................Information Management Systems ...........................(3)
BVEd 315..........................Records Management .............................................(3)
BVEd 320..........................Business Communication .......................................(3)
Mgmt 300..........................Principles of Management ....................................(3)
Mgmt 301..........................Production Management .......................................(3)
Mgmt 302..........................Human Resource Management ..............................(3)
Mgmt 310..........................Organizational Behavior ........................................(3)
Psy 301..........................Industrial & Organizational Psychology* ...............(3)
Soc 361..........................Social Psychology** ..................................................(3)

*implies that Psy 101 is one of the Social Science GER courses
**implies that Soc 101 is one of the Social Science GER courses

Other Approved Computer Electives .................................................................(1-4)

Plus Electives to total 125 credits (to include remaining upper division credits).
B.S. IN AERONAUTICS WITH A MAJOR IN COMMERCIAL AVIATION

Required: 125 credits (36 of which must be numbered 300 or above, and 60 of which must be from a 4 year institution) including:


II. Center for Aerospace Sciences Requirements, page 37.

III. The following curriculum:

GENERAL EDUCATION COURSES

AtSc 110 ........................Meteorology I .........................................................(4)
Comm 110 ........................Fundamentals of Public Speaking ................................(3)
Econ 201 ........................Principles of Microeconomics ........................................(3)
Engl 110 ........................College Composition I ......................................................(3)
Engl 120 ........................College Composition II ......................................................(3)
Lang 101 ........................Foreign Language ............................................................(4)
Lang 102 ........................Foreign Language ............................................................(4)
Math 146 ........................Applied Calculus I ..............................................................(3)
Phys 150/150L ................Physics for Aerospace Sciences .......................................(5)
Arts and Humanities (other than Language) Electives ........................................(1)
Social Science Electives .................................................................(4)

AVIATION COURSES

Avit 100 ........................Aviation Orientation .........................................................(1)
Avit 102 ........................Introduction to Aviation .........................................................(5)
Avit 221 ........................Basic Attitude Instrument Flying ......................................(3)
Avit 222 ........................IFR Regulations and Procedures ........................................(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 309 ........................Flight Physiology .................................................................(3)
Avit 323 ........................Aerodynamics—Airplanes ...................................................(3)
Avit 324 ........................Aircraft Systems .................................................................(3)
Avit 325 ........................Multi Engine Systems and Procedures ..................................(2)
Avit 403 ........................Airspace Law .................................................................(3)
Avit 411 ........................International and Long-Range Navigation ................................(3)
Avit 414 ........................Certified Flight Instructor ....................................................(5)
Avit 415 ........................Instrument Flight Instructor ...................................................(4)
Avit 430 ........................Crew Resource Management ..................................................(2)

Two of the following:

Avit 402 ........................Airport Planning and Administration ...................................(3)
Avit 405 ........................Airline Operations and Management .....................................(3)
Avit 407 ........................General Aviation Operations and Management ......................(3)

One of the following:

Avit 409 ........................Advanced Aircraft Operations ...........................................(3)
Avit 428 ........................Transport Category Aircraft Systems ......................................(4)
Avit 429 ........................Turbo Prop Operations .........................................................(4)

OTHER REQUIREMENTS

AtSc 231 ........................Aviation Meteorology .........................................................(4)
BVED 320 ........................Business Communication ...................................................(3)
Approved Computer Elective .................................................................(1-4)
Plus electives to total 125 credits.

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

Required: 125 credits (36 of which must be numbered 300 or above, and 60 of which must be from a 4 year institution) including:


II. Center for Aerospace Sciences Requirements, page 37.

III. The following curriculum:

GENERAL EDUCATION COURSES

AtSc 110 ........................Meteorology I .........................................................(4)
Comm 110 ........................Fundamentals of Public Speaking ................................(3)
Econ 201 ........................Principles of Microeconomics ........................................(3)
Engl 110 ........................College Composition I ......................................................(3)
Engl 120 ........................College Composition II ......................................................(3)
Lang 101 ........................Foreign Language ............................................................(4)
Lang 102 ........................Foreign Language ............................................................(4)
Math 146 ........................Applied Calculus I ..............................................................(3)
Phys 150/150L ................Physics for Aerospace Sciences .......................................(5)
Arts and Humanities (other than Language) ...................................................(1)
Social Science .................................................................(3)

AVIATION COURSES

Avit 100 ........................Aviation Orientation .........................................................(1)
Avit 102 ........................Introduction to Aviation .........................................................(5)
Avit 221 ........................Basic Attitude Instrument Flying ......................................(3)
Avit 222 ........................IFR Regulations and Procedures ........................................(3)
Avit 302 ........................Air Transportation ..............................................................(3)
Avit 303 ........................Introduction to Air Traffic Control ......................................(2)
Avit 308 ........................Aviation Safety .................................................................(3)
Avit 323 ........................Aerodynamics—Airplanes ...................................................(3)
Avit 324 ................................Aircraft Systems .........................................................(3)
Avit 325 ................................Multi Engine Systems and Procedures ................................(2)
Avit 403 ................................Airspace Law .................................................................(3)
Avit 405 ................................Airline Operations and Management ..........................(3)
Avit 407 ................................General Aviation Operations and Management ................(3)
Avit 414 ................................Certified Flight Instructor .................................................(5)
Avit 415 ................................Instrument Flight Instructor .............................................(4)
Avit 416 ................................Multi-engine Flight Instructor ...........................................(2)
Avit 409 ................................Basic Attitude Instrument Flying ......................................(3)
Avit 428 ................................Transport Category Aircraft Systems ..................................(4)
Avit 429 ................................Turbo Prop Operations .........................................................(4)

OTHER REQUIREMENTS

AtSc 231 ........................Aviation Meteorology .........................................................(4)
BVED 320 ........................Business Communication ...................................................(3)
Approved Computer Elective .................................................................(1-4)
Plus electives to total 125 credits.

MINORS IN AVIATION

NOTE: Students who are majoring in an aviation field are not eligible to declare either of these minors.

MINOR IN PROFESSIONAL FLIGHT

Required: 30 credits including:

AtSc 110 ........................Meteorology I .........................................................(4)
Avit 221 ........................Basic Attitude Instrument Flying ......................................(3)
Avit 222 ........................IFR Regulations and Procedures ........................................(3)
Avit 308 ........................Aviation Safety .................................................................(3)
Avit 323 ........................Aerodynamics—Airplanes ...................................................(3)
Avit 324 ................................Aircraft Systems and Instruments ..................................(3)
Avit 325 ................................Multi-engine Systems and Procedures ................................(2)
Avit 429 ................................Turbo Prop Operations .........................................................(4)
Avit 430 ................................Crew Resource Management ..................................................(2)

MINOR IN AVIATION MANAGEMENT

Required: 24 credits including:

AtSc 110 ........................Meteorology I .........................................................(4)
Avit 102 ........................Introduction to Aviation .........................................................(5)
Avit 302 ........................Air Transportation ..............................................................(3)
Avit 308 ........................Aviation Safety .................................................................(3)
Avit 402 ........................Airport Planning and Administration .....................................(3)
Avit 403 ........................Airspace Law .................................................................(3)
Avit 405 ........................Airline Operations and Management .....................................(3)
AtSc 231 ........................Aviation Meteorology .........................................................(4)
AtSc 232 ........................Aviation Meteorology .........................................................(4)
AtSc 307 ........................Aviation Safety .................................................................(3)
AtSc 323 ........................Aerodynamics—Airplanes ...................................................(3)
Avit 324 ................................Aircraft Systems and Instruments ..................................(3)
Avit 325 ................................Multi-engine Systems and Procedures ................................(2)

MINOR IN PROFESSIONAL FLIGHT

Required: 24 credits including:

AtSc 110 ........................Meteorology I .........................................................(4)
Avit 102 ........................Introduction to Aviation .........................................................(5)
Avit 302 ........................Air Transportation ..............................................................(3)
Avit 308 ........................Aviation Safety .................................................................(3)
Avit 402 ........................Airport Planning and Administration .....................................(3)
Avit 403 ........................Airspace Law .................................................................(3)
Avit 405 ........................Airline Operations and Management .....................................(3)
Avit 407 ................................General Aviation Operations and Management ................(3)

COURSES

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. Career option courses will be explored. Academic and airport requirements and procedures will be covered. F, S

102. Introduction to Aviation. 5 credits. Co-requisite: AtSc 110. The course will develop the student’s knowledge and skills that are needed to safely exercise the privileges and responsibilities of a Private Pilot. Course content includes instruction in aerodynamics, aircraft systems, FAA regulations, U.S. Airspace System, weight and balance, aircraft performance, aviation weather, flight publications, radio navigation, cross-country planning and navigation, basic flight physiology, and flight safety. 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: AtSc 110. The course will develop the student’s knowledge and skills that are needed to safely exercise the privileges and responsibilities of a Private Pilot. Course content includes instruction in helicopter aerodynamics, helicopter systems, FAA regulations, U.S. Airspace System, weight and balance, helicopter performance, aviation weather, flight publications, radio navigation, cross-country planning and navigation, basic flight physiology, and flight safety. The student must complete the appropriate flight lessons in the Private Helicopter course to satisfactorily complete the course. F

183. Glider Certification. 1 credit. Prerequisite: Avit 102. SU/GR grading only. 221. Basic Attitude Instrument Flying. 3 credits. Prerequisite: Avit 102. This course will include an in-depth study of pilot/static and gyro instruments and basic attitude instrument flying. In addition, the operation, interpretation and practical use of VOR, ILS, RTE, RNAV, RNAV/GPS, and Integrated Flight Control systems will be studied. The student must complete the appropriate flight lessons to satisfactorily complete the course. F, S, SS
222. IFR Regulations and Procedures. 3 credits. Prerequisite: Avit 221. This course will provide the student with a detailed study of the regulations, procedures, and publications necessary for operating IFR in the national airspace system. Terminal and enroute procedures will be studied in detail. The student must complete the appropriate flight lessons to satisfactorily complete the course. F, S, SS

224. Aircraft Systems-Helicopter. 3 credits. Pre- or corequisite: Avit 243. This course will provide an in-depth study of flight instruments for instrument flight in helicopters. In addition, the operation, interpretation and practical application of IFR, ADF, DME, RNAV, and RMI will be studied. The student must complete the appropriate flight lessons in the Instrument Helicopter course to satisfactorily complete the course. F, S

244. Basic Aircraft Instrumentation and Navigation-Helicopter. 3 credits. Pre- or prerequisite: Avit 244. This course will provide the student with a detailed study of ATC procedures, ATC system charts, publication and rules of the IFR environment as they relate to helicopter operations. The student must complete the appropriate flight lessons to satisfactorily complete the course. F, 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 basics, physical limitations of human components and design elements that allow for optimizing human machine interaction. F, S

299. Topics in Aviation. (CNN) 1-3 credits. Selected topics in aviation which allow the student to study a specialized subject. Repeatable to a maximum of 6 credits. F, S

301. Avionics for Aviators. 3 credits. Prerequisite: Avit 102. Theory of operation of various common types of avionics equipment. The course starts with a review of basic electricity, then applies this basic theory to aircraft electrical systems. The course includes radio, 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/2

302. Air Transportation. 3 credits. Prerequisite: Avit 102 or consent of the instructor. The course provides an introduction to 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. The student will be 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. Prerequisites: 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. Aviation Safety. 3 credits. Prerequisite: Avit 102. This course provides the student with a detailed introduction into aspects of aviation safety risk management, and the associated components of pilot psychology, human factors, and accident trends, factors and analysis. F, S

309. Flight Physiology. 3 credits. Prerequisite: Avit 250. This course provides an in-depth study of aerodynamic factors for pilots. Included are aerodynamics, performance, flight limits and basic research findings. F, S

323. Aerodynamics—Airplanes. 3 credits. Prerequisite: Phys 150 and 150L, Avit 222. Corequisite: Avit 324. This course will provide the student a study of the physical principles of airplane aerodynamics, thereby fostering an appreciation of the factors affecting aircraft performance, stability and control, and special flight conditions often experienced by commercial pilots of fixed-wing aircraft. F, S, SS

324. Aircraft Systems. 3 credits. Prerequisite: Avit 222, corequisite: Avit 323. This course provides an in-depth study of reciprocating engine, propeller, electrical, environmental, hydraulic, pneumatic, fuel, ignition, lubrication, and pressurization systems. F, S, SS

325. Multi-Engine Systems and Procedures. 2 credits. Prerequisites: Avit 324. This course covers the operations necessary to operate 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

327. Gas Turbine Engines. 3 credits. Prerequisite: Avit 325. This course will provide an in-depth introduction to the turbine engine through the study of its development, construction, & operation of turbine transports. F

335. Air Transport Regulations. 2 credits. Prerequisite: Avit 325. This course provides an in-depth study of the regulations governing scheduled air carriers. The study of Federal Aviation regulations parts 135 and part 121 will be included, as well as the international regulations as established by the International Civil Aviation Organization. S

349. Instrument Certification—Helicopter Rating. 3 credits. Prerequisites: Avit 142, Phys 150/150L. 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 Helicopter Course to satisfactorily complete the course. On Demand.

348. Commercial Certification — Helicopter Additional Rating. 3 credits. Prerequisite: Commercial Pilot Certificate. This course provides the dual flight instruction and solo practice necessary to obtain a Commercial Pilot Certificate with a Rotorcraft Category – Helicopter Rating. The course is designed to provide ground instruction in helicopter aerodynamics, flight attitudes, control systems, auto-rotation, vertical flight, and off-airport operations. The student must complete the appropriate flight lessons to satisfactorily complete the course. On Demand.

349. Instrument Certification — Helicopter Rating. 1 credit. Prerequisite: Avit 142. At the completion of this course, helicopter students will have completed all FAA requirements for a Helicopter Instrument Rating. A minimum of a Private Pilot Certification with an Instrument Rating is required to enroll in this course. S-U grading only. SS

360. ATC: Tower Operations. 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 airspace orientation. F, S

361. ATC: En Route Non Radar Operations. 4 credits. Prerequisite: Avit 360. Provides the student with en route non-radar operations. The procedural knowledge covers the basic to the advanced non-radar center operations and structure. F, S

362. ATC: Advanced Tower Operations. 4 credits. Prerequisite: Avit 361. Builds on the previous two courses adding Terminal Radar Approach Control in the Tower (TRACAB) operations. Training includes tower radar operations, separation requirements, procedures, and knowledge or radar, norad, and tower operations, F, S, SS

363. 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 is not limited to, flight takeoffs and landings, portaging and stowing, water emergency takeoffs and landings, taxiing, sailing and docking, glacial 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

386. 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

389. Introduction to Aerobatic 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 which include loops, spins, rolls, and inverted flight, with advanced variations and combinations of maneuvers demonstrated in flight. S-U grading only. F, S, SS

397. Cooperative Education. (CCN) 1-4 credits. S-U grading only. Prerequisite: Acceptance into a co-op position with cooperating industry and approval by Aviation Department. A practical work experience with an employer closely associated with the student’s academic area. Arranged by mutual agreement between student, aviation department, and employer. A maximum of four cooperative education credits may be applied toward the total credits needed to complete degree requirements. Co-op credits may not be substituted for any required course within the student’s major. F, S, SS

399. Special Aerospace Topics. (CCN) 1-4 credits. F, S

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 as achieving a successful airport operation. Course content includes a study of the duties and responsibilities of the airport manager with a special emphasis on the Federal Air Regulations governing the operation and administration of commercial service airports within the United States. F, S

403. Aerospace Law. 3 credits. Prerequisite: Avit 302 and junior 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

404. 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 the real and immediate problems in 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 303. 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 are studied. Aircraft and equipment evaluation will be studied. F, S

409. Flight Engineer Certification. 3 credits. Prerequisite: Avit 325. Provides the classroom course of study utilizing the professional course material 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. F

409. Advanced Aircraft Operations. 3 credits. Prerequisites: Avit 325. The topics of study include high speed and high altitude aerodynamics, physiological aspects of high altitude flight, hazards associated with operations near high speed buffet boundary, effects of turbulence on aircraft, the effects of engine systems, load factors, along with the general study of the typical business jet systems management. F, S

410. Airline Transport Pilot Certification. 3 credits. Prerequisites: Avit 308 and 325. Co-requisite: Avit 481. Provides a detailed and comprehensive background of
aeronautical subjects 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 airplane operations and performance computations. On Demand.

419. International and Long Range Navigation. 3 credits. Prerequisites: Avit 325 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 as well as methods and systems of computing, communicating and displaying navigation information. F, S

414. CFI Certification. 5 credits. Prerequisite: Avit 325. Provides the student with a detailed study of the responsibilities and teaching concerns of a flight instructor. The course is divided into two major sections: fundamentals of teaching and learning, including effective teaching methods, learning process, consideration of flight training syllabi, effective evaluations, and flight instructor responsibilities; the second section is concerned with the analysis of the flight maneuvers involved with Private Pilot, Commercial Pilot and Flight Instructor Certificates. The course will also provide practical teaching experiences. The student must complete the associated flight lessons in the CFI Flight Course to satisfactorily complete the course. F, S, SS

415. Instrument Flight Instructor. 4 credits. Prerequisite: Avit 414. Provides the student with an in-depth study of the responsibilities and techniques to be used as an Instrument Flight Instructor. Additional study of instrument flight. ATC system, charts, publications and rules of the IFR environment as they pertain to teaching will be covered. The course will provide practical teaching experience. The student must complete the associated flight lessons in the Instrument Flight Instructor course to satisfactorily complete the course. F, S, SS

425. Multi-engine Flight Instructor. 2 credits. Prerequisite: Avit 325 and 414. This course provides an understanding of the fundamentals of teaching in a multi-engine airplane. The course will include multi-engine aerodynamics and performance, analysis of multi-engine operations, single-engine operations and procedures, flight instructor responsibilities; flight safety concerns and instrument flight maneuvers in multi-engine airplanes. The student must complete the associated flight lessons in the Multi-engine Airplane CFI course to satisfactorily complete the course. F, S, SS

421. Advances in Aerodynamics. 3 credits. Prerequisite: Avit 325 or consent of the instructor. Beginning with a brief review of low speed aerodynamics, the course provides a study of the terminology and aerodynamics fundamentals associated with transonic and supersonic flight. F

422. Advanced Flight Lab I. 1 credit. Prerequisite: Avit 325. An advanced flight lab consisting of multi-engine and instrument flying. Also includes turbine and aero-batic flight. 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. F

428. Transport Category Aircraft Systems. 4 credits. Prerequisite: Avit 325 or consent of the instructor. This course will provide an indepth study of the complex systems of today’s air transport jet aircraft centered around Boeing 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 325 or consent of the instructor. This course will provide an introduction to the study of turboprop aircraft systems. The type of aircraft studied may vary from semester to semester. S

430. Crew Resource Management. 2 credits. Prerequisite: Avit 250 and 325. This course will provide an in-depth study of Crew Resource Management, which involves having a complete understanding of the flight deck environment and the proper utilization of all resources available to an aviator. This course gives the student a thorough indoctrination to CRM, including areas of leadership communications and management as they apply to the modern air transport pilot. F

442. Airport Operations and Administration. 3 credits. Prerequisite: Avit 402. This course is the second of a two course curriculum in airport administration. It is an advanced course emphasizing the further development of the skills and understanding of the operation and management of commercial service airports of all sizes. The content focuses upon the practical application of airport management skills and includes educational tours of operating airports. The program stresses the airport manager’s role in relations with tenants, public officials, and patrons through the honing of individual writing and public speaking skills. S

444. CFI Certification – Helicopter. 5 credits. Pre- or co-requisite: Avit 345. Provides the student with a detailed study of the responsibilities and teaching concerns of a helicopter flight instructor. The course is divided into two major sections: fundamentals of teaching and learning, including effective teaching methods, learning process, consideration of flight training syllabi, effective evaluations and flight instructor responsibilities; the second section is concerned with the analysis of the flight maneuvers involved with helicopter Private and Commercial Ratings. The course will also provide practical teaching experiences. The student must complete the associated flight lessons in the CFI Flight Instructor course to satisfactorily complete the course. F

445. Instrument Flight Instructor – Helicopter. 4 credits. Pre- or co-requisite: Avit 444. Provides the student with an in-depth study of the responsibilities and techniques to be used by a helicopter instrument flight instructor. Additional study of instrument flight operations, ATC system, chart, 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 associated flight lessons in the Instrument Flight Instructor-Helicopter Course to satisfactorily complete the course. S

463. ATC: Radar Operations I. 4 credits. Prerequisite: Avit 362. Provides an orientation to fundamental radar procedures and operations. Basic radar concepts and theories, various levels (1-5) of radar facilities. Airspace orientation and separation procedures are examined in the classroom. F, S

464. ATC: Radar Operations II. 4 credits. Prerequisite: Avit 463. Provides the student with nonradar terminal operations procedural knowledge. Covers basic and advanced radar/nonradar operations and structure. F, S

465. ATC: Radar and Tower Operations. 4 credits. Prerequisite: Avit 464. This course will bring together all knowledge acquired in previous ATC courses. Completing radar/nonradar/tower exercise scenarios, students will be required to demonstrate their ATC performance skills with an emphasis on split sector operations. F, S

481. Airline Transport Pilot Certification Lab. 2 credits. Prerequisite: Avit 308 and 325. 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.

490. Methods and Materials in Teaching Aviation. (CCN) 3 credits. Prerequisite: Avit 414. This course will acquaint the student with resources and software used in classroom teaching specific to aviation. Topics covered include use of presentation software, writing a syllabus, composing lesson plans, delivering a lecture/presentation and writing tests. Discussion of teaching methods and critiques of peers will also be included. On Demand.

497. Aviation Internship. (CCN) 1-4 credits. Prerequisites: will vary depending on the area of the internship. Aviation internship will provide a student with the actual, on-the-job exposure of a particular area of interest the student has within the aviation industry. Internships will be available in airport management, general aviation management, on both the manufacturer and fixed-base operator level and within the weather modification industry. The weather modification internship will be available only with the necessary federal funding or contractor support. F, S, SS

499. Readings in Aviation. (CCN) 1-3 credits. Prerequisite: senior standing. Repeatable to 8 credits. The course is designed for seminar and project assignments. Both the seminar and project assignments are to be concerned with in-depth studies of aviation related 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, Knull, Lambeth, Milavetz, Shabb and Sukalski

#### Courses

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>301</td>
<td>Biochemistry Lecture</td>
<td>3</td>
</tr>
<tr>
<td>302</td>
<td>Biochemistry Laboratory</td>
<td>3</td>
</tr>
<tr>
<td>303</td>
<td>Biochemistry Lecture</td>
<td>3</td>
</tr>
</tbody>
</table>

#### Requirements

- **General Education Requirements**: see pages 27-31
- **Biology Major Requirements**: see section II

### Biology (Biol)

J. LaDuke (Chair), Austin, Carmichael, Crawford, Cronin, Fivizzani, Gerber, Kelsch, Lang, Meberg, Newman, Pyle, Schlosser, Sheridan, Switzer, 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: ecology, 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 laboratories of the individual professors. Research apprenticeships or assistantships financed by private foundation support or faculty research grants may be available for part-time employment. The department participates in the University Honors Program through certain interdisciplinary colloquia, by honors credit in advanced courses, and by independent studies and tutorials in advanced topics.

The Department of Biology offers concentrated study in Biology (Biology or Pre-Health Sciences Emphasis) and Fisheries and Wildlife Biology. Our objective is to provide students with a broad knowledge of modern biology through training in each of the major areas of biological science: ecology, genetics, molecular biology, cell biology, morphology, and systematics. Specific department requirements for majors and minors are listed below.

#### College of Arts and Sciences

B.S. WITH MAJOR IN BIOLOGY

This program is designed for students interested in a broad general background and students interested in a number of biological sub-disciplines, including: Ecology, Conservation Biology, Behavior, Evolution, Fisheries Biology, Wildlife Biology, Genetics, Morphology, Physiology, Systematics, Cell Biology, and Molecular Biology. Students must consult with their advisor to develop an appropriate course of study.

Required 125 credits (36 of which must be numbered 300 or above, and 60 of which must be from a 4 year institution) including:

I. **General Education Requirements**, see pages 27-31.

II. 40 major hours including:

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Biol 130 &amp; Biol 151</td>
<td>General Biology I &amp; II</td>
<td>(6)</td>
</tr>
<tr>
<td>Biol 130L &amp; 151L</td>
<td>General Biology Lab I &amp; II</td>
<td>(2)</td>
</tr>
<tr>
<td>Biol 312</td>
<td>Evolution</td>
<td>(3)</td>
</tr>
<tr>
<td>Biol 315</td>
<td>Genetics</td>
<td>(3)</td>
</tr>
<tr>
<td>Biol 332</td>
<td>Ecology</td>
<td>(3)</td>
</tr>
<tr>
<td>Biol 341</td>
<td>Cell Biology</td>
<td>(3)</td>
</tr>
</tbody>
</table>

#### III. Biology Electives (20)

Students enrolling in other 300 or 400 level biology courses are expected to have mastered material from the courses listed in section II above; therefore, we strongly advise the prior completion of all courses from section II.

All other 300 or 400 biology courses will count toward the 40 hour major. (See below for limitations on 494 — Directed Studies, 492 — Research, and 489 — Senior Honors). No more than a combined total of 10 credits from 494 — Directed Studies, 492 — Research, and 489 — Senior Honors will count toward the 40 hour major.
No more than one biology course intended for non-majors (all UND 200-level biology courses) will count toward the 40 hour major.
Up to two life-sciences related courses from other departments at UND may be counted toward the 40 hour major.

At least four upper-division biology courses with laboratories must be included in the 40 hour major.

### IV. Required in other Departments: (38-42 hours)

<table>
<thead>
<tr>
<th>Course</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>Phys 211 &amp; 212 College Physics I &amp; II</td>
<td>(8)</td>
</tr>
<tr>
<td>Level II proficiency in a foreign language</td>
<td>(8)</td>
</tr>
<tr>
<td>Chem 121 General Chemistry I</td>
<td>(4)</td>
</tr>
<tr>
<td>Chem 122 General Chemistry II</td>
<td>(4)</td>
</tr>
<tr>
<td>8-10 hours from:</td>
<td></td>
</tr>
<tr>
<td>Chem 240 &amp; BiCh 301 Survey of Organic Chemistry and Biochemistry Lecture</td>
<td>(8)</td>
</tr>
<tr>
<td>OR</td>
<td></td>
</tr>
<tr>
<td>Chem 341 &amp; 342 Organic Chemistry</td>
<td>(10)</td>
</tr>
<tr>
<td>6-8 hours from:</td>
<td></td>
</tr>
<tr>
<td>Math 103 &amp; 146 College Algebra and Applied Calculus I</td>
<td>(6)</td>
</tr>
<tr>
<td>OR</td>
<td></td>
</tr>
<tr>
<td>Math 104 &amp; 146 Finite Math and Applied Calculus I</td>
<td>(6)</td>
</tr>
<tr>
<td>OR</td>
<td></td>
</tr>
<tr>
<td>Math 165 &amp; 166 Calculus I and II</td>
<td>(8)</td>
</tr>
</tbody>
</table>

### B.S. WITH MAJOR IN BIOLOGY (Pre-Health Sciences Emphasis)

This program is designed for students interested in medicine or in allied medical fields such as dentistry, veterinary medicine, medical laboratory research, etc. Students must consult with their advisor to develop an appropriate course of study.

Required 125 credits (36 of which must be numbered 300 or above, and 60 of which must be from a 4 year institution) including:

#### I. General Education Requirements, see pages 27-31.

#### II. 40 major hours including:

**A. Basic requirements:**

<table>
<thead>
<tr>
<th>Course</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>Biol 150 &amp; 151 General Biology I &amp; II</td>
<td>(6)</td>
</tr>
<tr>
<td>Biol 150L &amp; 151L General Biology I II Laboratory</td>
<td>(2)</td>
</tr>
<tr>
<td>Biol 312 Evolution</td>
<td>(3)</td>
</tr>
<tr>
<td>Biol 315 Genetics</td>
<td>(3)</td>
</tr>
<tr>
<td>Biol 332 Ecology</td>
<td>(3)</td>
</tr>
<tr>
<td>Biol 341 Cell Biology</td>
<td>(3)</td>
</tr>
</tbody>
</table>

Students enrolling in other 300 or 400 level biology courses are expected to have mastered material from the courses listed in section A above; therefore, we strongly advise the prior completion of all courses from section A.

**B. Advanced requirements:**

<table>
<thead>
<tr>
<th>Course</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>8 hours from:</td>
<td></td>
</tr>
<tr>
<td>Biol 341L Cell Biology Laboratory</td>
<td>(1)</td>
</tr>
<tr>
<td>Biol 367 Cytology</td>
<td>(3)</td>
</tr>
<tr>
<td>Biol 369 Histology</td>
<td>(3)</td>
</tr>
<tr>
<td>Biol 369L Histology Laboratory</td>
<td>(1)</td>
</tr>
<tr>
<td>Biol 370 Vertebrate Zoology</td>
<td>(3)</td>
</tr>
<tr>
<td>Biol 371 Anatomy and Adaptations Laboratory</td>
<td>(2)</td>
</tr>
<tr>
<td>Biol 378 Developmental Biology</td>
<td>(3)</td>
</tr>
<tr>
<td>Biol 442 Physiology of Organs and Systems</td>
<td>(3)</td>
</tr>
<tr>
<td>Biol 442L Physiology of Organs and Systems</td>
<td>(1)</td>
</tr>
</tbody>
</table>

**C. Biology electives:**

<table>
<thead>
<tr>
<th>Course</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>MBio 302 General Microbiology</td>
<td>(4)</td>
</tr>
</tbody>
</table>

Other choices of courses in Biology should be made with the aid of a Biology advisor.

Among the other requirements for the major, students seeking teacher certification must complete the Chem 240 Organic Chemistry (5) and BiCh Biochemistry Lecture (3) option. Level II language proficiency is not required of students who complete the Teaching and Learning program in Secondary Education. These students must however, complete at least four hours of Earth Science (Geol 101 and 101L Physical Geology, Geog 121 and 121L Physical Geography, or Geog 134 and 134L, Introduction to Global Climate).

Formal admission to Teacher Education is required and is normally sought while enrolled in T&L 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 credits (36 of which must be numbered 300 or above, and 60 of which must be from a 4 year institution including:

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

#### II. The Following Curriculum:

<table>
<thead>
<tr>
<th>Course</th>
<th>Hours</th>
</tr>
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<tbody>
<tr>
<td>Biol 150, 151 General Biology I &amp; II</td>
<td>(6)</td>
</tr>
<tr>
<td>Biol 150L, 151L General Biology I II Laboratory</td>
<td>(2)</td>
</tr>
<tr>
<td>Biol 315 Genetics</td>
<td>(3)</td>
</tr>
<tr>
<td>Biol 332, 332L General Ecology and Lab</td>
<td>(4)</td>
</tr>
<tr>
<td>Biol 338 Animal Behavior</td>
<td>(2)</td>
</tr>
<tr>
<td>Biol 431 Wildlife Management</td>
<td>(4)</td>
</tr>
<tr>
<td>Biol 438 Fisheries Management</td>
<td>(3)</td>
</tr>
<tr>
<td>Biol 442 Physiology of Organs and Systems</td>
<td>(4)</td>
</tr>
<tr>
<td>Biol 470 Biometry</td>
<td>(3)</td>
</tr>
<tr>
<td>2 hours from:</td>
<td></td>
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<tr>
<td>Biol 338L Animal Behavior Lab</td>
<td>(2)</td>
</tr>
<tr>
<td>Biol 371 Anatomy and Adaptations Lab</td>
<td>(2)</td>
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</table>

3 hours from:

<table>
<thead>
<tr>
<th>Course</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>Biol 312 Evolution</td>
<td>(3)</td>
</tr>
<tr>
<td>Biol 333 Population Biology</td>
<td>(3)</td>
</tr>
<tr>
<td>Biol 370 Vertebrate Zoology</td>
<td>(3)</td>
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3-4 hours from:

<table>
<thead>
<tr>
<th>Course</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>Biol 363 Entomology</td>
<td>(4)</td>
</tr>
<tr>
<td>Biol 364, 364L Parasitology and Lab</td>
<td>(4)</td>
</tr>
<tr>
<td>Biol 375 Invertebrate Zoology</td>
<td>(4)</td>
</tr>
<tr>
<td>Biol 432 Fish and Wildlife Disease</td>
<td>(3)</td>
</tr>
</tbody>
</table>

3 hours from:

<table>
<thead>
<tr>
<th>Course</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>BiCh 301 Biochemistry Lecture</td>
<td>(3)</td>
</tr>
<tr>
<td>Biol 341 Cell Biology</td>
<td>(3)</td>
</tr>
</tbody>
</table>
**Biological Station or Field Work:** (No Credit)

**MINOR IN BIOLOGY**

**Courses**

- **Biology 150, 150L, 151L**. General Biology I & II. (CCN) 3 credits. A study of the effect of human activity upon the environment in which we live. F, S

- **111L. Concepts of Biology**. (CCN) 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

- **111L. Concepts of Biology Laboratory**. (CCN) 1 credit. Prerequisite or corequisite: Biol 100. A basic biology laboratory to complement Biol 111. F, S

- **112. Introduction to Animal Behavior**. 2 credits. Prerequisite or co-requisite: Biol 101, 102. A contemporary biology laboratory to complement Biol 150, 151L. 2 credits. Prerequisite or co-requisite: Biol 101, 102. A contemporary biology laboratory to complement Biol 150, 151L. Prerequisite: consent of the Department and approval of the Honors Committee. 2 credits. Prerequisite: Senior status in biological sciences. Advanced standing and approval of 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

- **338. Animal Behavior**. 2 credits. Studies in animal social behavior. The influences of environmental factors on behavior is emphasized. S

- **339L. Animal Behavior Laboratory**. 2 credits. Prerequisite or co-requisite: Biol 338. Laboratory studies of animal behavior including a student research project using live animals. S

- **341. Cell Biology**. 3 credits. Prerequisite: Chem 121 and 122. Corequisite: Chem 122. A description of processes common to life at the cellular level including biochemistry and structural organization, membrane function, motility, signal transduction, growth, division and genetic regulation of the cell. S

- **341L. Cell Biology Laboratory**. 1 credit. Prerequisite or co-requisite: Biol 341, Chem 121 and 122. Recommended: Organic Chemistry. Laboratory investigation utilizing techniques to study life at the cellular level including chemical composition and characterization, enzyme kinetics, metabolism and microscopy. 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. Microscopic anatomy of vertebrate tissues and organs, with emphasis on man and other mammals. F

- **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 systematics of anatomy, physiology and behavior to one another. F

- **371. Anatomy and Adaptations Laboratory**. 2 credits. Prerequisite or co-requisite: Biol 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 and conservation. Lectures at UND followed by fieldwork at terrestrial and marine sites in Costa Rica. Semianual. F

- **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 315. A study of the diverse developmental systems of animals, plants and microbial organisms. F

- **411. Ichthyology**. 3 credits. Structure and function, anatomy, physiology, behavior, classification, distribution and ecological aspects of fishes. F

- **421. Ornithology**. 3 credits. Classification, identification, morphology, distribution, ecology and life history of birds. F

- **428. Mammalogy**. 3 credits. Classification, identification, morphology, distribution, ecology and life history of mammals. F


- **432. 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

- **433. Aquatic Ecology**. 3 credits. Analysis of the relationships between organisms and their physical, chemical and biological environments in freshwater ecosystems. 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 fishes. F

- **442. Physiology of Organs and Systems**. 3 credits. Study of the physiology of organs and organ systems in vertebrates. F

- **442L. Physiology of Organs and Systems Laboratory**. 1 credit. Prerequisite: Biol 442. A physiology laboratory to complement Biol 442. F

- **450. Molecular Genetics**. 2 credits. Prerequisite: Biol 315. Topics will include basic molecular genetic mechanisms, recombinant DNA technology, the organization and function of the cell nucleus, and the molecular control of gene expression. S

- **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 biossary. 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.

- **489. Senior Honors Thesis**. (CCN) 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

- **491. Seminar**. (CCN) 1 credit. Prerequisite: Major in biology. Discussion of selected topics in advanced biology, a different topic each semester. F, S

- **492. Research**. (CCN) 1 to 4 credits. Open to qualified majors. Prerequisite: Consent of instructor. Research conducted under the supervision of a faculty member. F, S
Business Administration (BAdm)

MINOR IN INTERNATIONAL BUSINESS
(For Business Majors Only)

The College of Business and Public Administration provides undergraduate business students with the opportunity to earn a minor in international business. The minor requires a total of 26 semester hours: nine hours from various international business courses, nine hours from various arts and sciences courses focused on global issues, and achievement of a Level II proficiency in a language (eight hours).

Required 26 hours, including:

1. Completion of 9 hours from the following:
   - Fin 430 . . . . . . . . . . . . International Financial Management . . . . . . . . (3)
   - Mgmt 420 . . . . . . . . . . . . Multinational Management . . . . . . . . . . . . . (3)
   - Mkt 425** . . . . . . . . . . . . International Marketing . . . . . . . . . . . . . . (3)
   - Mkt 425** . . . . . . . . . . . . Current Prospectives in Global Marketing . . . . . . . (3)
   - Econ 338* . . . . . . . . . . . . International Economics . . . . . . . . . . . . . (3)
   - Econ 438* . . . . . . . . . . . . International Money and Finance . . . . . . . . . . . (3)
   - Econ 331* . . . . . . . . . . . . Comparative Economic Systems . . . . . . . . . . . (3)

   *only one of the above economic courses may be used.
   **only one of the above marketing courses may be used.

2. Completion of 9 hours from the following:
   - Anth 171 . . . . . . . . . . . . Cultural Anthropology . . . . . . . . . . . . . . . (3)
   - Geog 161 . . . . . . . . . . . . World Regional Geography . . . . . . . . . . . . . (3)
   - Hist 102 . . . . . . . . . . . . Western Civilization II . . . . . . . . . . . . . . . (3)
   - Pols 220 . . . . . . . . . . . . International Politics . . . . . . . . . . . . . . . (3)
   - Pols 225 . . . . . . . . . . . . Comparative Politics . . . . . . . . . . . . . . . (3)

3. Completion of Level II Proficiency in a language (8 hours).

4. Completion of B.A. or B.Acc. degree.

Courses

The College of Business and Public Administration offers non-departmental courses under the designation Business and Public Administration 395. The purpose of these courses is to provide special interest courses for particular groups of students. The course title and number may also be used for experimental courses which may later be established as regular offerings within departments or programs.

101. Introduction to Business. 3 credits. This course provides a study of business and its environment, organization, operation, and the interrelationships with government and society. Students will become familiar with the American enterprise system and issues facing society today. The Introduction to Business course will be open to anyone enrolled at the University.

251. Personal Finance. (CCN) 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

395. Special Topics. 1-4 credits in any one semester; Repeatable to 9 hours. Specially arranged seminars, courses, or independent study on a variety of subjects not covered by regular departmental offerings. May be initiated by students with approval of dean and departments involved. F, S

Business and Vocational Education

S. Moser (Division Director),
Brathen, Haga, O’Keefe, Prigge and Robles

The Bachelor of Science in Education degree with a major in Business Education is offered through the Faculty of Business and Vocational Education in the Division of Organizational Systems and Technology in the College of Business and Public Administration. This degree prepares students to teach business education subjects in high schools, junior high schools, and vocational-technical schools in nearly every state in the United States. It prepares students to meet the professional requirements for certification as vocational coordinators of business and office education programs in North Dakota. A broad general education background essential for success in teaching is provided. A core of courses in business administration prepares students for careers in business as well.

College of Education and Human Development

The B.S.Ed. degrees require the completion of the College of Education and Human Development Program in Secondary Education. See page 47.

B.S.ED. WITH MAJOR IN BUSINESS EDUCATION

Required 125 credits (36 credits of which must be numbered 300 or above, and 60 of which must be from a 4 year institution) including:

I. General Education Requirements, see pages 27-31.

II. BVED Core Curriculum, including:
   - Acc 200, 201 ......................................... Elements of Accounting I & II ..................(6)
   - Acc 315 ......................................... Business in the Legal Environment .............(3)
   - BVED 152 ......................................... Keyboarding II ..................................(2)
   - BVED 202 ......................................... Keyboarding III ...................................(2)
   - BVED 217 ......................................... Fundamentals of Management Information Systems .................................................(4)
   - BVED 309 ......................................... Office Management ..................................(3)
   - BVED 320 ......................................... Professional Communication for Business ....(3)
   - **BVED 444 ..................................... Philosophy of Vocational Education ........(3)
   - BVED 470 ......................................... Senior Seminar ....................................(2)
   - Comm 110 ......................................... Fundamentals of Public Speaking .............(3)
   - Econ 201 ......................................... Principles of Microeconomics ..................(3)
   - Econ 202 ......................................... Principles of Macroeconomics ..................(3)
   - Mgmt 300 ......................................... Principles of Management .........................(3)
   - Mkt 305 ......................................... Marketing Foundations ..............................(3)

III. One of the Following Concentrations:

   **CONCENTRATION 1—
   VOCATIONAL BUSINESS AND OFFICE EDUCATION—
   For those preparing to teach all business subjects. The following additional courses are required for this concentration:
   - BVED 147 ......................................... Word Processing ..................................(3)
   - BVED 303 ......................................... Methods of Teaching Business Subjects ..........(3-5)
   - BVED 305 ......................................... Microcomputer Applications for Business ....(3)
   - BVED 315 ......................................... Records and Information Management .........(3)
   - BVED 375 ......................................... Administrative Office Procedures .............(3)
   - **BVED 421 ..................................... Coordinating Techniques ..........................(2)
   - BVED 431 ......................................... Career and Vocational Education of Special Needs Students .............................................(3)

   **CONCENTRATION 2—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:
   - Acc 301, 302 ......................................... Intermediate Accounting I & II ................(8)
   - Acc 320 ......................................... Accounting for Production ........................(3)
   - BVED 303 ......................................... Methods of Teaching Business Subjects ..........(3-5)
   - BVED 305 ......................................... Microcomputer Applications for Business ....(3)
   - BVED 315 ......................................... Records and Information Management .........(3)
   - Mkt 305 ......................................... Approved by Program Coordinator ..................(6)
   - **BVED 421 ..................................... Coordinating Techniques ..........................(2)
   - BVED 431 ......................................... Career and Vocational Education of Special Needs Students .............................................(3)
   - **Required for office education coordinators in reimbursable vocational programs.
### Minor in Vocational Marketing Education

Required 125 credits (36 of which must be numbered 300 or above, and 60 of which must be from a 4 year institution) including:

#### I. General Education Requirements

See pages 27-31.

#### II. The Following Curriculum:

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
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<tr>
<td>Acct 200, 201</td>
<td>Elements of Accounting I &amp; II</td>
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</tr>
<tr>
<td>Acct 315</td>
<td>Business in the Legal Environment</td>
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</tr>
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<td>BVED 102</td>
<td>Keyboarding I</td>
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<tr>
<td>BVED 152</td>
<td>Keyboarding II</td>
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<tr>
<td>BVED 217</td>
<td>Fundamentals of Management</td>
<td></td>
</tr>
<tr>
<td>BVED 303</td>
<td>Methods of Teaching Business Education</td>
<td></td>
</tr>
<tr>
<td>BVED 305</td>
<td>Business and Education—General Methods</td>
<td></td>
</tr>
<tr>
<td>BVED 320</td>
<td>Professional Communication for Business</td>
<td>3</td>
</tr>
<tr>
<td>BVED 380</td>
<td>DECA-Student Leadership Practicum</td>
<td>3</td>
</tr>
<tr>
<td>BVED 402</td>
<td>Curriculum Development in Vocational</td>
<td>3</td>
</tr>
<tr>
<td>BVED 403</td>
<td>Professional Training Techniques in</td>
<td></td>
</tr>
<tr>
<td>BVED 421</td>
<td>Coordinating Techniques</td>
<td>2</td>
</tr>
<tr>
<td>BVED 431</td>
<td>Career and Vocational Education of Special Needs Students</td>
<td>3</td>
</tr>
<tr>
<td>BVED 444</td>
<td>Philosophy of Vocational Education</td>
<td>3</td>
</tr>
<tr>
<td>BVED 460</td>
<td>Methods of Teaching Vocational Marketing</td>
<td></td>
</tr>
<tr>
<td>Comm 110</td>
<td>Fundamentals of Public Speaking</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>Mgmt 300</td>
<td>Principles of Management</td>
<td>3</td>
</tr>
<tr>
<td>Mrkt 305</td>
<td>Marketing Foundations</td>
<td>3</td>
</tr>
<tr>
<td>Mrkt 311</td>
<td>Personal Selling</td>
<td>3</td>
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<tr>
<td>Mrkt 312</td>
<td>Advertising</td>
<td>3</td>
</tr>
<tr>
<td>Mrkt 315</td>
<td>Retail Management</td>
<td>3</td>
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</tbody>
</table>

#### Minors

**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: Professional Training Techniques in Business and Education (3)
  - BVED 460: Methods of Teaching Vocational Education (3)
  - Mrkt 305: Marketing Foundations (3)
  - Mrkt 311: Personal Selling (3)

**Electives:** 5 hours from selected courses from Business and Vocational Education and/or from the College of Business and Public Administration.

#### Minor in Office Administration

**Not available for Information Management majors**

- 23 hours, including:
  - BVED 217: Fundamentals of Management (4)
  - BVED 309: Office Management (3)
  - BVED 315: Records and Information Management (3)
  - BVED 405: Records Management Systems (3)
  - Mgmt 300: Principles of Management (3)

**Elect:** Eight hours from courses in BVED and/or from the College of Business and Public Administration.

#### Minor in Secretarial Administration

- 23 hours, including:
  - BVED 147: Word Processing (3)
  - BVED 152: Keyboarding II (2)
  - BVED 202: Keyboarding III (2)
  - BVED 305: Microcomputer Applications for Business (3)
  - BVED 315: Records and Information Management (3)
  - BVED 375: Administrative Office Procedures (3)

**Elect:** Five hours from courses in BVED.

### Minor in Business Education Teaching

- 22 hours, including:
  - BVED 147: Word Processing (3)
  - BVED 152: Keyboarding II (2)
  - BVED 202: Keyboarding III (2)
  - BVED 303: Methods of Teaching Business Subjects (3-5)
  - BVED 305: Microcomputer Applications for Business (3)
  - BVED 309: Office Management (3)

**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 faculty to determine appropriate course level.

- **102. Keyboarding I.** (CCN: BOTE) 1 credit. A half-semester course offering basic instruction and practice in learning to use proper fingerlings for touch operation of the alphanumeric keyboard, developing techniques and manipulative skills for operating the keyboard of data-word processing equipment, microcomputers, or computer terminals. F,S

- **147. Word Processing Applications.** (CCN: BOTE) 3 credits. Orientation to word processing and data processing software, hands-on applications, and skill development. F

- **152. Keyboarding II.** (CCN: BOTE) 2 credits. Prerequisite: BVED 147. Development of speed and accuracy, letter writing, manuscripts, and tabulation techniques. F

- **202. Keyboarding III.** (CCN: BOTE) 2 credits. Prerequisites: BVED 152 or equivalent. Skill development, rough drafts, statistical keyboarding, preparation of manuscripts, reports, legal forms, and display typing. S


- **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 credit hour. 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. S

- **305. Microcomputer Applications for Business.** 3 credits. Prerequisite: 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

- **309. Office Management.** (CCN: BOTE) 3 credits. Introduction to information management and office management concepts and technologies including office automation, office facilities development, technology selection and implementation, office systems and procedures analysis, and office personnel supervision. F,S

- **315. Records and Information Management.** 3 credits. An orientation to business records management including systematic control over the creation, distribution, utilization, retention, storage, protection, preservation and final disposition of all types of records within an organization. F,S

- **320. Professional Communication for Business.** (CCN: BOTE) 3 credits. Compositions of business letters and reports with emphasis on clear, concise, effective presentation and logical organization. It includes a brief review of writing mechanics. F,S

- **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

- **375. Administrative Office Procedures.** (CCN: BOTE) 3 credits. Prerequisite: BVED 147. Advanced word processing concepts and applications as well as desktop publishing, computerized shorthand, and other technologies. S

- **380. DECA—Student Leadership Practicum.** 1 credit. Repeatable to 6 credits. Planning, organizing, conducting, and advising of the Vocational Marketing Education student organization, DECA, program of work and related leadership activities. Vocational Marketing Education majors must register for 3 credits. 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 areas are investigated. F

- **431. Career and Vocational Education of Special Needs Students.** 3 credits. A study of the characteristics of the handicapped and disadvantaged, their employment opportunities, and career and vocational education to meet their needs. F
Chemical Engineering

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 upon planning and teaching marketing topics at either the high school or post-secondary ME programs. 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

T. Owens (Chair), Erjavec, Hasan, Mann, and Muggli

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.

The core of the program is a strong technical curriculum, whereby the fundamentals of the physical sciences, mathematics, and chemical engineering are learned. This core is complemented by general courses in other engineering disciplines to provide greater exposure to the engineering profession and to help prepare the students for professional registration. Four of the engineering courses are electives, which gives each student the opportunity to tailor the program to his/her individual interests such as environmental concerns, materials, bio-processes, etc. Other prescribed courses include topics such as economics, statistics and ethics. The program also gives students a chance to become proficient in skills such as computer use, oral and written communication, and team work. The undergraduate program culminates in a senior capstone design course in which the students bring together all they have learned as they work in teams on a process design and evaluation project. UND’s program is accredited by the Engineering Accreditation Commission (EAC) of the Accreditation Board for Engineering and Technology (ABET).

Practical, hands-on experience is gained in laboratories distributed throughout the undergraduate program. Lab experiments form a significant part of each student’s learning beginning immediately in first year chemistry and continuing through the curriculum. In addition to university experiences, which include opportunities to conduct research, students are encouraged to spend time working in the engineering profession via summer internships or cooperative education.

Besides the technical education embodied in the program, there is a strong general education component, which is also required. It is included to round out the individual’s university experience, and help prepare them for a full life, not just a career. There are also many extracurricular activities available (including professional societies, honor societies, sports and clubs) to enhance the enjoyment of the time spent at UND and to develop important friendships and leadership and team building skills.

One of the main characteristics of this department, which distinguishes it from most other chemical engineering programs around the country, is the commitment to building a strong rapport between the students and faculty. We are able to maintain close interaction because of the relatively small class sizes (typically 25-30 students), and because all faculty members are committed to helping all students do their best and succeed. The interaction between faculty and students occurs formally in the classrooms and through the advising process, but it also frequently arises informally because all faculty maintain an open door policy. It all adds up to an environment that fosters mutual respect and maximizes learning. Our alumni report that the education they received at UND enables them to compete effectively with graduates from any other institutions.

School of Engineering and Mines

B.S. IN CHEMICAL ENGINEERING

Required 136 credits (36 of which must be numbered 300 or above and 60 of which must be from a 4 year institution) including:

I. General Education Requirements, see pages 27-31.

II. The Following Curriculum:

<table>
<thead>
<tr>
<th>Freshman Year</th>
<th>First Semester</th>
<th>Second Semester</th>
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<tbody>
<tr>
<td>CHE 102</td>
<td>Introduction to Chemical Engineering</td>
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<tr>
<td>Chem 121/121L</td>
<td>General Chemistry I and Laboratory</td>
<td>(4)</td>
</tr>
<tr>
<td>Chem 122/122L</td>
<td>General Chemistry II and Laboratory</td>
<td>(4)</td>
</tr>
<tr>
<td>Engl 110</td>
<td>College Composition I</td>
<td>(3)</td>
</tr>
<tr>
<td>Engl 101</td>
<td>Graphical Communication</td>
<td>(3)</td>
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<tr>
<td>Math 165</td>
<td>Calculus I</td>
<td>(4)</td>
</tr>
<tr>
<td>Math 166</td>
<td>Calculus II</td>
<td>(4)</td>
</tr>
<tr>
<td>Phys 251</td>
<td>University Physics I</td>
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</tr>
<tr>
<td>Arts /Humanities GER</td>
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<tr>
<td>Social Science GER</td>
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<tr>
<td>CHE 201</td>
<td>Stoichiometry</td>
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<td>CHE 232</td>
<td>Chemical Engineering Laboratory I</td>
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<td>Chem 341/341L</td>
<td>Organic Chemistry and Laboratory</td>
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<tr>
<td>Econ 201</td>
<td>Principles of Microeconomics</td>
<td>(3)</td>
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<tr>
<td>EE 206</td>
<td>Fundamental Electrical Engineering</td>
<td>(3)</td>
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<tr>
<td>Engl 125</td>
<td>Introduction to Technical and Business Writing?</td>
<td>(3)</td>
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<td>Engr 201</td>
<td>Statics</td>
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<td>Math 265</td>
<td>Calculus III</td>
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<td>Math 266</td>
<td>Elem. Differential Equations</td>
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<td>Phys 252</td>
<td>University Physics II</td>
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<tr>
<td>Advanced Chemical Science elective</td>
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<th>Junior Year</th>
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<tbody>
<tr>
<td>CHE 301</td>
<td>Transport Phenomena</td>
<td>(4)</td>
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<tr>
<td>CHE 306</td>
<td>Unit Operations in Chemical Engineering</td>
<td>(3)</td>
</tr>
<tr>
<td>CHE 331/332</td>
<td>Chemical Engineering Laboratory I and II</td>
<td>(2)</td>
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<tr>
<td>CHE 333</td>
<td>Basic Experimental Strategies</td>
<td>(1)</td>
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<td>CHE 405</td>
<td>Mass Transfer Operations</td>
<td>(3)</td>
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<td>Chem 465</td>
<td>Physical Chemistry II</td>
<td>(3)</td>
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<td>Phil 370</td>
<td>Ethics in Engineering and Science</td>
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<td>* Advanced chemical science Elective</td>
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<td>* Engineering science elective</td>
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<td>* Technical Elective I</td>
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<td>* Technical Elective II</td>
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<tr>
<td>CHE 403</td>
<td>Chemical Engineering Thermodynamics</td>
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ChE: 408.........Chemical Process Dynamics. ........ (3)
ChE: 412.........Chemical Engineering
 Plant Design.......................... (6)
ChE: 421.........Chemical Engineering
 Reactor Design......................... (3)
ChE: 431.........Chemical Engineering
 Laboratory IV.......................... (3)
Engr 460.........Engineering Economy................... (3)
Arts and Humanities (GER)................. (3)
Social Science (GER)....................... (3)
* Chemical Engineering Elective .......... (3)
*Technical Elective I.......................... (3)

*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 Professional Assessment and Evaluation; Engr 101, ChE 102, and ChE 337. Phil 370 may also be waived, but not the University’s GER. (See Engr 100 course description on pg. 96)
†Engl 120 — College Composition II may be substituted.

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 122. Introductory principles of stoichiometry with emphasis directed to material and energy balances involved in chemical processes. F

232. Chemical Engineering Laboratory I, 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

301. Introduction to Transport Phenomena, 4 credits. Prerequisite: Math 266 or concurrent enrollment and Physics 252. An analytical study of the transport of momentum, energy and mass; derivation and utilization of the differential equations of change. F

306. Unit Operations in Chemical Engineering, 3 credits. Prerequisites: ChE 201* and ChE 301. Application of the principles of momentum and heat transfer. F

331. Chemical Engineering Laboratory II, 2 credits. Prerequisites: ChE 301 or concurrent enrollment. Experiments illustrating physico-chemical principles and transport phenomena. F

332. Chemical Engineering Laboratory III, 2 credits. Prerequisites: ChE 331 and Chem 465 or concurrent enrollment. Experiments illustrating physico-chemical principles and transport phenomena. S

333. Basic Experimental Strategies, 1 credit. Corequisite: ChE 332. Basic experimental strategies for the empirical study of relationships between variables. Analysis of resulting data to find significance of effects. S

337. Cooperative Education, 1-8 credits repeatable to 24. Prerequisite: Admission to the chemical engineering degree program. A practical work experience with an employer closely associated with the student’s academic area. Arranged by mutual agreement among student, department and employer. S/U grading only. F,S,SS

403. Chemical Engineering Thermodynamics, 3 credits. Prerequisites: ChE 201* and Chem 465. Thermodynamics applied to chemical engineering with emphasis on computational work, including thermodynamic laws, chemical equilibria and pressure-volume-temperature relationships. F

405. Mass Transfer Operations, 3 credits. Prerequisite: ChE 201* and prerequisite or corequisite ChE 306. Applications of principles of mass transfer. Theory and application of staged operations. S

408. Chemical Process Dynamics, 3 credits. Prerequisite: Chem 266. Dynamics and control of chemical processes and of systems. F

412. Chemical Engineering Plant Design, 6 credits. Prerequisites: ChE 306, 403, 405, and 421 and concurrent or concurrent enrollment in Engr 460. Preliminary plant design for a chemical process, including market survey, site selection, process selection, material and energy balance, equipment design, plant layout, instrumentation and economic feasibility. S


431. Chemical Engineering Laboratory IV, 3 credits. Prerequisites: ChE 306 and 405. Laboratory study of the unit operations of Chemical Engineering. 493A. Special Topics. (regular grading). 493B. Special Topics. (S-U grading). 1-3 credits. Repeatable to 9 credits. Prerequisite: consent of instructor. Special topics dictated by student request and current faculty interest. The particular course may be initiated by the students by contacting members of the faculty. On demand.

Chemistry

(Chem)

H. Abrahamson (Chair), Ballintine, Borgerdin, Hoffmann, Kozliak, Lakshman, Pierce, Shay, Smoliatova, Stahl, Thomasson, and Tilotta

The Chemistry Department of the University has been approved by the Committee on Professional Training of the American Chemical Society. This means that the teaching staff, curriculum, equipment, library, and other facilities of the Department meet the standards established by the Society for the proper undergraduate training of chemists. Students who complete the work for the professional degree, Bachelor of Science in Chemistry, will upon graduation and certification by the Chairman of the Department, receive a special certificate from the Society. Certified graduates are eligible to become Members of the American Chemical Society; other chemistry graduates may become Associate Members and Members after three years of professional experience in chemistry.

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. Those students also qualify for the department’s 5-year BS/MS program (non-thesis M.S. option). Students who desire a course of study which is less concentrated in chemistry in order to prepare themselves for advanced work in other fields should pursue the program leading to the B.S. degree with a major in chemistry. Those students who wish to prepare themselves for teaching in High School may pursue the program leading to the B.S. degree with a major in chemistry in the College of Arts and Sciences and take additional courses in the Department of Teaching and Learning to qualify for teaching certification. The specific course requirements for each of these major programs are listed below.

Graduate Study

The Department of Chemistry offers graduate programs leading to the degrees of Master of Science and Doctor of Philosophy with majors in inorganic chemistry, organic chemistry, physical chemistry and analytical chemistry. In order to pursue graduate work in chemistry, the student must have the baccalaureate degree with a major in chemistry. For more detailed information, see the Graduate School Bulletin.

College of Arts and Sciences

B.S. IN CHEMISTRY

Required 125 credits (36 of which must be numbered 300 or above and 60 of which must be from a 4-year institution) including:

I. General Education Requirements, see pages 27-31.
II. The Following Curriculum:

Major Requirements—53 hours including:

FRESHMAN YEAR

Fall       Spring
Chem 121, 121L........General Chemistry I & Lab.......... (4)
Chem 122, 122L........General Chemistry II & Lab........ (4)
Chem 116 ...............Introduction to Organic and Biochemistry................................. (3)
Engl 110 ..................College Composition I.............. (3)
*Engl 125 ..................Technical and Business Writing.. (3)
*Math 165 .................Calculus I........................... (4)
Math 166 .................Calculus II........................... (4)
*Humanities or Social Science Elective....................... (5)
Total Hours.................................................. 16 16

Sophomore Year

*Chem 330 .................Quantitative Analysis ................ (4)
Chem 341, 341L...........Organic Chemistry I & Lab...... (5)
Chem 342, 342L...........Organic Chemistry II & Lab..... (5)
Phys 251, 252.............University Physics I & II......... (4)
Math 265 .................Calculus III............................ (4)
*Humanities or Social Science Elective....................... (3) (3)
Total Hours.................................................. 16 16
### Chemistry

#### JUNIOR YEAR

<table>
<thead>
<tr>
<th>Course</th>
<th>Subject</th>
<th>Fall</th>
<th>Spring</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chem 338</td>
<td>Introduction to Research</td>
<td></td>
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</tr>
<tr>
<td>Chem 464, 465</td>
<td>Physical Chemistry I, II</td>
<td></td>
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</tr>
<tr>
<td>Chem 455</td>
<td>Spectroscopy and Structure</td>
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<tr>
<td>Chem 461</td>
<td>Instrumental Analysis</td>
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<td>Level II Language</td>
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Electives: (6) (3)

Total Hours: 16 16

#### SENIOR YEAR

<table>
<thead>
<tr>
<th>Course</th>
<th>Subject</th>
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<tbody>
<tr>
<td>Chem 462</td>
<td>Physical Chemistry Laboratory</td>
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<td>Chem 454</td>
<td>Inorganic Chemistry</td>
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<td>Chem 429</td>
<td>Inorganic Chemistry Laboratory.</td>
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<td>MATH 165</td>
<td>Calculus I</td>
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<td>MATH 166</td>
<td>Calculus II</td>
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Electives: (5) (9)

Total Hours: 15 15

#### Option A. Physical Science Emphasis

**FRESHMAN YEAR**

<table>
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<th>Course</th>
<th>Subject</th>
<th>Fall</th>
<th>Spring</th>
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<tbody>
<tr>
<td>Chem 121, 121L</td>
<td>General Chemistry I &amp; Lab</td>
<td></td>
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<tr>
<td>Chem 122, 122L</td>
<td>General Chemistry II &amp; Lab</td>
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<tr>
<td>Engl 110</td>
<td>College Composition I</td>
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<tr>
<td>Engl 125</td>
<td>Technical and Business Writing.</td>
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<tr>
<td>MATH 165</td>
<td>Calculus I</td>
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<td>Math 166</td>
<td>Calculus II</td>
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Electives: (4) (4)

Total Hours: 16 16

**SOPHOMORE YEAR**

<table>
<thead>
<tr>
<th>Course</th>
<th>Subject</th>
<th>Fall</th>
<th>Spring</th>
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</thead>
<tbody>
<tr>
<td>Chem 333</td>
<td>Intro Env Clfn Forens</td>
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<tr>
<td>Chem 341, 341L</td>
<td>Organic Chemistry I &amp; Lab</td>
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<tr>
<td>Chem 342, 342L</td>
<td>Organic Chemistry II &amp; Lab</td>
<td></td>
<td></td>
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<tr>
<td>Phys 251, 251L</td>
<td>University Physics I &amp; II</td>
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<tr>
<td>Math 265</td>
<td>Calculus III</td>
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Electives: (0) (6)

Total Hours: 16 16

**JUNIOR YEAR**

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<tbody>
<tr>
<td>Chem 464, 465</td>
<td>Physical Chemistry I, II</td>
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<td>Chem 461</td>
<td>Instrumental Analysis</td>
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<tr>
<td>Level II Language</td>
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Electives: (9) (4)

Total Hours: 16 16

**SENIOR YEAR**

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<thead>
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<th>Spring</th>
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<tbody>
<tr>
<td>Chem 462</td>
<td>Physical Chemistry Laboratory</td>
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Electives: (12) (15)

Total Hours: 15 15

#### Option B. Health Sciences Emphasis

**FRESHMAN YEAR**

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<th>Course</th>
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<th>Fall</th>
<th>Spring</th>
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</thead>
<tbody>
<tr>
<td>Chem 121, 121L</td>
<td>General Chemistry I &amp; Lab</td>
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</tr>
<tr>
<td>Chem 122, 122L</td>
<td>General Chemistry II &amp; Lab</td>
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</tr>
<tr>
<td>Engl 110</td>
<td>College Composition I</td>
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<tr>
<td>Engl 125</td>
<td>Technical and Business Writing.</td>
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<tr>
<td>MATH 164</td>
<td>Applied Calculus I</td>
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</table>

Electives: (3) (6)

Total Hours: 16 16

**SOPHOMORE YEAR**

<table>
<thead>
<tr>
<th>Course</th>
<th>Subject</th>
<th>Fall</th>
<th>Spring</th>
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</thead>
<tbody>
<tr>
<td>Chem 333</td>
<td>Introductory Environmental</td>
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<tr>
<td>Chem 341, 341L</td>
<td>Organic Chemistry I &amp; Lab</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Chem 342, 342L</td>
<td>Organic Chemistry II &amp; Lab</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Phys 211, 211L</td>
<td>College Physics I &amp; II</td>
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<td></td>
</tr>
<tr>
<td>Math 265</td>
<td>Calculus III</td>
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<td></td>
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</table>

Electives: (13) (15)

Total Hours: 16 16

#### 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 with laboratory. Chem 240 and Biochem 301 can be substituted for one year of organic chemistry. If all twenty hours are required for the student’s major, a minor may be achieved by taking 2 semester hours beyond the chemistry courses required for the major.

### Teacher Certification

In addition to fulfilling the requirements of one of the majors listed above, students seeking secondary teacher certification in Chemistry must complete the Department of Teaching and Learning requirements in Secondary Education on page 155. Students seeking certification must also complete these additional courses:

BioCh 301 Biochemistry Lecture
Biol 130, 151 General Biology I & II
Biol 150, 151L General Biology Lab I & II

4 credits from: Geog 101, 101L Physical Geology

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. 48).
Courses

110. Survey of Chemistry. (CCN) 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

115. Introductory Chemistry. (CCN) 3 credits. Measurement, ionic and covalent compounds, chemical calculations, states of matter; energy, solutions, reactions, chemical bonding. F, S

115L. Introductory Chemistry Laboratory. (CCN) 1 credit. Corequisite: Chem 115. Laboratory to accompany Chem 115. F, S

116. Introduction to Organic and Biochemistry. (CCN) 3 credits. Prerequisite: Chem 101 or 121. A semester of organic chemistry and biochemistry. Includes compounds, chemical calculations, states of matter; energy, solutions, reactions, chemical calculations, thermodynamics, bonding, molecular geometry, periodicity, gases. Required of all chemistry majors. F, S, S

201L. General Chemistry I Laboratory. (CCN) 1 credit. Corequisite: Chem 101. Laboratory to accompany Chem 101. F, S

211. General Chemistry I. (CCN) 3 credits. Prerequisite: Math 102. Corequisite: Math 103 or an equivalent course. Placement Program Test (PTP). Open to all students; no high school credit in chemistry required. Elements, and theories of chemistry; matter, measurements, atoms, ions, molecules, reactions, chemical calculations, thermodynamics, bonding, molecular geometry, periodicity, gases. Required of all chemistry majors. F, S, S

212. General Chemistry II. (CCN) 3 credits. Prerequisite: Chem 211. Corequisite: Math 103. Required of all chemistry majors. F, S

212L. General Chemistry II Laboratory. (CCN) 1 credit. Prerequisite: Chem 212. Laboratory to accompany Chem 212. Required of all chemistry majors. F, S, S


240L. Survey of Organic Chemistry Laboratory. (CCN) 1 credit. Prerequisite: Chem 212L. Corequisite: Chem 240. Laboratory to accompany Chem 240. F, S, S

242L. Organic Chemistry I Laboratory. (CCN) 1 credit. Prerequisite: Chem 212L. Corequisite: Chem 242. Laboratory to accompany Chem 242. Required of all chemistry majors. F, S, S

311. Introductory Environmental, Clinical, and Forensic Chemical Analysis. 4 credits. Prerequisites: Chem 122 and Chem 122L or written permission of the instructor. For all science majors interested in using analytical chemistry techniques in a modern environmental laboratory. Principles of quantitative and qualitative chemical analysis as applied to environmental, clinical, and forensic science are covered. S

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 courses: Chem 351, 352 or Chem 305, 306. S/U grading.

341. Organic Chemistry I. (CCN) 4 credits. Prerequisite: Chem 122 or a grade of C or better in Chem 121. Designed for science and pre-professional students. Required for chemistry majors. Structure and bonding: nomenclature, functional groups, spectroscopy (NMR, IR, MS) for structure determination. F, S

341L. Organic Chemistry I Laboratory. (CCN) 1 credit. Prerequisite: Chem 341L. Corequisite: Chem 341. Laboratory to accompany Chem 341. Required for chemistry majors. F, S


342L. Organic Chemistry II Laboratory. (CCN) 1 credit. Prerequisite: Chem 341. Corequisite: Chem 342. Required for all chemistry majors. Laboratory to accompany Chem 342. F, S

388. Introduction to Research. 1 credit. Prerequisites: Chem 342L and 333, Introduction to the chemical literature, to computer searching of the literature and to prudent laboratory practices, including safety and waste disposal. S

392. Special Problems in Chemistry. 1 to 3 credits. Prerequisite: consent of instructor. Total credits not to exceed 3. Available for students to work on research problems under close faculty guidance. S/U grading only. F, S

413. Selected Topics in Chemistry. 1-5 credits, repeatable with different topics. On demand.

454. Inorganic Chemistry II. 3 credits. Prerequisite: Chem 463 or 465. Study of inorganic compounds in terms of modern theories and concepts. F

455. Spectroscopy and Structure. 3 credits. Prerequisite: Chem 342 or Chem 463. Corequisite: Chem 464. Students may satisfy the Chem 464 prerequisite by a Chem 466 prerequisite instead. Applications of spectroscopic techniques to the determination of molecular structure. F

461. Instrumental Analysis. 5 credits. Prerequisite: Chem 464. Required for B.S. in Chemistry and B.S. with Major in Chemistry Physical Science Emphasis majors. Applications of physicochemical principles via instrumental techniques to problems of quantitative and qualitative analysis. Includes laboratory. S

462. Physical Chemistry Laboratory. 3 credits. Prerequisites: Chem 454 and 456. Required for B.S. in Chemistry and B.S. with Major in Chemistry Physical Science Emphasis majors. The solution of chemical problems in the laboratory using modern physical and analytical methods. F

463. Advanced Synthesis Laboratory. 3 credits. Prerequisites: Chem 462 or 463 and 455. Advanced synthetic, separatory and characterization methods currently used in modern laboratory practice will be emphasized. S


465. Physical Chemistry II. 3 credits. Prerequisites: Chem 431, Math 265, Phys 252. The use of energy concepts in studying and understanding the nature of matter, equilibrium, reactivity, kinetics, criteria for reactions. S

466. Survey of Physical Chemistry. 4 credits. Prerequisites: Chem 342, Math 146 and Phys 212. Required for chemistry majors in the B.S. with Major in Chemistry with Emphasis in Health Sciences option. Survey of topics in physical chemistry with an emphasis for the life sciences. Includes macroscopic thermodynamics, kinetics, introductory quantum mechanics, and spectroscopy. S

467. Survey of Physical Chemistry Laboratory. 2 credits. Prerequisite: Chem 466. The solution of chemical problems in the laboratory using physical and biophysical methods. F

942. Senior Research. 2-6 credits. Prerequisite: Chem 342. Corequisite: Chem 462 or 467. May be repeated up to 6 credits. Total credits not to exceed 6. F, S, S

Civil Engineering (CE)

Gullicks, Jerath, Mason, Moretti, Phillips, Richard, and Sheikh-Ibrahim

The mission of the Civil Engineering Program at the University of North Dakota is to provide students with a well-rounded civil engineering education with proficiency in the environmental, geotechnical, structural, and water resources stems of civil engineering and more. The program provides students with the opportunity to develop technical skills in the areas of design, construction, and research, as well as an understanding of the environmental, social, and economic impacts of civil engineering. The specific program educational objectives are to provide students with: 1) a capstone, team-oriented design project experience; 2) abilities to continue lifelong learning and professional development; 3) competency in the application of data acquisition and analysis, communication, economics, mathematics, science, ethical responsibility, and modern engineering tools and techniques; and 4) awareness of contemporary issues and global/social impacts of engineered solutions. The department is committed to an educational environment, which encourages interaction between students, faculty, and practicing professionals. The Civil Engineering Program facilitates students hands-on experimental and design experiences, self-motivation, self-development, self-confidence, professionalism, and competence. The technical curriculum includes preparation in mathematics, statistics, physical sciences, and engineering sciences. The general education and technical components of the curriculum provide the student with an awareness of the impacts of contemporary social and global issues, economics, ethics, technological advances, computers, and communication on engineering responsibilities and engineered solutions. Proficiency in four stems of civil engineering is attained by students through the curriculum focus on prescribed two-course sequences in each of the stems. Two technical electives in the curriculum allow the students to further expand their proficiency in one or more of the four mandatory stems, to add proficiency in another civil engineering stem, or to obtain background in other civil engineering technical topics. Students are introduced to subject-related engineering tools, data acquisition, data analysis, problem solving, and engineering techniques in lecture courses and various laboratories. This preparation leads to comprehensive integration of each student’s knowledge and ethics base and research, design, professional, leadership, and communication skills.
for completion of a major, two-semester, team-oriented capstone senior design project experience.

The department has a strong advising program which helps each student make sound academic decisions, based on their personal education and professional goals and in accord with the expectations of practicing professionals. The faculty open-door policy and class size encourage one-on-one student and faculty interactions and significantly enhance learning experiences. The faculty encourage students to access interpersonal and technical resources of practicing professionals, consulting firms, professional organizations, governmental agencies, the internet, and equipment suppliers in a variety of real-world problem-solving educational experiences. Cooperative education, research, continuing professional development, and profession-related summer work experiences are encouraged in order to enhance student and faculty awareness of contemporary practice.

Department faculty are active on university committees and in faculty governance, providing service to the university. Additionally, the faculty are active in professional and technical societies and encourage the students to actively participate in and serve their profession. The faculty strongly encourage students to pursue ethical, competent, and licensed practice of civil engineering and life-long learning.

**School of Engineering and Mines**

**B.S. IN CIVIL ENGINEERING**

Required 139 credits (36 of which must be numbered 300 or above, and 60 of which must be from a 4 year institution) including:

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

II. The Following Curriculum:

<table>
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<th>Credit Hours</th>
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<td><strong>Freshman Year</strong></td>
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<tr>
<td>Chem 121, 121L...... General Chemistry I/Laboratory</td>
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<td>Chem 122, 122L..... General Chemistry II/Laboratory</td>
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<td>Eng 110............. College Composition I</td>
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<td>Engr 101............ Graphical Communication</td>
<td>(3)</td>
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<td>Engr 200............ Computer Applications</td>
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<td>Math 165, 166....... Calculus I &amp; II</td>
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<td>Phys 251, 251L...... University Physics I/Laboratory</td>
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<tr>
<td>Arts and Humanities (See page 28)</td>
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<td><strong>Sophomore Year</strong></td>
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<td>CE 313.............. General Surveying</td>
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<td>Econ 201............ Principles of Microeconomics</td>
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<td>EE 206.............. Electrical Engineering</td>
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<td>Eng 125............ Technical &amp; Business Writing</td>
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<td>Engr 201............ Statics</td>
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<td>Engr 202............ Dynamics</td>
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<td>Engr 203............ Mechanics of Materials</td>
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<td>Geo 203............. Geology for Engineers</td>
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<td>Math 265............ Calculus III</td>
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<tr>
<td>Math 351............. Elementary Differential Equations</td>
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<td>Phys 252, 252L...... University Physics II/Laboratory</td>
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<tr>
<td>Social Science (See page 28)</td>
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<tr>
<td><strong>Junior Year</strong></td>
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<tr>
<td>CE 303.............. Civil Engineering Lab</td>
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<td>CE 306.............. Fluid Mechanics</td>
<td>(3)</td>
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<td>CE 351.............. Structural Mechanics</td>
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<td>CE 412.............. Soil Mechanics</td>
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<td>CE 421.............. Hydrology</td>
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<td>CE 423.............. Hydraulic Engineering</td>
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<td>CE 451.............. Steel Design</td>
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<td>CE 414.............. Foundation Engineering</td>
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<td>CE 432.............. Environmental Engineering II</td>
<td>(3)</td>
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<td>CE 444.............. Contracts and Specifications</td>
<td>(3)</td>
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<td>CE 453.............. Reinforced Concrete</td>
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<td>CE 482.............. Civil Engineering Design</td>
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<td>CE 485.............. Environmental Engineering Design</td>
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<td>ME 341.............. Thermodynamics</td>
<td>(3)</td>
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<td>(3)</td>
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[303. Civil Engineering Laboratory. 3 credits. Prerequisites: Engr 203 and Engl 101. Design, conducting, and technical reporting of laboratory experiences dealing with: 1) the engineering/A.S.T.M. properties of asphaltic and Portland cement concrete, ceramic products, metals, plastics, and other materials, and 2) measurements of stress and strain.]

[306. Fluid Mechanics. 3 credits. Prerequisites: Phys 251 and Math 265. Fluid properties; fluid statics and dynamics; transport theory and transport analogies; conservation of mass, energy, and momentum; dimensional analysis; boundary layer concepts; pipe flows; compressible flow; open channel flow. F S]

[337. Cooperative Education. 1-8 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. F,S,SS]

[351. Structural Mechanics. 4 credits. Prerequisite: Engr 203. Reactions, shear and bending moment, plane and space trusses, influence lines, deflections, virtual work, energy methods, approximate analysis, consistent deformations method, slope deflection and moment distribution methods, introduction to matrix methods. Use of computer for analysis.]
Clinical Laboratory Science (CLS)

R. Sopher (Chair), A. W. Bruce (Program Director), Coleman, Larson, Paur, 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 (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.

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 (first year and sophomore) education followed by two years of professional (junior and senior) 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 "C" or better 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 four months in a student laboratory and six-to-eight months in a medical center setting operating equipment, performing and managing testing activities, evaluating quality control and working with the health care team.

Medical centers currently affiliated with the Clinical Laboratory Science program are: Allina Laboratories/Abbott Northwestern Hospital, Minneapolis, MN; Altru Health System, Grand Forks, ND; Bozeman Deaconess Hospital, Bozeman, MT, Community Medical Center, Missoula, MT; Health East–St. Joseph’s Hospital, St. Paul, MN, Hennepin County Medical Center, Minneapolis, MN; Lake Region Hospital, Fergus Falls, MN; Mayo Clinic, Rochester, MN; Minot Center for Family Medicine, Minot, ND; Presentation Medical Center, Rolla, ND; Riverview Hospital, Crookston, MN; Roseau Area Hospital and Homes, Inc., Roseau, MN; Smith Kline-Beecham Laboratories, New Brighton, MN, St. Alexius Medical Center, Bismarck, ND; St. Cloud Hospital, St. Cloud, MN; St. Patrick’s Hospital, Missoula, MT; St. Vincent’s Hospital and Health Center, Billings, MT; Trinity Medical Center, Minot, ND; West River Regional Medical Center, Hettinger, ND.

The Clinical Laboratory Science program is affiliated with Bemidji State University, Bemidji, MN; Jamestown College, Jamestown, ND; University of Mary, Bismarck, ND; Montana State University, Bozeman, MT; and the University of Montana, Missoula, MT. Each of these universities/colleges have developed their curricula to match the curriculum at the University of North Dakota. Students from the universities/college listed above apply to the University of North Dakota CLS senior year professional program. Upon completion they receive a certificate from the University of North Dakota CLS program verifying completion of 12 months of clinical training in the UND NAACLS accredited program. They are then eligible for a degree in Clinical Laboratory Science or a related major at their respective institution.

Applications are also accepted for the senior year professional program from students that have completed their B.S. degree from an NCA accredited college in medical technology, clinical laboratory science, or a science major congruent with the University of North Dakota Clinical Laboratory Science program. Prerequisite course work may be required depending on the curriculum completed at the student’s previous college.

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. The student’s record is evaluated and a recommendation made to the Registrar regarding the number of credits to be transferred and the science courses to be waived. The student may be eligible for a shortened professional program based on previous coursework, years of experience working in a clinical laboratory, and competency assessment.

During the senior professional year students register for courses in the summer, fall and spring semesters. Students must be aware that there are special requirements prior to contact with patients and testing of patient specimens. Students are required to have a physical and to be immunized with the Hepatitis B vaccine. If a student elects not to be immunized a liability waiver must be signed. A background check may also be required. Students are responsible for additional costs that include: travel, housing, food, and summer course fees.

A Master of Science degree with a major in Clinical Laboratory Science 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 credits (36 of which must be numbered 300 or above, and 60 of which must be from a 4 year institution) including:

I. General Education Requirements see pages 27-31.

II. Curriculum:

Freshman Year

FIRST SEMESTER

Engl 110.............. College Composition I.........(3)
Biol 150 & 150L.... General Biology I and Laboratory.......(4)
Chem 121 & 121L........ General Chemistry I and Laboratory..................(4)
Math 103 or 104..........College Algebra or Finite Math............(3)
SECOND SEMESTER

Med 100 .......Introduction to Health Sciences Professions ...(2)
Biol 151 & 151L ....General Biology II and Laboratory ...(3)
Comm 110 ......Fundamentals of Public Speaking .....(3)
Chem 122 and 122L ....General Chemistry II and Laboratory ...(4)
Eng 120 or 125 ....College Composition II or Technical and Business Writing .....(3)

Sophomore Year

FIRST SEMESTER

Anat 204 .........Anatomy for Paramedical Personnel ...(3)
CLS 101 .......Orientation to Medical Laboratory Sciences ...(2)
Comm 210 .........Interpersonal Communications .....(3)
Psyc 111 .........Introduction to Psychology .....(3)
Soc 110 ......Introduction to Sociology .....(3)
Humanities Elective .....(3)

SECOND SEMESTER

Chem 240 & 240L ....Survey of Organic Chemistry and Laboratory ...(5)
CLS 234 .........Human Parapsychology .....(1)
CLS 234L ......Human Parasitology Lab .....(1)
CLS 238 .........Computer & Statistical Applications in CLS .....(2)
Econ 201 ........Principles of Microeconomics .....(3)
Humanities Elective .....(3)

Professional Year 01 (Junior)

FIRST SEMESTER

CLS 325 .........Hematology .....(3)
CLS 325L ......Hematology Laboratory .....(2)
CLS 336 .........Laboratory Calculations .....(1)
MBio 202 ........Introduction to Medical Microbiology Lecture .....(3)
Phil 310 ........Ethics .....(3)
Phy 301 .........Human Physiology .....(4)

SECOND SEMESTER

BiCh 301 .........Biochemistry .....(3)
BiCh 303 .........Biochemistry Lab .....(3)
CLS 301 .........Immunology .....(2)
CLS 380 .........Professional Issues in CLS .....(1)
CLS 393 .........Immunohematology/Immunology Laboratory .....(2)
CLS 394 .........Medical Microbiology .....(2)
Mgmt 300 .........Prin of Management .....(3)
Mgmt 305 .........Managerial Concepts .....(3)

Professional Year 02 (Senior)

SUMMER SESSION

CLS 470 .........Clinical Immunohematology I .....(1)
CLS 471 .........Clinical Chemistry Theory .....(2)
CLS 472 .........Clinical Laboratory I .....(1)
CLS 473 .........Clinical Hemostasis .....(2)
CLS 474 .........Clinical Microscopy & Urinalysis .....(2)
CLS 475 .........Clinical Body Fluids .....(1)
CLS 477 .........Clinical Immunohematology Theory .....(1)
CLS 478 .........Clinical Microbiology Theory and Laboratory .....(2)

FIRST SEMESTER

CLS 480 .........Clinical Immunohematology II .....(2)
CLS 481 .........Clinical Chemistry I .....(3)
CLS 482 .........Clinical Hematology I .....(2)
CLS 483 .........Clinical Laboratory II .....(1)
CLS 484 .........Clinical Microbiology I .....(2)
CLS 485 .........Clinical Laboratory III .....(1)
CLS 486 .........Clinical Immunology .....(1)
CLS 487 .........Clinical Mycology .....(1)

SECOND SEMESTER

CLS 490 .........Financial & Quality Management of the Clinical Laboratory .....(3)
CLS 491 .........Clinical Chemistry II .....(1)
CLS 492 .........Clinical Immunohematology III .....(2)
CLS 493 .........Clinical Hematology II .....(3)
CLS 495 .........Clinical Microbiology II .....(2)

Total Credits 130

Courses

The Clinical Laboratory Science program is part of the Division of Medical Laboratory Sciences in the Pathology Department. The Pathology (Path) courses that are required for Clinical Laboratory Science majors are listed below.

101. Orientation to Medical Laboratory Sciences. 2 credits. Introduction to the role, ethics, conduct, certification, education, employment, and fundamental knowledge and skills related to medical laboratory science. F

103. Clinical Laboratory Sciences I. 3 credits. Techniques and practice in routine phlebotomy at the clinical affiliate. F

105. Clinical Laboratory Sciences II. 3 credits. Techniques and practice in routine phlebotomy at the clinical affiliate. F

234L. Human Parasitology Laboratory. 1 credit. Prerequisite: Biol 101. Physiological aspects of human parasites, their symbiotic host-parasite relationships and clinical diagnostic techniques. S

234R. Human Parasitology. 1 credit. Prerequisite: Biol 101. Physiological aspects of human parasites, their symbiotic host-parasite relationships and clinical diagnostic techniques. S

238. Computer and Statistical Application in Clinical Laboratory Science. 2 credits. Applications of modern information systems, terminology, word processing, data base, spreadsheet and statistical analysis including normal and binomial distribution, t-tests, chi square tests, analysis of variance, linear regression and correlation.

301. Immunology. 2 credits. Principles of clinical immunology focusing on the cellular and molecular nature of antigens and immunoglobulins, the immune response, immunogenetics, and immune mediated disease. S


325L. Hematology Laboratory. 2 credits. Corequisite: Path 325. Morphologic examination of blood and marrow and laboratory testing used in hematological study. F

336. Laboratory Calculations. 1 credit. Calculations used in the clinical laboratory including measurement systems, dilutions, graphing, solution chemistry, statistics of quality control and research interpretation. F

380. Professional Issues in Clinical Laboratory Science. 1 credit. Discussion of CLS professional issues, ethics, current topics of healthcare delivery, governmental regulations, societal concerns, cultural diversity, disease prevention, research and environment. SS

393. Immunohematology/Immunology Laboratory. 2 credits. Prerequisites: Biol 150 and 151. Corequisite: Path 392. Theory and practical application of laboratory investigations of immunology serology, and immunohematology. S

394. Medical Microbiology. 2 credits. Medically important microorganisms are identified using a wide variety of clinical techniques. Included in the discussion will be susceptibility studies and the correlation of the presence of microorganisms to health and disease. S

399. Special Topics in Medical Technology. 1-9 credits Lecture, discussion, and readings on topics of current interest in the clinical laboratory sciences. S

470. Clinical Immunohematology I. 1 credit. Practical application of modern transfusion techniques, component therapy, and quality assurance. SS

471. Clinical Chemistry Theory. 2 credits. Theories and principles of chemistry procedures includes topics in instrumentation, carbohydrates, proteins, lipids, enzymes, liver function, blood gases, electrolytes, renal function, endocrinology, TDM and toxicology. SS

472. Clinical Laboratory I. 1 credit. Theory and practice of phlebotomy in the clinical setting, specimen processing, review of state and federal regulations, safety and biohazard compliance, interpersonal relationship skills. SS

473. Clinical Hemostasis. 2 credits. Physiologic mechanisms of normal human hemostasis as well as hereditary and acquired defects. Laboratory techniques performed and discussed are screening tests and specific assays for abnormalities, procedures to monitor therapeutic measures and practice and maintenance of current instrumentation. SS

474. Clinical Microscopy & Urinalysis. 2 credits. Theory, techniques and practice of microscopy and urinalysis with emphasis on identification of elements in the sediment. SS

475. Clinical Body Fluids. 1 credit. Overview of the theory and practice in manual procedures of human body fluids. The body fluids to be discussed include: spinal, synovial and amniotic fluid, transudates and exudates, fecal specimens, gastric, sweat, and other body fluid secretions. SS

477. Clinical Immunohematology Theory. 1 credit. Theory of modern transfusion techniques, component therapy, and quality assurance. SS

478. Clinical Microbiology Theory and Laboratory. 2 credits. Groups of medically important bacteria are studied and correlated to laboratory practice in identification. Included in the discussions are antibiotic susceptibility testing, quality control, and methods of identification including rapid, automated, and traditional methods. SS


481. Clinical Chemistry I. 3 credits. Applied theory and practice in clinical chemistry at the clinical affiliate. F

482. Clinical Hematology I. 2 credits. Emphasis on interpretive correlation of hematology findings and pathophysiology. Topics of current interest and advances in hematology. F

483. Clinical Laboratory II. 1 credit. Techniques and practice in routine phlebotomy at the clinical affiliate. Annually.

484. Clinical Microbiology I. 2 credits. Applied theory and practice in clinical microbiology at the clinical affiliate. F

485. Clinical Laboratory III. 1 credit. Observation, practice, or research in specialized areas or settings at the clinical affiliate. F

486. Clinical Immunology. 1 credit. Applied theory and practice in clinical immunology and serology at the clinical affiliate. F

487. Medical Mycology. 1 credit. Comparative morphology, physiology and pathogenicity of medically important fungi. Laboratory methods for identification emphasize interpretation and evaluation of results including the recognition of contaminating organisms. F

490. Financial and Quality Management of the Clinical Laboratory. 3 credits. Corequisite: Enrollment in clinical practicum coursework. A capstone course designed to provide senior students with the skills to manage a clinical laboratory. The course brings together previous content with a focus on laboratory profitiblity, quality management, and quality improvement. Annually.
School of Communication  

(Comm)

Fiordo (Chair), Courtright, Ganje, Hikins, Holden, Kraidy, Rakow, Rendahl, Sfafer, Tovares, and Zacher

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 University’s Television Center facility is available for student training.

The School’s Communication Research Center conducts research on a variety of communication issues and problems.

The Native American Program’s mission is to promote diversity in communication by enhancing awareness of Native American issues among media professionals and by attracting Native American students into journalism and communication careers. The activities include production of special publications and materials written by, about, and for Native peoples.

Student Opportunities. Students are encouraged to supplement classroom instruction through work on campus publications, a national award-winning television program, and supervised professional internships.

Student organizations sponsored by the School include chapters of the American Advertising Federation, the Public Relations Student Society of America, and the Society of Professional Journalists. Another program sponsored by the School is the North Dakota Student Government, which serves high school journalism programs in North Dakota and northern Minnesota.

Admission Requirements. Admission to the College of Arts and Sciences does not automatically carry admission to the School of Communication. Students planning to pursue a major 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 110 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 unless 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 credits (36 or which must be numbered 300 or above, and 60 of which must be from a 4 year institution) including:

I. General Education Requirements, see pages 27-31. *(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 110 ..........Fundamentals of Public Speaking ................................(3)
Comm 201 ..........Visual Communication .............................................(3)
Comm 212 ..........Interpersonal Communication .................................(3)
Comm 303 ..........Principles of Public Relations .................................(3)
Comm 341 ..........Advertising Creative Strategy .....................................(3)
Comm 365 ..........Small Group Discussion and Conference ......................(3)

INFORMATION

Comm 200 ..........Introduction to Media Writing .....................................(3)
Comm 244 ..........Reporting and Feature Writing .....................................(3)
Comm 321 ..........Advanced Journalistic Writing .....................................(3)
Comm 322 ..........Editing ........................................................................(3)
Comm 352 ..........Writing for Public Relations .........................................(3)
Comm 353 ..........Writing for the Electronic Media .....................................(3)
Comm 366 ..........Business and Professional Speaking .............................(3)

TECHNOLOGY

Comm 204 ..........Graphic Design .........................................................(3)
Comm 240 ..........Introduction to News Photography ...............................(3)
Comm 304 ..........Electronic Editing .........................................................(3)
Comm 305 ..........Publications ...............................................................(3)
Comm 306 ..........Advertising Media Planning .........................................(3)
Comm 307 ..........Video Production ..........................................................(3)
Comm 332 ..........Fundamentals of Television Production ...........................(3)

• Level C: 12-15 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 499 ..........Special Topics ...............................................................(1-3)

INFORMATION

Comm 313 ..........Persuasion ................................................................(3)
Comm 315 ..........Argumentation ..............................................................(3)
Comm 367 ..........Classical and Modern Criticism .....................................(3)
Comm 404 ..........Advertising and Society ...............................................(3)
201. Visual Communication. 3 credits. An examination of the history and development of design in visual communication with emphasis on design components in visual literacy. Images in news and advertising, photography, film and television are examined using theoretical, ethical, and critical perspectives. F

204. Graphic Design. 3 credits. Prerequisite: Comm 201. Admitted major or instructor consent. An introduction to theory and practice of print making for the media. Coverage of major structural theories including style, semiotics, and iconography in a historical, environmental and psychological context. Typography, corporate symbolology, 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

212. Interpersonal Communication. (CCN) 3 credits. Introduces fundamental concepts of communication between individuals. Explores aspects of self-expression and relationship communication. To give insights into the dynamics of interpersonal communication. To aid in the understanding of how people present themselves to other people, and how others perceive them in return. F,S,SS

240. Introduction to News Photography. 3 credits. Introduction to the practice of photography. Film developing, print making, photographic composition. Emphasis on the purposes of photography. F

244. Reporting and Feature Writing. 3 credits. Prerequisite: Admitted major or instructor consent. Introduction to news gathering, judgment and writing. F

300. Communication and Society. 3 credits. Prerequisites: Comm 102 or 103 or instructor consent. Explores the interpersonal relationships 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 and understanding of the media. F

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 relationships among personal characteristics and communications. F

302. Popular Culture. 3 credits. Prerequisite: Comm 102 or 103 or instructor consent. Critical analysis of culture(s), their characteristics, and the relationship between media, interpersonal communication, and broader cultural patterns. A look at how popular culture works and influences the public and how everyday actions, objects and experiences affect us. A critical look at the ways in which culture is defined by such elements as fashion, shopping malls, television, film, music, books, newspapers and the internet. F

303. Principles of Public Relations. 3 credits. Examines public relations as a profession 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,S

304. Electronic Editing. 3 credits. Prerequisite: Admitted major or instructor consent. 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, admitted major, or instructor consent. An overview of the print production process from concept to distribution. Includes publication conceptualization, design and production, budgeting, pre-press and printing processes. F

306. Advertising Media Planning. 3 credits. Prerequisite: Comm 341 or instructor consent. An introduction to the complexities of buying space and time for advertising elements, 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. Prerequisite: Admitted major or instructor consent. 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

310. Media and Diversity. 3 credits. Prerequisites: Comm 102 or 112, 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

313. Persuasion, (CCN) 3 credits. Prerequisites: Comm 102 or 103 or instructor consent. An examination of principles and practices of persuasion and its influence across communication contexts such as interpersonal, group, and mass communication. Emphasis will be placed on ethical standards and implication of persuasion and influence. S

315. Argumentation. 3 credits. Prerequisites: Comm 102 or 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

321. Advanced Journalistic Writing. 3 credits. Prerequisite: Comm 200; admitted major or instructor consent. News coverage and writing techniques involving public and private sectors of contemporary society. S

322. Editing. 3 credits. Prerequisite: Comm 200; admitted major or instructor consent. Editing and headline writing, copy preparation and layout applicable to newspapers and other print media. S
Cooperative Education. Internship, Co- 
operative Education, Internship, or a combination of both.
Prerequisite: Level B 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 com-
munities, on the role of weekly newspapers in small, rural towns or on broadcast 
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 communi-
ties. F, S

322. Fundamentals of Television Production. 3 credits. Introduction to basic stu-
dio production. Emphasis on the function and operation of TV equipment, lighting, pro-
ducing and directing, including crew management, program conception, writing, plan-
ning and evaluation. F

323. Cooperative Education. 1-3 credits, repeatable to a total of 3 credits in 
Cooperative Education, Internship, or a combination of both. Prerequisite: Level B or 
instructor consent. 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

341. Advertising Creative Strategy. 3 credits. Prerequisites: Comm 204 or instructor consent. Introduces students to ideas and their translation into words and 
images that inform and persuade. Emphasis is on strategic approaches to creative deci-

dion-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: Comm 200; admitted 
major or instructor consent. Intensive practice in preparing the most common types of 
materials used in public relations. Special emphasis on writing style and form, and effec-
tive media relations. F, S

353. Writing for the Electronic Media. 3 credits. Prerequisites: Comm 200, admittance 
major or instructor consent. Introduction to basic electronic writing. Topics include 
information gathering techniques, principles of writing for different electronic 
formats and the differences in writing for print versus electronic media. Consideration of 
ethical, cultural, legal and regulatory issues in constructing scripts. F

381. Small Group Discussion and Conference. 3 credits. A theory and perfor-
mance course in which students learn discussion techniques and study small group 
communication in networks, roles and worknorms in task oriented and problem solving pro-
jects. S

366. Business and Professional Speaking. 3 credits. Prerequisite: Admitted 
major or instructor consent. Advanced study of rhetorical invention, disposition and 
style, and the application of those principles through preparation of business and profes-
sional 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 
critical standards and practices in public speaking and communication. F

394. Individual Projects and Readings. 1-3 credits (May be repeated up to 6 credits.)* Prerequisite: Junior standing, School of Communication consent. Individual projects of directed study related to topics, issues or activities in the areas of journalism, 

speech or communication. F, S

401. Organizational Communication. 3 credits. Prerequisite: Comm 102 or 103 or instructor consent. Analysis of communication behavior in formally structured rela-
tionships as it relates to the organization and to individuals. Special attention given to 
organizational style, status, trust and conflict management. Informal communication net-
works and rumor are studied. S

402. International/Intercultural Communication. 3 credits. Prerequisite: Comm 
102 or 103 or instructor consent. This course will provide an overview of the study of 
intercultural or international communication. Topics addressed will include: history, lit-
erature, and culture of specific groups including racial, religious, and ethnic issues that 

affect communication patterns and outcomes. F

403. Community Relations. 3 credits. Prerequisites: Comm 102 or 103 or instruc-
tor consent. Examination of communication strategies organizations use to establish and maintain rapport with communities. Theoretical foundations, crisis and issues management, conflict resolu-
tion, promotional strategies and effective media relations. F

404. Advertising and Society. 3 credits. Prerequisites: Comm 102 or 103 or instructor consent. Examination and evaluation of the social, ethical and economic aspects of 
advertising. Attention is given to appraising the effects of advertising on the consumer and competition. F

405. Social Implications of the Information Society. 3 credits. Prerequisites: Comm 
102 or 103 or instructor consent. Considers and evaluates different perspectives on the 

information society, ranging from humanistic and Neomarxist critiques to the 

optimistic scenarios of some futurists. Examines the implications of new means of creat-
ing, storing, manipulating and disseminating information. Discussion of whether or not the potential benefits will be realized. F

406. Media Consequences and Effects. 3 credits. Prerequisites: Comm 102 or 103 or instructor consent. Examination of the ways in which individuals and societies are 
affected by media systems. Topics include Technology, History, Media Power and Control, Audiences and Users, Information and Entertainment, Mass Culture and Popular Culture. Uses a critical perspective to interpret the consequences and effects of 

media systems. F

407. Communication Technologies and the Future. 3 credits. Prerequisites: Comm 102 or instructor consent. Enables students to develop an in-depth under-
standing of new communication technologies and to explore their potential. Consideration of how media industries are being restructured, of the social consequences of 

new technologies and applications and of implications for the exercise of social power. S

410. Research Methods in Communication. 3 credits. Prerequisite: Comm 102 or 103 or instructor consent. Introduction to methodologies of historical, descriptive, and 
experimental research with attention to interpreting research results, selecting research 
designs and conducting communication research projects. S

412. Communication Law. 3 credits. Prerequisite: Comm 102 or 103 or instructor consent. Examination of philosophical and historical background, development and court 
interpretations of “speech press” clause of First Amendment with attention to libel law, 
right to privacy, access to information and advertising and broadcast regulation. F

428. U.S. Media History. 3 credits. Prerequisite: Comm 102 or 103 or instructor consent. Development and impact of the American news media in the context of the 

social, political, economic and intellectual history of the United States from colonial 
times to the present. Previous coursework in general American history helpful. S

450. Senior Portfolio. 1 credit. Prerequisite: Departmental approval. A review, 
synthesis, and demonstration of what has been learned in the communication major. 
Creation of an academic portfolio documenting achievement of the program's goals for student learning. F, S

461. Political Communication. 3 credits. Prerequisite: Comm 102 or 103 or 
instructor consent. Analysis of political campaigns: a study of leading speakers, their 
speeches and the impact these have on our political, social, legal, and religious life. The 
rhetoric of mass movements and power, protest, and conciliation are analyzed. S

497. Internship. 1-3 credits, repeatable to a total of 3 credits in Internship, Co-
operative Education, or a combination of both. Prerequisite: Junior standing and in-
structor consent. Supervised experience in the mass media or related field consistent with 
student’s career objectives. Final report, employer’s evaluation and samples of work 
required. Formal application in advance of internship needs departmental approval. S-U 
grading only. F, S

499. Special Topics. 1-3 credits, repeatable to 6.* Prerequisite: Comm 102 or 103 or instructor consent. Selected topics in communication that allow students to study spe-
cific communication issues and/or topics that are not covered by regular department 
offerings. On demand.

* Communication majors may not exceed 38 credits in the major within the 125 credits for graduation.

Communication Sciences 
and Disorders 
(CSD)

W. Swisher (Chair), Biberdorf, Fire, Glick, 
Grela, 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 practice, 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 practice/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.
**A course in gerontology will be required of all undergraduate majors in CSD. The students may opt to take CSD 365 to satisfy this requirement or some other gerontology course offered through another department.**

### D. Teacher Certification

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>Psyc 213</td>
<td>Educational Psychology</td>
</tr>
<tr>
<td>T&amp;L 410*</td>
<td>Teaching and Reading Writing in the Elementary School</td>
</tr>
<tr>
<td>CSD 584</td>
<td>Clinical Practicum</td>
</tr>
</tbody>
</table>

*Four hours are required in this area. This requirement may also be filled by electing from the following courses:

- T&L 310 | Intro to Early Childhood Education | (3) |
- T&L 313 | Young Children Language and Thought | (3) |
- T&L 315 | Education of the Exceptional Student | (3) |
- T&L 423 | Assessment Program Planning for Special Needs Students | (3) |
- The Professional Education sequence for future speech clinicians also includes:
- T&L 400* | Methods Materials: Communications Disorders | (3) |
- CSD 585 | Practicum School Setting | (Graduate students only) | (10) |

*T&L 400 must be completed before taking CSD 585.

### Courses

223. **Phonetics.** 3 credits. Introduction to Phonetics. Includes articulatory descriptions of the speech sounds of English and other language, the International Phonetic Alphabet, coarticulatory phenomena, suprasegmentals, phonological features and phonological processes. Supervised practice in broad and narrow transcription of normal and disordered speech is provided.

231. **Anatomy and Physiology of the Speech and Hearing Mechanism.** 4 credits. Structure and function of the mechanisms involved in breathing, phonation, resonance, articulation and hearing.

232. **Survey of Communication Disorders.** 3 credits. Speech disorders: causes, symptoms, diagnosis, and therapy of the common speech defects.

235. **Speech and Hearing Science.** 3 credits. Prerequisite: CSD 231 and Math 103 or consent of instructor and CSD 223. An introduction to the normal processes of speech, hearing, and language through the study of basic speech and hearing science exploring the scientific investigation of the physiological and acoustical parameters of speech.

343. **Language Development.** 3 credits. The nature and development of linguistic content, form, and use from birth to adulthood are studied relative to the development of communication and speech; relative to cognitive, social, and physical development; and relative to cultural diversity.

353. **Language Disorders.** 3 credits. Prerequisite: CSD 343. The identification, causes, and remediation of disorders of linguistic content, form, and use are studied relative to cognitive, social and physical development and functioning and relative to cultural diversity.

365. **Aging and Communication Processes.** 3 credits. An intensive study of the sociological, psychological, medical and educational aspects of adult development and aging as they relate to communication processes and communication disorders.

382. **Introduction to Practicum.** 3 credits. An introduction to clinical case management with emphasis on developing clinical skills. Also includes an orientation to the UND Speech, Language, and Hearing Clinic.

422. **Neuroanatomy of Communication Disorders.** 3 credits. Prerequisite: CSD 231. A study of the essentials that form the basis for neuroanatomy, neuropsychology, neurophysiopathology, and neurology, with a special section of study dealing with the neurological bases for speech, language and hearing.

430. **Sign Language.** 2 credits. Introduction to manual communication. F, S, SS

431. **Introduction to Audiology.** 3 credits. Prerequisites: CSD 231 and Math 103 or 104. Elementary structure and function of the hearing mechanism; basic psychophysical dimensions of the auditory mechanism; types of deficient hearing; pure tone threshold and screening audiometry. Students are required to do hearing testing to qualify for certification in speech and hearing.

434. **Aural Rehabilitation.** 3 credits. Prerequisites: CSD 431, & 343 or consent of instructor. Principles, techniques and clinical practice in the diagnosis and rehabilitation of hearing disorders in children and adults; auditory training, speech reading and hearing conservation.

437. **Cleft Palate and Other Orofacial Anomalies.** 3 credits. Prerequisites: CSD 231 or consent of instructor. Co-req. CSD 482. Communication disorders related to cleft palate and other defects of the speech mechanism. A consideration of etiology, incidence, and clinical management of resulting communication and related problems.

438. **Articulation and Phonological Development Disorders.** 4 credits. Prerequisites: CSD 223. Development, etiology, diagnosis and management of phonological and articulation disorders.

483. **Clinical Tests Measures.** 3 credits. Prerequisites: CSD 343 and CSD 353. Course uses CSD 482. This course provides a consideration of general principles of diagnostic test construction and validation of speech-language pathology. Further, it includes review, evaluation and administration of major tests and measures designed to diagnose speech and language pathologies.

484. **Clinical Practicum I: Speech-Language Pathology.** 2 credits. Prerequisite: 382. An introduction to the clinical process and speech and language intervention. Includes supervised observation of clinical intervention. F, S, SS

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**College of Arts and Sciences**

**B.A. WITH MAJOR IN COMMUNICATION SCIENCES AND DISORDERS**

Required 125 credits (36 of which must be numbered 300 or above and 60 of which must be from a 4 year institution) including:

### I. General Education Requirements (see pages 27-31).

(Laboratory science requirement to be met by 4 credits of anatomy, biology or physics)

### II. The Following Curriculum

#### A. Major Course Requirements

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>CSD 223</td>
<td>Phonetics</td>
</tr>
<tr>
<td>CSD 231</td>
<td>Anatomy Physiology Speech and Hearing Mechanism</td>
</tr>
<tr>
<td>CSD 235</td>
<td>Speech Hearing Science</td>
</tr>
<tr>
<td>CSD 343</td>
<td>Language Development</td>
</tr>
<tr>
<td>CSD 353</td>
<td>Language Disorders</td>
</tr>
<tr>
<td>CSD 365*</td>
<td>Aging Communication Disorders</td>
</tr>
<tr>
<td>CSD 382*</td>
<td>Introduction to Practicum</td>
</tr>
<tr>
<td>CSD 422</td>
<td>Neuroanatomy</td>
</tr>
<tr>
<td>CSD 431</td>
<td>Introduction Audiology</td>
</tr>
<tr>
<td>CSD 434</td>
<td>Aural Rehabilitation</td>
</tr>
<tr>
<td>CSD 437</td>
<td>Cleft Palate Other Orofacial Anomalies</td>
</tr>
<tr>
<td>CSD 462*</td>
<td>Articulation Phonological Development Disorders</td>
</tr>
<tr>
<td>CSD 483</td>
<td>Clinical Tests Measures</td>
</tr>
<tr>
<td>CSD 484</td>
<td>Clinical Practicum I: Speech-Language Pathology</td>
</tr>
<tr>
<td>CSD 485</td>
<td>Clinical Practicum II: Speech-Language Pathology</td>
</tr>
<tr>
<td><strong>Total Credit Hours</strong></td>
<td><strong>35</strong></td>
</tr>
</tbody>
</table>

#### B. Major courses not required for B.A., but recommended:

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>CSD 232</td>
<td>Survey Communication Disorders</td>
</tr>
<tr>
<td>CSD 466</td>
<td>Special Problems Communication Disorders</td>
</tr>
<tr>
<td>Comm 301</td>
<td>Psychology Communication</td>
</tr>
<tr>
<td><strong>Total Credit Hours</strong></td>
<td><strong>11-13</strong></td>
</tr>
</tbody>
</table>

#### C. Courses required in other departments:

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>Psyc 250</td>
<td>Developmental Psychology</td>
</tr>
<tr>
<td>Psyc 270</td>
<td>Abnormal Psychology</td>
</tr>
<tr>
<td>Engl 209</td>
<td>Introduction Linguistics</td>
</tr>
<tr>
<td>Math 103</td>
<td>College Algebra</td>
</tr>
<tr>
<td><strong>Total Credit Hours</strong></td>
<td><strong>33</strong></td>
</tr>
</tbody>
</table>

Course in Multicultural Education, such as Anth 171, 375 and 379 or I S 121, 330 and 345, or Psyc 421, or T&L 433.

*Admission to this course will require an overall GPA of at least 2.50, a grade of C or better in any CSD course.

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**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.
Computer Science (CSci)

T. O'Neil (Chair), Anderson, Hexmoor, Jo, Panda, Valeroso, and Wiggins

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 credits (36 of which must be numbered 300 or above, and 60 of which must be from a 4-year institution) including:


II. College of Arts and Sciences Requirements. See page 39.

III. Courses from computer science as follows:

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>CSci 160</td>
<td>Computer Science I</td>
<td>4</td>
</tr>
<tr>
<td>CSci 161</td>
<td>Computer Science II</td>
<td>4</td>
</tr>
<tr>
<td>CSci 242</td>
<td>Algorithms and Data Structures</td>
<td>3</td>
</tr>
<tr>
<td>CSci 250</td>
<td>Computer Organization and Programming</td>
<td>4</td>
</tr>
<tr>
<td>CSci 289</td>
<td>Social Implications of Computer Technology</td>
<td>3</td>
</tr>
<tr>
<td>CSci 351</td>
<td>Introduction to File Processing</td>
<td>3</td>
</tr>
<tr>
<td>CSci 365</td>
<td>Organization of Programming Languages</td>
<td>3</td>
</tr>
<tr>
<td>CSci 370</td>
<td>Computer Architecture</td>
<td>3</td>
</tr>
<tr>
<td>CSci 435</td>
<td>Formal Languages and Automata</td>
<td>3</td>
</tr>
<tr>
<td>CSci 451</td>
<td>Operating Systems I</td>
<td>3</td>
</tr>
<tr>
<td>CSci Electives*</td>
<td>12</td>
<td></td>
</tr>
</tbody>
</table>

*All Computer Science electives must be at or above a 200 level. CSci 260 and 397 may be applied toward this major in Computer Science, but only up to a combined maximum of 3 hours. CSci 399, 491, and 494 may be applied toward this major in Computer Science, but only up to a combined maximum of three hours.

IV. Courses from other departments as follows:

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>Comm 110</td>
<td>Fundamentals of Public Speaking</td>
<td>3</td>
</tr>
<tr>
<td>EE 201</td>
<td>Introduction to Digital Electronics</td>
<td>1</td>
</tr>
<tr>
<td>EE 202</td>
<td>Electrical Engineering Laboratory</td>
<td>1</td>
</tr>
<tr>
<td>Math 208</td>
<td>Discrete Mathematics</td>
<td>3</td>
</tr>
<tr>
<td>Math 165, 166</td>
<td>Calculus I and II</td>
<td>8</td>
</tr>
<tr>
<td>Approved math elective</td>
<td>(3)</td>
<td></td>
</tr>
<tr>
<td>Approved probability/statistics elective</td>
<td>(3)</td>
<td></td>
</tr>
<tr>
<td>Approved 2-semester laboratory science sequence</td>
<td>(6)</td>
<td></td>
</tr>
</tbody>
</table>

2 approved courses in science or quantitative methods, (6-8)

B.A. WITH MAJOR IN COMPUTER SCIENCE

Required 125 hours (36 of which must be numbered 300 or above, and 60 of which must be from a 4-year institution) including:


II. College of Arts and Sciences Requirements. See page 39.

III. Courses from Computer Science as follows:

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>CSci 160</td>
<td>Computer Science I</td>
<td>4</td>
</tr>
<tr>
<td>CSci 161</td>
<td>Computer Science II</td>
<td>4</td>
</tr>
<tr>
<td>CSci 242</td>
<td>Algorithms and Data Structures</td>
<td>3</td>
</tr>
<tr>
<td>CSci 250</td>
<td>Computer Organization and Programming</td>
<td>4</td>
</tr>
<tr>
<td>CSci 370</td>
<td>Computer Architecture</td>
<td>3</td>
</tr>
<tr>
<td>CSci 435</td>
<td>Formal Languages and Automata</td>
<td>3</td>
</tr>
<tr>
<td>or</td>
<td>Principles of Translation</td>
<td>(3)</td>
</tr>
<tr>
<td>CSci 451</td>
<td>Operating Systems I</td>
<td>(3)</td>
</tr>
<tr>
<td>CSci Electives*</td>
<td>(3)</td>
<td></td>
</tr>
</tbody>
</table>

*Electives may be selected from CSci 260 (at most 3 hours), CSci 289, CSci 397 (at most 3 hours) and any other Computer Science courses numbered 300 or above.

IV. Courses from other departments as follows:

Level IV proficiency in a language other than English

A minor or a second major

EE 201      | Introduction to Digital Electronics                | (1)          |
EE 202      | Electrical Engineering Laboratory                  | (1)          |
Math 208    | Discrete Mathematics                               | (3)          |
Math 165, 166 | Calculus I and II                                | (3)          |
Math 208    | Discrete Mathematics                               | (3)          |
Math 165, 166 | Calculus I and II                                | (3)          |
Math 146    | Applied Calculus I                                 | (3-8)        |
Approved probability/statistics elective         | (3)          |

MINOR IN COMPUTER SCIENCE

Courses from Computer Science as follows:

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>CSci 160</td>
<td>Computer Science I</td>
<td>4</td>
</tr>
<tr>
<td>CSci 161</td>
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<td>4</td>
</tr>
<tr>
<td>CSci 250</td>
<td>Computer Organization and Programming</td>
<td>4</td>
</tr>
<tr>
<td>CSci 289</td>
<td>Social Implications of Computer Technology</td>
<td>3</td>
</tr>
<tr>
<td>CSci 351</td>
<td>Introduction to File Processing</td>
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<tr>
<td>CSci 365</td>
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<td>CSci 370</td>
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<td>CSci 435</td>
<td>Formal Languages and Automata</td>
<td>3</td>
</tr>
<tr>
<td>CSci 451</td>
<td>Operating Systems I</td>
<td>3</td>
</tr>
</tbody>
</table>

*All 9 credits hours of Computer Science electives must be 200 level or above, and at least 3 credit hours must be 300 level or above.

Courses

101. Introduction to Computers. 3 credits. Recommended corequisite: CSci 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 grading only. F,S

120. Computer Programming I. (CCN) 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. F,S

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. Students may not take CSci 120 after successfully completing CSci 160. 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

170. Computer Programming II. (CCN) 3 credits. Prerequisite: CSci 120. Advanced techniques in computer programming using a high-level language. Topics include the use of recursion, pointers, and fundamental data structures in developing small to medium-scale programs. A student may not receive credit for both CSci 170 and CSci 161. Once a year.

242. Algorithms and Data Structures. 3 credits. Prerequisites: CSci 161 and Math 208. Abstract data types (ADTs) and alternatives for implementation of lists, arrays, sets, trees, and graphs. Dynamic and static data structures. Time and space analysis of algorithms for initializing, accessing, searching, sorting, and traversing. F,S
250. Assembly Language Programming. 4 credits. Prerequisite: CSci 160 or knowledge of one high-level language. Computer structure, machine representation of numbers and characters, instruction codes and assembly systems. Includes laboratory. F,S

260. Advanced Programming Languages. 1-3 credits. Prerequisite: CSci 170 or CSci 161 or consent of instructor. Programming in a specific high-level language for students who are already proficient at programming in another high-level language. Course may be repeated for different languages. A maximum of 3 credits may apply to a Computer Science major. A student may not receive credit for both CSci 260 and a 100-level programming course in the same language. On demand.

289. Social Implications of Computer Technology. 3 credits. CSci 120 or 160. An introduction to the effects of computer technology on society and individuals and to ethical problems faced by computer professionals. Topics covered include privacy, the nature of work, centralization versus decentralization and the need for human factors analysis in the development of a new computer system. S

327. Data Communications. 3 credits. Prerequisites: CSci 250 and Math 208. An introduction to the concepts of data transmission, communication hardware and protocols, communication software and the design, performance and management of computer networks. F


365. Organization of Programming Languages. 3 credits. Prerequisite: CSci 242 & 250. Compile and run time requirements of programming languages, parameter passing and value binding techniques. Vector and stack processing. S

370. Computer Architecture. 3 credits. Prerequisite: CSci 250, EE 201, 202. Introduction to hardware methodologies and software extensions to hardware in computers. Some topics on hardware and software selection will be discussed. S

384. Artificial Intelligence. 3 credits. Prerequisite: CSci 242. A survey of the applications and techniques of artificial intelligence. Topics include problem solving paradigms, tree searching, rule-based systems, theorem proving, knowledge representation, natural language processing, image processing, and computer learning. On demand.

397. Cooperative Education. (CCN) 1-8 credits repeatable to 18. Prerequisite: 15 completed credits in CSci excluding CSci 242, 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,SS

399. Topics in Computer Science. (CCN) 1-3 credits. Prerequisite: Consent of instructor. Selected topics in Computer Science which allow the students to study specialized subjects. 3 credits may apply to the Computer Science major and 12 credits to degree requirements. F,S

411. Information Systems. 3 credits. Prerequisite: CSci 351. Representation, storage, and processing of information. Design of an information system to solve a specific problem. On Demand.

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

436. Mathematical Modeling and Simulation. 3 credits. Prerequisites: CSci 161 or 170, Math 166 and a statistics course. A survey of various mathematical applications for digital computers, including the modeling, simulation and interpretation of the solution of complex systems. S

446. Computer Graphics. 3 credits. Prerequisites: CSci 242 and Math 166. Introduction to computer graphics hardware and software. Topics include display technologies, clipping, three-dimensional representations, shading, and color. On Demand.


452. Operating Systems II. 3 credits. Prerequisite: CSci 451. 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. F

463. Software Engineering. 3 credits. Prerequisites: 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, students 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 into executable code. F

467. Introduction to Autonomous Mobile Robotics. 3 credits. Prerequisite: CSci 242. This course will introduce the basics of mobile robotics research with an emphasis on the application of artificial intelligence and empirical slant. Areas covered will be sensors, actuators, movement, navigation, mapping, localization, control architectures and learning methodologies. On Demand.

491. Seminars in Computer Science. (CCN) 1 credit. May be repeated (3 credits maximum). Prerequisite: consent of instructor. A course for advanced students. S-U grading only. F,S

494. Special Projects in Computer Science. (CCN) 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)
Daughtry, Henly, Jacobs, Juntunen-Smith, Twohey, and Whitcomb

The Department of Counseling offers graduate programs leading to the degrees of Master of Arts in Counseling and the Doctor of Philosophy in Counseling Psychology. The M.A. with a school counselor emphasis is accredited by the National Council for the Accreditation of Teacher Education (NCATE). The Ph.D. in Counseling Psychology is accredited by the American Psychological Association and prepares graduates for Psychologist licensure in North Dakota, as well as other states. Course work for the M.A. degree satisfies eligibility requirements for certification as a Counselor, for School Counselor certification, and for Addiction Counselor licensure in North Dakota and other states. The Department is committed to diversity with a particular emphasis on providing graduate training for Native Americans interested in mental health careers.

The masters program provides preparation for counseling practice in community service agencies, universities and colleges, addiction treatment agencies, or schools, depending upon the emphasis of the student. Admission is based on achievement in undergraduate work, particularly during the junior and senior years, scores on the Millers Analogies Test, recommendation letters, and relevant experience. Prospective students must have completed at least twenty semester credits of undergraduate coursework in the behavioral sciences (e.g., psychology, sociology) including abnormal psychology, developmental psychology, and statistics. Students are admitted once a year, with completed applications required by February 1 for admission for the following year.

Typically, 18 students are admitted each year from a pool of 40. 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 private practice. Four to six students are admitted each year. The application deadline is January 1st for admission the following year.

Details of the masters and doctoral degree programs in the Department of Counseling may be found in the graduate section of this catalog. For more information, contact the Chairperson, Department of Counseling (701-777-2729).

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

**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 educational upgrading for individuals already working in criminal justice fields. By incorporating the various disciplines, departments and colleges along with their respective faculty, the program is able to integrate the various approaches and ideals to the study of criminal justice.

**Admission Requirements.** Students 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 CJ 201, CJ 210, Soc 252, and Soc 253 with a minimum grade point average of 2.70 and apply for major status in the College of Arts and Sciences. 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 in the major for one semester. Failure to maintain the requirements for two consecutive semesters will result in dismissal from the Program.

### College of Arts and Sciences

**B.S. IN CRIMINAL JUSTICE STUDIES**

Required 125 credits (36 of which must be numbered 300 or above, and 60 of which must be from a 4 year institution) including:

I. General Education Requirements, see pages 27-31.

II. College of Arts and Sciences Requirements, see page 39.

III. The Following Curriculum:

#### Preadmission Requirements:
- CJ 201..............Introduction to Criminal Justice .........(3)
- CJ 210..............Introduction to Policing .................(3)
- Soc 252..............Criminology .........................(3)
- Soc 253..............Juvenile Delinquency ...............(3)

#### 27 required additional major hours:
- CJ 330..............Criminological Theory ...............(3)
- CJ 353..............Law for Criminal Justice System ...(3)
- Soc 323..............Sociological Research Methods ... (3)
- Soc 326..............Sociological Statistics ............(3)
- Phil 412..............Philosophy of Law ..................(3)
- Pol 306..............American Constitution-Civil Liberties (3)

#### 9 hours from:
- Anth 345..............Forensic Science .................(3)
- Soc 351..............Corrections ..........................(3)
- CJ 350..............Correctional Alternatives ..........(3)
- CJ 351..............Police Administration ..............(3)
- CJ 352..............Criminal Investigation ............(3)
- CJ 361..............Victimology ..........................(3)
- CJ 401..............Administration of Justice ...........(3)
- CJ 452..............Police Role in Society ...............(3)

A concentration in a single supplementary field other than criminal justice studies is also required of all criminal justice majors. This concentration may be met in two ways: (1) a language proficiency of level IV in a modern foreign language; 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

21 credits required:
- CJ 201..............Introduction to Criminal Justice .........(3)
- CJ 210..............Introduction to Policing .................(3)
- Soc 252..............Criminology .........................(3)
- Soc 253..............Juvenile Delinquency ...............(3)

9 additional credits from:
- Anth 345..............Forensic Science ................(3)
- CJ 330..............Criminological Theory ...............(3)
- CJ 350..............Correctional Alternatives ............(3)
- CJ 351..............Police Administration ..............(3)
- CJ 353..............Law for Criminal Justice System ...(3)
- CJ 361..............Victimology ..........................(3)
- CJ 401..............Administration of Criminal Justice System (3)
- CJ 452..............Police Role in Society ...............(3)
- Phil 306..............Philosophy of Law ..................(3)
- Pol 306..............American Constitution-Civil Liberties (3)
- Soc 351..............Corrections ..........................(3)

### Courses

201. Introduction to Criminal Justice, (CCN) 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, criminal justice, corrections, sociology, social welfare, government and pre-law. F

210. Introduction to Policing, (CCN) 3 credits. Prerequisite: CJ 201. Introduces the student to the specific field of law enforcement. Provides an overview of federal, state, and local law enforcement agencies. Reviews the coordination requirements of the system. S

330. Criminological Theory, (CCN) 3 credits. Prerequisite: CJ majors and minors only. This class will provide an overview of a variety of criminological theories. Attention will be directed toward the study of the major theoretical schools of thought which have influenced the discipline of criminology. The basic goal of this course is to help the student develop an understanding of and appreciation for the insights gained by examining crime and criminals through different theoretical frameworks. F,S

361. Victimology, (CCN) 3 credits. Prerequisite: CJ 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 compensation initiatives. The basic goal of this course is to help the student develop an understanding of the impact of victimization on the victim, those associated with the victim, the criminal justice system, and each of us as individuals. F

350. Correctional Alternatives, 3 credits. Prerequisites: Restricted to CJ majors and minors. This course is designed to explore and evaluate intervention strategies developed in the criminal justice system as alternatives to institutional corrections in the sentencing 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: CJ 210. Restricted to CJ 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: CJ majors and minors only. An overview and examination of basic principles and techniques in the criminal investigations procedures and the rules of the law of evidence in criminal court proceedings. F

353. Law for Criminal Justice System, 3 credits. Prerequisite: CJ majors and minors only. An overview of principles of criminal law and criminal procedure as established by common law and contemporary legal codes in the United States. S

397. Cooperative Education, (CCN) 1-8 credits, repeatable to 16. Prerequisite: CJ 491 (1 cr.) and CJ majors and minors only. A practical work experience with an employer closely associated with the student’s academic area. Arranged by mutual agreement among student, department, and employer. Any student registering for CJ 397 will not be eligible to register in CJ 497, Administrative Internship. S/U grading only. F,S,SS

399. Problems in Criminal Justice, (CCN) 1-3 credits. Maximum of 6 credits. Prerequisite: CJ majors and minors only, consent of instructor. Students study special topics under the direction and supervision of a member of the staff; prior consent of instructor is required before enrollment. F,S

401. Administration of Criminal Justice Systems, (CCN) 3 credits. Prerequisites: Restricted to CJ 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 organizational change as applied to the administration of criminal justice. F

452. The Police Role in Society, 3 credits. CJ majors and minors only. The functions and role of police in society with a focus on contemporary issues in police organization and administration. S

494. Readings in Criminal Justice, (CCN) 1-6 credits. Prerequisite: CJ majors and minors only, consent of instructor. Selected readings with oral and written reports. F,S

497. Administrative Internship, (CCN) 2-12 credits. Prerequisite: CJ 494 (1 credit). Prerequisite: CJ majors and minors only, consent of instructor. Prior approval of instructor required before enrollment. S/U grading only. On-the-job training in a criminal justice position with final report and analysis of the agency by the intern. F,S,SS
Cytotechnology

T. Weiland, 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 pathologists and technologists. It specializes in the detection and diagnosis of abnormal human body cells, especially for the diagnosis of cancerous, or pre-cancerous conditions. A cytotechnologist’s work consists primarily of screening cell samples using a microscope, searching for abnormal cells. Once found, marked, and interpreted by the technologist, these cells are reviewed by a pathologist. Cytotechnologists are also trained to be proficient in specimen preparation and 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 cytotechnology since 1967. In 1975 it was upgraded from a non-credit, certificate course to a four-year, degree granting program, and in 1988 expanded from a four to a six-student program. Most recently awarded reaccreditation in 1998, this program currently exists as the only such program in North Dakota. Among the affiliated Western Undergraduate Exchange states (Alaska, Arizona, California, Colorado, Hawaii, Idaho, Montana, Nebraska, New Mexico, Oregon, South Dakota, Utah, Washington, and Wyoming), the only other training offered in this specialty is in California and Utah.

The UNDSMHS Cytotechnology Program (Path 401, Path 402, & Path 403) is a 12-month professional course. It is designed to be taken as either a 5th year, following a baccalaureate in another major, or as the 4th year of a major in Cytotechnology. Enrollment is limited to 6 students per year. University commencement and program graduation both occur at the end of summer session. Students are selected using criteria of academic performance, references, an interview with program officials, and a background in life sciences. Upon completion of the program, graduates are eligible to take the national certifying examination administered by the Board of Registry of the American Society of Clinical Pathologists.

Applications for admission to the Cytotechnology Program should be submitted to the Program Director. To be eligible for enrollment, applicants must meet the following requirements:

(1) They must receive departmental approval.
(2) They must have completed all other required courses.
(3) Upon successful completion of the program (Path 401, 402, 403), they must be eligible to be awarded a bachelor’s degree (or already possess a degree). For those students who already possess a bachelor’s degree, transcripts must indicate a minimum of 20 semester hours of biological science, 8 of chemistry, and 3 of college mathematics.

School of Medicine and Health Sciences

B.S. IN CYTOTECHNOLOGY

Required 125 credits (36 of which must be numbered 300 or above, and 60 of which must be from a 4 year institution) including:

I. General Education Requirements, see pages 27-31.

II. The Following Curriculum:

Anat 204 & 204L .............Anatomy for Paramedical Personnel and Laboratory ..............................................(3-5)
Biol 150/150L, 151/151L...General Biology I & II and Laboratories ...........................................(8)
Biol 369 .............Histology ...........................................................................................................................................(4)

12 hours from:
Biol 341 .............Cell Biology .......................................................................................................................(4)
Biol 357 .............Genetics .................................................................................................................................(3)
Biol 364 .............Parasitology ...........................................................................................................................(4)
Biol 370 .............Vertebrate Zoology ...................................................................................................................(2)
Biol 371 .............Anatomy and Adaptations Laboratory ...................................................................................(2)
Biol 470 .............Biometry ......................................................................................................................................(3)
Path 325 .............Hematology ....................................................................................................................................(5)

4 hours from:
MBio 202 + 202 L ...Introduction to Medical Microbiology and Laboratory .................................................(5)

 MBio 302 + 302 L ....General Microbiology and Laboratory ..................................................(4)

4 hours from:
Phy 301 .............Mechanics of Human Physiology .........................................................................................(4)
Biol 442 .............Physiology of Organs and Systems ...............................................................................(4)

8 hours from:
Chem 121, 121L ...General Chemistry I and Laboratory .............................................................................(4)
Chem 122, 122L ...General Chemistry II and Laboratory ..........................................................................(4)
*Chem 116 .............Introduction to Organic & Biochemistry ...........................................................................(4)
Chem 240, 240L ...Survey of Organic Chemistry and Laboratory .........................................................(5)
BioCh 301 .............Biochemistry Lecture ...........................................................................................................(3)
* (Students who elect to take BioCh 301 should take Chem 116, but must take Chem 122 and 240.)

3 hours from:
Math 103 .............College Algebra ..................................................................................................................(3)
Math 104 .............Finite Mathematics ...............................................................................................................(3)

2 hours from:
Path 330 .............Qualitative Management .................................................................................................(3)
Mgmt 305 .............Managerial Concepts ...........................................................................................................(2)

4 hours from:
CSci 101 .............Introduction to Computers .....................................................................................................(2)
CSci 120 .............Computer Programming I ...................................................................................................(3)
CSci 170 .............Computer Programming II ..................................................................................................(3)
Phys 211/211L ...College Physics I and Laboratory .......................................................................................(4)
Phys 212/212L ...College Physics II and Laboratory .........................................................................................(4)

III. Cytotechnology Program, professional phase: (Senior year, 12 months)
Path 401 .............Diagnostic Cytology I .............................................................................................................(15)
Path 402 .............Diagnostic Cytology II .............................................................................................................(15)
Path 403 .............Diagnostic Cytology III ..........................................................................................................(10)

The Cytotechnology Program is part of the Pathology (Path) department. The Pathology courses for Cytotechnology majors are listed below:

401. Diagnostic Cytology I. 15 credits. Full day, integrated lecture, tutorial, laboratory course introduces exfoliative cytopathology of the female genital tract. The student learns principles and microscopic skills involved in screening/diagnosing pap test samples in the medical laboratory. Prerequisites: 20 hours biology sciences, 8 hours chemistry, 3 hours math; including Biology 101, 102, and 369; Anatomy 204 and departmental approval. F

402. Diagnostic Cytology II. 15 credits. Full day, integrated lecture, tutorial, laboratory course introduces cytopathology of major body organs. The student learns principles and microscopic skills involved in preparing/diagnosing body fluid and fine needle aspiration samples in the medical laboratory. Prerequisites: Path 401 and departmental approval. S

403. Diagnostic Cytology III. 10 credits. Full day, 12 week clinical practicum held at UND or at a clinical affiliate cytology laboratory. Course is centered on the reinforcement of principles and the practice of skills learned in Path 401 and Path 402. Prerequisite: Pathology 402 and Departmental approval.

Economics (Econ)

D. Ramsett (Division Director), Bagheri, Biederman, Blackwell, O’Neill, Rhine, 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 Faculty falls into several important and interdependent areas. The faculty offer 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 economics, whether at regional, national or international levels. The Economics Faculty carries out research objectives, consistent with those reported by the University and the College of Business and Public Administration, by completing research leading to publication in professional journals and other research outlets; and, as needed, by providing service-related and contracted research to the city, region and state. The Economics Faculty provides services to the college, university, community, region, the state and professional organizations. This includes: committee service, provision of appropriate expertise in matters relevant to the economics profession; memberships in civic organizations; memberships in professional organizations as well as other relevant service related activities.

All programs in Economics include the necessary undergraduate economics courses for students who intend to pursue graduate level study. In addition, the major in Business Economics and the major in Economics offer a quantitative track which is recommended for students preparing for graduate study in Economics or Actuarial Science.

**College of Business and Public Administration**

The major in Business Economics is offered through the College of Business and Public Administration. This program emphasizes the business firm — integrating economics with related areas in marketing, management, accounting, finance, and quantitative analysis. Students who complete a major in Business Economics possess a comprehensive background in the basic foundations of a business as well as the analytical skills in economics increasingly required to be successful in the business world at local, regional, national and international levels.

All B.B.A. candidates must fulfill the College of Business and Public Administration degree requirements.

**B.B.A. WITH MAJOR IN BUSINESS ECONOMICS**

Required 125 credits (36 of which must be numbered 300 or above, and 60 of which must be from a 4 year institution) including:

I. General Education Requirements, see pages 27-31.

II. College of Business and Public Administration, see page 42 and including:

- Business Administration Requirements:
  - Act 200, 201. Elements of Accounting I & II ........................................ (6)
  - Act 315. Business in the Legal Environment .............................................. (3)
  - BVED 217. Fundamentals of Management ................................................. (3)
  - Comm 110. Fundamentals of Public Speaking ............................................. (3)
  - Fin 310. Principles of Finance ................................................................. (3)
  - Math 104. Finite Math ................................................................................ (3)
  - Math 146. Applied Calculus I ........................................................................ (3)
  - Mgmt 300. Principles of Management ............................................................ (3)
  - Mgmt 310. Production Management ............................................................... (3)
  - Mgmt 475. Strategic Management ................................................................. (3)
  - Mrkt 305. Marketing Foundations ................................................................. (3)
  - Pol 115. American Government I ................................................................. (3)

Elect one course from the following:

- Anth 121. Cultural Anthropology ................................................................. (3)
- Psyc 111. Introduction to Psychology ............................................................ (3)
- Soc 110. Introduction to Sociology ............................................................... (3)

Required courses:

- Act 218. Computer Applications in Business ................................................ (2)
- Econ 201. Principles of Microeconomics ....................................................... (3)
- Econ 202. Principles of Macroeconomics ...................................................... (3)
- Econ 210. Intro to Business and Economic Statistics ..................................... (3)
- Econ 303. Money and Banking ...................................................................... (3)
- Econ 308. Intermediate Microeconomic Theory ............................................ (3)
- Econ 309. Intermediate Macroeconomic Theory & Policy ............................ (3)
- Econ 400. History of Economic Thought ...................................................... (3)

Required Economics courses (6 hours from the following):

- Econ 370. Issues in Applied Microeconomics .............................................. (3)
- Econ 380. Intermediate Business and Econ Statistics ................................. (3)
- Econ 395. Principles of Banking ................................................................. (3)
- Econ 310. 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 349. International Money and Finance .............................................. (3)
- Econ 355. Government Regulation of Business .......................................... (3)
- 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 166. Calculus II .............................................................. (3)
- Math 265. Calculus III ................................................................. (3)
- Math 266. 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)

** More than 6 hours of electives from Econ 395, 496, 497 may count toward the major requirements.

**College of Arts and Sciences**

The B.B.A. with major in economics is offered through the College of Arts and Sciences. This is a flexible program for students who wish to attain a comprehensive background in Economics and while allowing them the opportunity to expand into related disciplines such as Mathematics, Statistics, Journalism and the Social Sciences. The major in Economics is excellent preparation for advanced graduate level study in Economics or law.

Students who are interested in obtaining a basic background in Economics to complement their chosen major course of study may elect a minor in Economics offered through the College of Arts and Sciences.

**B.A. WITH MAJOR IN ECONOMICS**

Required 125 credits (36 of which must be numbered 300 or above and 60 of which must be from a 4 year institution) including:

I. General Education Requirements, see pages 27-31.

II. All students must complete the following 36 credits:

- Required Economics courses:
  - Econ 201. Principles of Microeconomics ................................................ (3)
  - Econ 202. Principles of Macroeconomics ................................................ (3)
  - Econ 210. Introduction to Business & Economic Statistics ........................ (3)
  - Econ 303. Money and Banking ................................................................. (3)
  - Econ 308. Intermediate Microeconomic Theory ....................................... (3)
  - Econ 309. Intermediate Macroeconomic Theory & Policy ......................... (3)
  - Econ 400. History of Economic Thought ................................................ (3)

Required Economics courses (6 hours from the following):

- Econ 370. Issues in Applied Microeconomics ........................................... (3)
- Econ 380. Current Issues in Global Economics ......................................... (3)
- Econ 409. Current Issues in Macroeconomic Policy ................................... (3)

(Students who seek a Quantitative Emphasis may, with approval from the department, substitute Econ 310, 311, or 416 for the above listed courses.)

Required Economics electives (choose at least 9 hours from the following):

- Econ 305. Principles of Banking ............................................................... (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 349. International Money and Finance ........................................... (3)
- Econ 355. Government Regulation of Business .......................................... (3)
- 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 166. Calculus II .............................................................. (3)
- Math 265. Calculus III ................................................................. (3)
- Math 266. 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)

** More than 6 hours of electives from Econ 395, 496, 497 may count toward the major requirements.

**MINOR IN ECONOMICS**

Required 20 credits including:

- Econ 201. Principles of Microeconomics ................................................ (3)
- Econ 202. Principles of Macroeconomics ................................................ (3)
- Econ 303. Money and Banking ................................................................. (3)
- Econ 308. Intermediate Microeconomic Theory ....................................... (3)
- Econ 309. Intermediate Macroeconomic Theory & Policy ......................... (3)

Economics Electives ................................................................. (3)

Economics Electives ................................................................. (3)
Courses

105. Elements of Economics. (CCN) 3 credits. Survey of economic principles for students planning no 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 have been completed or audited. Not available to students in the College of Business and Public Administration.) S,F,S

201. Principles of Microeconomics. (CCN) 3 credits. Open to freshmen. Pre- or corequisite: Math 103 or 104 or equivalent. Nature, method, and scope of Economic analysis: economic scarcity, resources, specialization and division of labor, supply and demand, production and cost, technology, product and resource market structures, distribution of income, and international trade. F,S

202. Principles of Macroeconomics. (CCN) 3 credits. Prerequisite: Econ 201. Nature, method, and scope of economic analysis: aggregate levels of income and employment, inflation, monetary and fiscal policy, the role of the U.S. economy as part of a world economic system. 210. Introduction to Business and Economic Statistics, 3 credits. Prerequisite: Math 103 or 104, or equivalent. Descriptive statistics; probability distributions; sampling distributions; statistical inference for means and proportions; hypothesis testing; simple regression and correlation; non-parametric statistics. F,S

303. Money and Banking, 3 credits. Prerequisite: Econ 201 and 202. Nature of our current Monetary system; functional analysis of commercial bank operations; limits to credit expansion; alternative theories of the value of money; monetary and fiscal policies for control of the business cycle; powers of the Federal Reserve System and the Treasury; mechanics of international payment; balance-of-payments and other problems. F,S

305. Principles of Banking, 3 credits. Prerequisite: Econ 303. This course introduces the students to basic principles of banking governing loans, investments, deposits, liabilities, and capital. Consideration is given to the areas of liquidity, profitability, and capital adequacy as they relate to regulatory standards. Additional topics include bank organization, performance, and scope of services. F

308. Intermediate Microeconomic Theory, 3 credits. Prerequisite: Econ 201 and 202. Theory of demand, production, and cost; price determination under alternative market structures; general equilibrium and economic welfare; analysis of market failure; applications to public policy. (Core requirement for students planning advanced study in Economics.) F

309. Intermediate Macroeconomic Theory and Policy, 3 credits. Prerequisite: Econ 201 and Econ 202. A framework for studying national income, employment, and the general price level is developed. Theoretical perspectives on the National Income and Product accounts, expenditures in the public and private sectors of the economy, and supply and demand for money, labor and other resources are surveyed. Macroeconomic Theory is then applied to a study of monetary, fiscal, incomes, and other policies intended to influence unemployment, inflation, balance of international financial payments, and economic growth. (Core requirement for students planning advanced study in Economics.) S

310. Intermediate Business and Economic Statistics, 3 credits. Prerequisites: Econ 210, Math 204 or equivalent, BVED 217 or equivalent. Estimation and interpretation of models widely used in Business and Economics. Topics include multiple regression, 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 examination of the nature and theory of cyclical changes in economic activity; practical applications of direct and indirect methods of forecasting economic trends at various levels of aggregation. S

324. Public Finance, 3 credits. Prerequisite: 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 countries. 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. Additionally, 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, including GATT, NAFTA, and the European Community. F

331. Comparative Economic Systems, 3 credits. Prerequisites: Econ 201 and Econ 202. Theoretical foundation of capitalism; comparative role of the price mechanism under 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. Co-operative Education, 1-4 credits. Repeatable to 6 credits. Prerequisite: Permission of departmental Co-operative 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. Prerequisites: Econ 201 and 202. Economic basis for gain in international trade; capital and population movements; international disequilibrium and the process of balance-of-payments adjustments; tariffs, underdeveloped countries. F,S

341. Labor Economics and Labor Relations, 3 credits. Prerequisite: Econ 201 and 202. A survey of the nature and causes of the economic problems of the American wage and salary earner and of the attempts of wage earners and society, through organizations and legislation, to alleviate these problems. The course comparatively surveys the labor movements, economic theory and developments, and the effects of governmental influences on wages and employment. Particular emphasis will be placed on the law of industrial relations, employment and income access, and the adjustment of labor dispute. F

355. Government Regulation of Business, 3 credits. Prerequisite: Econ 201 and 202. An exploration of the many ways that federal and state governments regulate business 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 covered 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.

380. Current Issues in Global Economics, 3 credits. Prerequisites: Econ 201 and 202. This course covers issues relating to trade, foreign investment, trading blocs, exchange rate changes, development issues, external debt of developing countries, investment in infrastructure and education and health, as well as development vs. environment (or sustainable development). The issues considered will vary from year to year. On demand.

395. 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. A broad overview of the major schools of thought including Mercantilist, Physiocrat, Classical, Marxist, Socialist, Historical, Austrian, Neoclassical, Institutional, Keynesian, and Monetarist. The coverage includes value theory, income/expenditure theory, 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. S

409. Current Issues in Macroeconomic Policy, 3 credits. Prerequisite: Econ 303. This course focuses on the conduct of macroeconomic policy, especially as it pertains to the operations and functions of the nation’s financial system. The two basic tools of macroeconomic policy — monetary policy and fiscal policy — are studied from historical, contemporary, and theoretical perspectives. Emphasis is placed on recent developments in the theory and practice of macroeconomic policy; special emphasis is placed on the role of monetary policy as it affects the operations of financial markets and financial institutions. S

414. Managerial Economics, 3 credits. Prerequisites: Econ 210, 308; Math 204 or equivalent; BVED 217 or equivalent. A synthesis relating economic theory, statistics, and mathematics to pricing, output, and resource allocation decisions by business firms. S

416. Mathematics for Economists, 3 credits. 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 functions, 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 of teaching economics; techniques for integrating economics into social studies curriculum. On demand.

438. International Money and Finance, 3 credits. Prerequisite: Econ 303. Identification of key international financial concepts and analysis of their relationships in the international money and capital markets; determination of the balance of payments and exchange rates; and examination of alternative organizations of the international monetary system. On demand.

439. 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 adviser in planning the internship with an approved cooperating institution. F,S,SS

495. Research in Economics, 1-3 credits. Research work and use of original documentation, including of material available on special topics and bibliographies. Familiarizing the student with government publications and other material available for study of economic problems. 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 submitted. 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 pre-requisites 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. Benjamin (Chair), Bilodeau, Johnson, Khalifa, 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.

In addition to the traditional broad electrical engineering program, the department makes two focus areas available to students with interest in Aerospace or Computer Engineering. These focus programs are listed below in their entirety.

School of Electrical Engineering and Mines

B.S. IN ELECTRICAL ENGINEERING

Required 136 credits (36 of which must be numbered 300 or above and 60 of which must be from a 4 year institution) including:

I. General Education Requirements, see pages 27-31.

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 121 &amp; 121L</td>
<td>General Chemistry I and Laboratory</td>
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</tr>
<tr>
<td>Econ 201</td>
<td>Principles of Microeconomics</td>
<td>(3)</td>
</tr>
<tr>
<td>EE 101</td>
<td>Introduction to Electrical Engineering</td>
<td>(1)</td>
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<tr>
<td>EE 201</td>
<td>Introduction to Digital Electronics</td>
<td>(2)</td>
</tr>
<tr>
<td>EE 202</td>
<td>Electrical Engineering Lab</td>
<td>(1)</td>
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<tr>
<td>Engl 110</td>
<td>Composition I</td>
<td>(3)</td>
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<td>Engl 125</td>
<td>College English Writing</td>
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<tr>
<td>Engr 101</td>
<td>Graphical Communication</td>
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<tr>
<td>Math 165, 166</td>
<td>Calculus I, II</td>
<td>(4)</td>
</tr>
<tr>
<td>Arts and Humanities (See page 29)</td>
<td></td>
<td>(3)</td>
</tr>
</tbody>
</table>

Sophomore Year

| Engr 201 | Statics | (3) |
| EE 206 | Circuit Analysis | (3) |
| EE 304 | Computer Aided Measurement and Controls | (3) |
| EE 306 & 307 | Circuits Laboratory I & II | (1) | (1) |
| EE 313 | Linear Electric Circuits | (3) |
| Math 265 | Calculus III | (4) |
| Math 266 | Elementary Differential Equations | (3) |
| Phys 251, 252 | University Physics I, II | (4) | (4) |
| Engineering Science Elective* | | (3) |
| Social Science (See page 28)** | | (3) |

Junior Year

| EE 308 | Electronics Laboratory I | (2) |
| EE 314 | Signals and Systems | (3) |
| EE 316 | Electric & Magnetic Fields | (4) |
| EE 321 | Electronics I | (3) |
| EE 401 | Elective Drives | (3) |
| EE 405 | Control Systems I | (3) |
| EE 409 | Distributed Networks | (2) |
| EE 421 | Electromagnetics II | (3) |
| EE 425 | Electronics Laboratory II | (1) |
| Math 353 | Advanced Engineering Math I | (3) |
| Phys 253 | University Physics III | (4) |
| Technical Elective** | | (3) |

Senior Year

| EE 318 | Engineering Data Analysis | (2) |
| EE 403 | Senior Laboratory | (1) |
| EE 480 & 481 | Senior Design I & II | (1) | (2) |
| EE 482 | Technical Presentation & Portfolio | (3) |
| (or) A GER Communication Course | | |
| Phd 370 | Ethics in Engineering and Science | (3) |
| Engineering Science Elective*** | | (3) |
| Technical Electives** | | (3) |
| Electrical Engineering Elective*** | | (6) |
| Social Science (See page 28)** | | (3) |


University of North Dakota
## B.S. IN ELECTRICAL ENGINEERING  
(with a Computer Science Focus)

(Requires a Minor in both Computer Science and Mathematics)

Required 142 credits (36 of which must be numbered 300 or above, and 60 of which must be from a 4 year institution) including:

I. General Education Requirements, see pages 27-31.

II. The Following Curriculum:

### Freshman Year

<table>
<thead>
<tr>
<th>Course</th>
<th>Credit (Semester)</th>
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<tbody>
<tr>
<td>Chem 121 &amp; 121L</td>
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<tr>
<td>CSci 160</td>
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<td>EE 101</td>
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<td>EE 201</td>
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<td>Math 165, 166</td>
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<td>Phys 251</td>
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<td>CSci 161</td>
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<td>EE 304</td>
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<td>EE 313</td>
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<tr>
<td>Math 208</td>
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<td>Math 265</td>
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<td>Phys 252</td>
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### Sophomore Year

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<th>Credit (Semester)</th>
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<tr>
<td>CSci 327</td>
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<td>CSci 351</td>
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<td>EE 314</td>
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<td>EE 316</td>
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<td>EE 452</td>
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<td>3</td>
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<tr>
<td>Math 353</td>
<td>3</td>
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<tr>
<td>EE 480, 481</td>
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<td>EE 482</td>
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<td>CSci 463</td>
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### Junior Year

<table>
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<tr>
<th>Course</th>
<th>Credit (Semester)</th>
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<tbody>
<tr>
<td>EE 308</td>
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<td>CSci 463</td>
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### Senior Year

<table>
<thead>
<tr>
<th>Course</th>
<th>Credit (Semester)</th>
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<tbody>
<tr>
<td>EE 318</td>
<td>2</td>
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<tr>
<td>EE 428</td>
<td>3</td>
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<td>EE 452</td>
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<td>EE 480</td>
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<tr>
<td>(or) A GER Communication Course</td>
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<tr>
<td>Phil 370</td>
<td>3</td>
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</tbody>
</table>

* Must include a world culture course (can be either A&H or SS + designation).

** Consent of academic adviser. Must be aerospace related.

### Prerequisites

- Two courses out of EE 451, EE 452, CSci 327, EE/CSci Elective.

## B.S. IN ELECTRICAL ENGINEERING  
(with an Aerospace Focus)

(Includes a Minor in Mathematics)

Required 140 credits (36 of which must be numbered 300 or above, and 60 of which must be from a 4 year institution) including:

I. General Education Requirements, see pages 27-31.

II. The Following Curriculum:

### Freshman Year

<table>
<thead>
<tr>
<th>Course</th>
<th>Credit</th>
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<tbody>
<tr>
<td>Avit 102</td>
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<td>Chem 121/121L</td>
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<td>Econ 201</td>
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<td>EE 101</td>
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<td>EE 201</td>
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<tr>
<td>EE 304</td>
<td>3</td>
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<tr>
<td>EE 306 &amp; 307</td>
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<td>EE 313</td>
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<td>EE 451</td>
<td>3</td>
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<td>EE 452</td>
<td>3</td>
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<td>EE 480</td>
<td>1</td>
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<tr>
<td>EE 482</td>
<td>1</td>
</tr>
<tr>
<td>CSci 463</td>
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### Sophomore Year

<table>
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<th>Course</th>
<th>Credit</th>
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<tbody>
<tr>
<td>Avit 221</td>
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<tr>
<td>Avit 323</td>
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<td>EE 206</td>
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<td>EE 304</td>
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<td>EE 313</td>
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<td>EE 316</td>
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<td>EE 401</td>
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<td>Engr 201</td>
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<td>Math 351</td>
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<td>ME 306</td>
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<td>ME 341</td>
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<td>Phys 253</td>
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<td>EE 318</td>
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<td>EE 482</td>
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<td>CSci 463</td>
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### Senior Year

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<thead>
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<tbody>
<tr>
<td>EE 318</td>
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<td>EE 480</td>
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<td>EE 482</td>
<td>1</td>
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<tr>
<td>CSci 463</td>
<td>3</td>
</tr>
</tbody>
</table>

* Must include a world culture course (can be either A&H or SS + designation).

** Consent of academic adviser. Must be aerospace related.

### Prerequisites

- Two courses out of EE 401, EE 405, Avit 323, EE Elective.

## 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

2 credits. Co-requisite: EE 202. Introduction to the fundamentals of digital circuits design. Logic gates; Boolean algebra; Karnaugh maps; Mathematical operations; Flip Flops; Counters, F/S
202. Electrical Engineering Laboratory. 1 credit. Co-requisite: 201. Introduction to design and implementation of digital electronic circuits. F,S

206. Circuit Analysis. (CCN) 3 credits. Prerequisite: Math 166*. Co-requisite: Math 265. Introduces the foundations of electrical engineering, applying these concepts in developing the fundamentals of energy conversion, electronics and circuit theory. F,S

208. Computer Aided Measurement and Controls. 3 credits. Prerequisites: Math 165. The principles of the use of a computer in a measurement and control environment are presented. Software is designed to drive interfaces to perform measurement and control algorithms. The software and concepts presented are evaluated in a laboratory environment. F


307. Circuits Laboratory II. 1 credit. Prerequisite: EE 306. Co-requisite: EE 313. Experimental circuit analysis and proper uses of laboratory equipment. S

308. Electronics Laboratory II. 2 credits. Prerequisite: EE 307. Co-requisite: EE 321. Practical application and design using theory studied in concurrent electrical engineering courses. F

313. Linear Electric Circuits. 3 credits. Prerequisite: EE 206*. Corequisites: Math 266 and Phys 252*. Linear electric circuits in the steady state and transient conditions; two-port circuits; Fourier Series single and polyphase systems. F,S

315. Signals and Systems. 3 credits. Prerequisites: EE 313*, Math 266, and Phys 252*. 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

401. Electric and Magnetic Fields. 4 credits. Prerequisites: Math 266 and Physics 252*. Field produced by simple distributions of electric charges and magnetic poles, field mapping and application to engineering problems. F

318. Engineering Data Analysis. 2 credits. Prerequisite: Math 335, EE 313. This course will provide undergraduate electrical engineering students with an understanding of the principles of engineering data analysis using basic probability theory and basic statistics theory. Students will have the opportunity to apply these concepts to actual engineering applications and case studies. 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. Electric Drives. 3 credits. Prerequisite: EE 314, EE 316, and EE 321. A study of electric drives and their electronic controls, to include relevant power electronic theory, computer control, and laboratory implementation. 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. F,S

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,S

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 techniques. S

409. Distributed Networks. 2 credits. Prerequisites: EE 313 and 316. Fundamentals of power and communications transmission lines. S

410. Communications Engineering. 3 credits. Prerequisite: EE 314. Mathematical definition of random and deterministic signals and a study of various modulation systems. On demand. F

411. 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

429. 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 robotic’ 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 planar waveguides, analysis of microwave networks and components using scattering matrices, analysis of periodic structures, transmission and cavity type filters, high frequency effects, microwave oscillators, amplifiers, and microwave measurement techniques. On demand.

451. Computer Hardware Organization. 3 credits. Prerequisites: EE 201 and 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 analog systems. 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.


460. Senior Design I. 1 credit. Prerequisites: Three courses out of EE 401, 405, 409, 421, EE elective or as specified in the focus programs. Design methodologies, proposal writing, teamwork, communication skills. A complete proposal for senior design and preliminary work must be completed. F,S

481. 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

English Language and Literature (Engl)

R. Lewis (Chair), Anderegg, Beard, Carson, Coleman, Dixon, Donaldson, Hampsten, Huang, Koprince, Marshall, McKenzie, J. Meek, M. Meek, O’Donnell, Rankin, Robison, Salzer, 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, among other fields.

English 271 and 272 (3 hours each) are courses at the sophomore level recommended for English majors. The courses require a reasonable degree of ability to analyze orally and in writing a wide variety of literary texts. These courses are introductory to all other literature courses. Students who become English majors after their sophomore year or after having taken 221, 222, and 224, or their equivalents, may substitute those courses with the approval of their advisors.

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:
   - 241, 242 World Literature I & II
   - 299 Special Topics (when applicable and approved), e.g., The Twenties
   - 301, 302 Survey of English Literature
   - 303, 304 Survey of American Literature
   - 357 Women Writers and Readers (when applicable and approved)
   - 365 Black American Writers (when applicable and approved)
   - 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:
   - 299 Special Topics (when applicable and approved)
   - 315, 316 Shakespeare
   - 415 Special Topics in Literature (when applicable and approved), e.g., Keats, Melville, Dickinson, Faulkner

3. Generic courses, including:
   - 221 Introduction to Drama
   - 222 Introduction to Poetry
   - 224 Introduction to Fiction
   - 225 Introduction to Film
   - 299 Special Topics (when applicable and approved), e.g., The Modern Short Story
   - 320 Studies in American Fiction

   321 Studies in American Poetry
   322 Studies in American Drama
   330 Studies in English Fiction
   331 Studies in English Poetry
   332 Studies in English Drama
   357 Women Writers and Readers (when applicable and approved)
   359 Young Adult Literature
   365 Black American Writers (when applicable and approved)
   367 American Indian Literature (when applicable and approved)
   369 Literature and Culture (when applicable and approved)
   409 Art of Cinematic Drama
   415 Special Topics in Literature (when applicable and approved), e.g., Modern European Drama, Russian Fiction, Twentieth Century Lyric Poetry

4. Thematic courses, including:
   - 299 Special Topics (when applicable and approved), e.g., The Literature of the Sea, The Faust Legend in Modern Literature
   - 357 Women Writers and Readers (when applicable and approved)
   - 359 Young Adult Literature
   - 365 Black American Writers (when applicable and approved)
   - 369 Literature and Culture (when applicable and approved)
   - 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
   - 209 Introduction to Linguistics
   - 299 Special Topics (when applicable and approved)
   - 309 Modern Grammar
   - 370 Language and Culture
   - 417 Special Topics in Language, e.g., Transformational Grammar, Classical Rhetoric
   - 419 Teaching English as a Second Language
   - 442 History of the English Language

6. Writing courses, including:
   - 308, 408 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)

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**College of Arts and Sciences**

**B.A. WITH MAJOR IN ENGLISH**

Required 125 credits (36 of which must be numbered 300 or above, and 60 of which must be from a 4-year institution) including:

I. General Education Requirements, see pages 27-31.

II. The Following Curriculum:

   A. Major Requirements — 36 hours including 5-6 hours of introductory literature, preferably:
      - Engl 271 .........................Literary Analysis I .................................(3)
      - Engl 272 .........................Literary Analysis 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. Twenty hours must be at the 300 and 400 level .........................(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.

**B.A. WITH MAJOR IN ENGLISH**

**Teacher Certification**

Students seeking secondary teacher certification in English must complete the following program:

The English major (described above), including level-four proficiency in a foreign language

Required in the major: English 309 and either English 203 or 308

Recommended in the major: English 209, 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. 48).
The Program in Secondary Education (see p. 155), to include:
T&L 400  Methods and Materials of Teaching Reading and Language (fall only)
T&L 400  Methods and Materials of Teaching Writing and Language (spring only)
A full semester T&L 487 (student teaching), normally taken during the semester of graduation
English majors seeking secondary certification must have an advisor in both the English Department and the Department of Teaching of Learning.

MINOR IN ENGLISH
Required: 20 hours, including 5-6 hours of introductory literature, preferably:
Engl 271  Literary Analysis I ....................................................(3)
Engl 272  Literary Analysis 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

110. College Composition I. (CCN) 3 credits. Immersion in college level critical reading and expository writing, emphasizing revision and careful preparation of manuscripts. Does not apply to English major or minor. F,S
120. College Composition II. (CCN) 3 credits. Prerequisite: Engl 110. Continues the work of College Composition I but emphasizes the production of college level research and writing. Does not apply to English major or minor. F,S
125. Technical and Business Writing. (CCN) 3 credits. Prerequisite: Engl 110. Continues the work of College Composition I but emphasizes the production of college level research and writing applicable to business and technical fields. Does not apply to English major or minor. F,S
161. American Indian Languages I. 3 credits. Introductory study of one of the Native American languages of North Dakota. Repeatable for different languages. F,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
209. Introduction to Linguistics. 3 credits. An introduction to the nature of language, phonology, grammar, semantics, and historical, geographical, social, and developmental aspects of language. F,S
211. Introduction to Drama. (CNN) 2 credits. Drama studied as a literary type, for understanding and for critical appreciation. F,S
222. Introduction to Poetry. (CCN) 2 credits. Poetry studied as a literary type, for understanding and for critical appreciation. F,S
224. Introduction to Fiction. (CCN) 2 credits. Fiction studied as a literary type, for understanding and for critical appreciation. F,S
225. Introduction to Film. (CCN) 2 credits. The study of film drama, concentrating on appreciation and evaluation of motion pictures. F,S
241, 242. World Literature I & II. (CCN) 6 credits. Great literature of western Europe, or in the European tradition, studied with emphasis upon intellectual and cultural values. F,S
265. Native American Literature. (CCN) 3 credits. Writings by and about American Indians, studied for understanding and critical appreciation. S
271, 272. Literary Analysis I and II. (CCN) 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
299. Special Topics. (CCN) 1-4 credits. A course for undergraduate students, on topics varying from term to term. F,S
301, 302. Survey of English Literature. 6 credits. English literature from its beginnings to the 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. Advanced Composition I. 3 credits. Prerequisite: English 120 or permission of department. Advanced writing. Emphasis on the rhetorical appeals and style. F,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: 224, 271 or 272. Repeatable when topics vary. F
321. Studies in American Poetry. 3 credits. Prior course recommended: 222, 271, or 272. Repeatable when topics vary. F
322. Studies in American Drama. 3 credits. Prior course recommended: 221, 271 or 272. Repeatable when topics vary. S
330. Studies in English Fiction. 3 credits. Prior course recommended: 224, 271 or 272. Repeatable when topics vary. S
331. Studies in English Poetry. 3 credits. Prior course recommended: 222, 271 or 272. Repeatable when topics vary. S
332. Studies in English Drama. 3 credits. Prior course recommended: 221, 271 or 272. 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. S/U 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
359. Young Adult Literature. 3 credits. The study of literature for and about young adults (from the middle school through the high school years), examining the social, historical, and aesthetic significance of the works. S/2
365. Black American Writers. 3 credits. Writing by Black Americans studied for understanding and critical appreciation. S
369. Language 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 209. Interaction of language with other cultural subsystems. (Same course as Anthropology 370.) S
394. Independent Study. (CCN) 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
401. Studies in Medieval Literature. 3 credits. A course in the literature of England in the medieval period. Repeatable when topics vary. F/2
403. Studies in Colonial American Literature. 3 credits. A course in the literature of America in the colonial period. Repeatable when topics vary. F/2
404. Studies in Late Renaissance Literature. 3 credits. A course in the literature of the English Renaissance, 1603-1660. Repeatable when topics vary. F/2, S/2
406. Studies in Nineteenth Century Literature. 3 credits. A course in literature in English of the 19th Century. Repeatable when topics vary. F,S
408. Advanced Composition II. 2 credits. Advanced writing. Emphasis on the conventions of particular kinds of writing such as research reporting, writing for teachers, and article writing. English 308 recommended before English 408. S
409. Art of the Cinema. 3 credits. Prerequisite: English 225. An investigation of the esthetics of the film drama with a concentration on the theory and evaluation of the medium. This course examines the relationship 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
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: Engl 207. An introduction to the principles of teaching English as a second language, with special attention to tutoring. F/2
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
489. Senior Honors Thesis. 1 to 15 credits; total not to exceed fifteen. Prerequisite: consent of the Department and approval of the Honors Committee. Supervised independent study culminating in a thesis. F,S

Entrepreneurial Studies

(Entr)

Courses

201. The Entrepreneur and the Economy. 3 credits. This course is designed for students not enrolled in the College of Business and Public Administration who have an interest in business and the business world. This course introduces students to the basic characteristics of the world of business, including the political, social and economic systems in which a business functions, the characteristics of a business, the creation of a business and issues dealing with the world of business. F,S
Family Medicine

(FMed)

W. Mann (Chair), Baird, Billings, Burrell, Cariveau, Curley, Demers, Delorme, Duke, Emery, Greek, Halvorson, Hartson, Kringlie, Mattson, McBride, Mitchell, Murphy, Olson, Paine, Rudd, Rubeck, Schauer, Smith, Tangedahl, Tsichyja, and Ziegler

The Department of Family Medicine offers the B.S. in Athletic Training degree under the auspices of the Division of Sports Medicine. This degree program was formally approved by the North Dakota Board of Higher Education in September, 1990. Athletic Training was recognized as an allied health field by the AMA in June, 1990.

The degree program entails a four-year curriculum designed to prepare the student for an entry-level position in the field of athletic training. Upon completion of the curriculum, the student will be prepared to take the NATA Certification Examination.

Admission to the curriculum is competitive. Students are selected using the following criteria: academic performance (2.75 GPA minimum), departmental application, references, 100 hours of directed observation, and completion of FMed 101, 207L, 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 pursuing the Athletic Training degree are encouraged to utilize the electives in this program to prepare for advanced study. Suggested areas of study include: post-graduate study in exercise science, physical therapy or medicine. The Athletic Training program offered is accredited by the Committee for Accreditation of Allied Health Education Programs (CAAAHPE).

School of Medicine

B.S. IN ATHLETIC TRAINING

Required 129 credits (36 of which must be numbered 300 or above, and 60 of which must be from a 4 year institution) including:

I. General Education Requirements, see pages 27-31.

II. The following curriculum:

Pre-Admission Courses

The student must earn C or better in the following courses to be admitted in the program.

Biol 150/150L General Biology I and Laboratory

The student must earn B or better in the following courses to be admitted in the program.

FMed 101 Orientation to Athletic Training

FMed 207 Prevention and Care of Athletic Injuries

FMed 207L Prevention and Care of Athletic Injuries Laboratory

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:

HPER 310 First Aid and CPR

Core Courses

The following core courses are required for BS in Athletic Training:

** Chem 121, 121L General Chemistry I/Laboratory

Comm 110 Fundamentals of Public Speaking

CSci 101 & 101L Introduction to Computer Science and Laboratory

** Engl 110 College Composition I

** Engl 120 College Composition II

OF 205 Medical Terminology

** Phys 161, 161L Introductory College Physics I/Laboratory

** Phys 162, 162L Introductory College Physics II/Laboratory

** Psych 111 Introduction to Psychology

** Psych 241 Statistics for Behavioral Science

** W 250 Developmental Psychology

** Soc 110 Introduction to Sociology

** Arts & Humanities Requirement

Electives

**indicates course satisfies General Education Requirements.

Professional Courses

The following are essential professional courses to become an entry-level athletic trainer:

Anat 204 & 204L Anatomy for Paramedical Personnel and Laboratory

FMed 208 Procedures in Athletic Training

FMed 208L Laboratory Procedures in Athletic Training

FMed 209 Understanding Medicine

FMed 213 Beginning Practicum

FMed 312 Medical Aspects of Sports

FMed 313 Intermediate Practicum

FMed 320 Athletic Training Modalities

FMed 321 Athletic Training Rehabilitation Techniques

FMed 321L Laboratory Athletic Training Rehab. Tech.

FMed 343 Organizational Admin. in Athletic Training

FMed 413 Advanced Practicum

FMed 481 Athletic Injury Assessment

FMed 482 Internship in Athletic Training

FMed 495 Seminar in Athletic Training

Nut 240 Fundamentals of Nutrition

HPER 332 Biomechanics

HPER 402 Exercise Physiology

HPER 403 Health Education

PhTx 410 Drugs Subject to Abuse

Phy 301 Human Physiology

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.


207L. Laboratory Prevention and Care of Athletic Injuries, 1 credit. Corequisite: FMed 207. A practical laboratory to develop athletic taping skills taught in FMed 207L.

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.

208L. Laboratory Procedures in Athletic Training, 1 credit. Prerequisites: FMed 207, 207L, Anat 204, 204L. Corequisite: FMed 208L. 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.

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.
313. Intermediate Clinical Practicum in Athletic Training. 2 credits. Prerequisite: FMed 481. Corequisites: FMed 320, 321, 321L. A clinical course designed to allow the students to develop specified clinical competencies in a directed progressive manner.

320. Athletic Training Modalities. 2 credits. Prerequisite: FMed 481. A course designed to present the theoretical and applied principles and techniques for the application of modalities in sports injury care.

321. Athletic Training Rehabilitation Techniques. 2 credits. Prerequisite: FMed 481. Corequisite: FMed 321L. A course designed to explain the principles and techniques of rehabilitation as they apply to athletic injuries.


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.

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.

481. Athletic Injury Assessment. 4 credits. Prerequisite: FMed 213. A course designed to instruct the students in the theories and skills of injury evaluation.

491. Seminar in Athletic Training. (CCN) 2 credits. Permission of instructor. Advanced work in athletic training to include surgical and conservative injury management, rehabilitation and injury. F,S

494. Directed Studies in Athletic Training. (CCN) 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 tutorial supervision. F,S

497. Internship in Athletic Training. (CCN) 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

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**Finance**

(Fin)

H. Wilde, (Division Director) Lee, Markovich, Nelson, and Potter

The Faculty 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. Portfolio and investment management courses analyze enterprises from the perspective of external investors who consider 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 credits (36 of which must be numbered 300 or above, and 60 of which must be from a 4-year institution) including:

I. General Education Requirements. see pages 27-31.

II. The College of Business and Public Administration Requirements, see page 42.

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**III. The Following Curriculum (suggested sequence)**

<table>
<thead>
<tr>
<th>Freshman Year</th>
<th>Credits</th>
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<tbody>
<tr>
<td><strong>First Semester</strong></td>
<td></td>
</tr>
<tr>
<td>Engl 110 ...............College Composition I ..................(3)</td>
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<tr>
<td>One of the Following:</td>
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<tr>
<td>Anth 171 .........Introduction to Cultural Anthropology ....(3)</td>
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<tr>
<td>Psych 111 ................Introduction to Psychology ..........(3)</td>
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<tr>
<td>or Soc 110 .............Introduction to Sociology .................(3)</td>
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<tr>
<td>Math 104 ..............Finite Mathematics .........................(3)</td>
<td></td>
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<tr>
<td>Poli 115 .............American Government I ....................(3)</td>
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<tr>
<td><strong>Second Semester</strong></td>
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<tr>
<td>Comm 110 .............Fundamentals of Public Speaking ......(3)</td>
<td></td>
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<tr>
<td>Engl 120 ...............College Composition II .................(3)</td>
<td></td>
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<tr>
<td>or Engl 125 .............Technical and Business Writing ......(3)</td>
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<tr>
<td>Math 146 .............Applied Calculus I .........................(3)</td>
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<tr>
<td>Lab Science ..............(4)</td>
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<tr>
<td>Arts &amp; Humanities ..........(3)</td>
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</tbody>
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| Sophomore Year | |
| **First Semester** | |
| Acc 200 ..........Elements of Accounting I ....................(3) |
| Acc 315 ...............Business in the Legal Environment ....(3) |
| Econ 201* ..........Principles of Microeconomics ..........(3) |
| Econ 210* ..........Introduction to Business and Economic Statistics ..........(3) |
| or Arts and Humanities ..........(3) |

| **Second Semester** | |
| Acc 201* ..........Elements of Accounting II ...................(3) |
| BVED 217 ..........Fundamentals of Management Information Systems ..........(4) |
| Econ 202* ..........Principles of Macroeconomics ..........(3) |
| or Arts and Humanities ..........(3) |

| Junior Year | |
| **First Semester** | |
| Acc 301* ..........Intermediate Accounting I ...................(4) |
| Mgmt 300 ..........Principles of Management .......................(3) |
| Mkt 305 ..........Marketing Foundations .........................(3) |
| Fin 310* ..........Principles of Financial Management ..........(3) |
| 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** | |
| Fin 430* ..........International Financial Management ..........(3) |
| Mgmt 475* ..........Strategic Management .........................(3) |
| Elective in Financial Management Major .....................(3) |

*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: Acc 302, 312; Econ 308, 309, 310, 311, 324; Fin 323, 324, 330, 460, 491, 492; Mgmt 310. The remaining 3 semester hours of electives to meet the 125 total semester hour requirement are not restricted.

| Courses | |
| RAdm. 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

230. Principles of Real Estate. 3 credits. Principles of real property with an emphasis on home ownership. Real property rights, the process for transferring those rights, the impact of taxation, and concepts of city development. Career options in real estate, including brokerage, appraisal, lending, and property management. This is an elective available to all UND students. F.S

310. Principles of Financial Management. 3 credits. Prerequisites: Acct 201, BVED 217, Econ 210. This course introduces students to asset management, cost of capital, dividend policy, valuation, capital structure planning, and working capital management. Forms of business organizations and tax environment are surveyed. Managerial implications of current developments in national and international capital markets are reviewed. F.S

321. Real Estate Finance and Investment. 3 credits. Nature of real estate finance, financial sources, role of government, real estate financial instruments, loan processing, defaults and foreclosures in real estate finance, fundamentals of real estate investment analysis. F.S

324. Real Estate Appraisal. 3 credits. Nature of value; appraisal process; analysis of neighborhoods, land and improvements; cost, market data and income approach to value; appraisal report; code of ethics. F

230. 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: Acct 200, 201, BVED 217, Econ 201, 202, and 210; approval of Division Director. On-the-job compensated work experience in various areas of Finance. S/U 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

350. Financial Information Systems. 3 credits. Prerequisite: Acct 301, Fin 310. Restricted to Financial Management and Banking and Financial Economics majors. Interpretation and revision of financial statements to better reflect current economic status and performance of reporting entities. Includes use of financial databases and software, introduction to financial modeling. 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 financing and investment through commercial banks, investment banks, pension funds, venture capital sources, insurance companies, limited partnerships. F,S,S

381. Internship in Finance. 1-6 credits. Repeatable to 12 credits. Prerequisites: Acct 200, 201, BVED 217, Econ 201, 202, 210, and approval by division. Guided practical experience in managerial finance, investment management, real estate, and insurance with public and private sector enterprises. S/U grading only. F,S,S,S

410. Cases in Managerial Finance. 3 credits. Prerequisites: Fin 340 and Fin 350. Introduces students to 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

420. 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 310. Principles of asset/liability and portfolio management as they apply to the balance sheets and income statements of financial institutions. Includes management of assets and liabilities in the context of interest rate risk. Considers gap management, duration, financial futures, interest rate swaps, and securitization with the goal of profit maximization. F.S

491. Senior Topics in Finance. 3 credits. Repeatable to 6 credits. Prerequisites: Fin 340 and Fin 350. 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 lecture. F,S

492. Readings and Research in Finance. 1-3 credits. Repeatable to 6 credits. Prerequisite: Fin 310 and approval by division. Designed for students with an interest in finance topics not covered in regularly scheduled courses. F,S

Fine Arts (FA)

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. Introduction to the fundamental principles of the Fine Arts — Visual Arts, Music, Theatre, and Dance — followed by examples of the interaction of the arts in selected cultures from history and around the world and at a variety of campus arts events, in order to increase appreciation of the importance of the fine arts to the individual and 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

P. Todhunter (Chair), Hammen, Hemmasi, 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. 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 urban and regional planning, economic development, environmental management, mapping, geographic information systems, or geographic education.

The Geography minor is extremely flexible and can provide related preparation for students in anthropology, aviation, biology, business, communications, education, geology, history, international business, meteorology, public administration, recreation and leisure studies, sociology or space studies.

The Department of Geography has a modern computer laboratory and wet laboratory for work related to remote sensing, digital image processing, computer-assisted mapping, geographic information systems, air photo interpretation, quantitative methods, spatial analysis and field methods. It also maintains a Census Data Center 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 credits (36 of which must be numbered 300 or above, and 60 of which must be from a 4 year institution including):

1. General Education Requirements, see pages 27-31.

Geo Minor

B.S.

Geo Minor

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 laboratory and wet laboratory for work related to remote sensing, digital image processing, computer-assisted mapping, geographic information systems, air photo interpretation, quantitative methods, spatial analysis and field methods. It also maintains a Census Data Center and Climatic Data Center for information related to the northern Plains.

B.S. WITH A MAJOR IN GEOGRAPHY

Required: 125 credits (36 of which must be numbered 300 or above, and 60 of which must be from a 4 year institution including):

1. General Education Requirements, see pages 27-31.
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 ............Global Physical Environment/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 (5-7 credits) from:

Geog 271 .................Map Use and Interpretation ..............................................................(3)
Geog 275 .................Remote Sensing of the Environment ......................................................(3)
Geog 333 .....................Graphics and Air Photo Interpretation ..............................................(3)
Geog 333L .....................Air Photo Interpretation Laboratory ...................................................(1)
Geog 471 .....................Cartography and Computer-Assisted Mapping ..............................(3)
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 ............Global Physical Environment/Lab ..................................................(4)
Geog 151 .....................Human Geography ...........................................................................(3)
Geog 161 .....................World Regional Geography .......................................................(3)
Geog 377/377L ..................Quantitative Applications in Geography/Lab ........................................(2)
Core Electives (10 credits) from:

Geog 352 .....................Economic Geography ......................................................................(3)
Geog 373/373L ..................Graphics and Air Photo Interpretation/Lab .........................................(3)
Geog 452 .....................Selected Topics in Economic Geography ..........................................(3)
Geog 453 .....................Historical Geography ....................................................................(3)
Geog 455 .....................Political Geography ......................................................................(3)
Geog 457 .....................Urban Geography and Planning ......................................................(3)
Core Electives (6 credits from):

Geog 271 .................Map Use and Interpretation ..............................................................(3)
Geog 322 .....................Natural Hazards ............................................................................(3)
Geog 354 .....................Conservation of Resources ............................................................(3)
Geog 262 .....................Geography of North America I .......................................................(3)
Geog 362 .....................Geography of Canada .................................................................(3)
Geog 462 .....................Geography of North Dakota ...........................................................(3)
Geog 463 .....................Regional Geography: Middle East ...................................................(3)

General Electives (6 credits from):

Geog 474 .....................Introduction to GIS ..........................................................................(3)

Core Electives in Geography (16 credits from):

Geog 271 .................Map Use and Interpretation ..............................................................(3)
Geog 275 .................Remote Sensing of the Environment ......................................................(3)
Geog 334/334L .................Climate and Lab ..............................................................................(4)
Geog 373/373L .................Graphics and Air Photo Interpretation/Lab .........................................(3)
Geog 421 .....................Selected Topics in Physical Geography ......................................................(3)
Geog 422 .....................Geography of Water Resources ..........................................................(3)
Geog 471 .....................Cartography and Computer-Assisted Mapping ......................................(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 ............Global Physical Environment/Lab ..................................................(4)
Geog 134/134L .................Introduction to Global Climate/Laboratory .......................................(4)
Geog 151 .....................Human Geography ...........................................................................(3)
Geog 354 .....................Conservation of Resources ............................................................(3)
Geog 377/377L ..................Quantitative Applications in Geography/Lab ........................................(2)
Core Electives in Geography (16 credits from):

Geog 271 .................Map Use and Interpretation ..............................................................(3)
Geog 275 .................Remote Sensing of the Environment ......................................................(3)
Geog 334/334L .................Climate and Lab ..............................................................................(4)
Geog 373/373L .................Graphics and Air Photo Interpretation/Lab .........................................(3)
Geog 421 .....................Selected Topics in Physical Geography ......................................................(3)
Geog 422 .....................Geography of Water Resources ..........................................................(3)
Geog 471 .....................Cartography and Computer-Assisted Mapping ......................................(3)

MINOR IN GEOGRAPHY

Required 20 credits including:

Geog 121/121L ............Global Physical Environment/Lab ..................................................(4)
Geog 151 .....................Human Geography ...........................................................................(3)
Geog 161 .....................World Regional Geography .......................................................(3)

Electives in Geography .................................................................(10)

Students must choose a minimum of 10 credits from one or a combination of the following concentrations, with the approval of a geography advisor.

1. Human Geography:

Geog 352 .....................Economic Geography ......................................................................(3)
Geog 354 .....................Conservation of Resources ............................................................(3)
Geog 452 .....................Selected Topics in Economic Geography ..........................................(3)
Geog 453 .....................Political Geography ......................................................................(3)
Geog 455 .....................Urban Geography and Planning ......................................................(3)

2. Physical Geography:

Geog 134/134L .................Introduction to Global Climate/Laboratory .......................................(3)
Geog 322 .....................Natural Hazards ............................................................................(3)
Geog 334 .....................Climatology ....................................................................................(4)
Geog 354 .....................Conservation of Resources ............................................................(3)
Geog 421 .....................Selected Topics in Physical Geography ......................................................(3)
Geog 422 .....................Geography of Water Resources ..........................................................(3)

3. Regional Geography:

Geog 253 .....................Geography of North Dakota ............................................................(3)
Geog 262 .....................Geography of North America I .......................................................(3)
Geog 362 .....................Geography of Canada .................................................................(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 373/373L .................Graphics and Air Photo Interpretation/Lab .........................................(4)
Geog 377/377L .................Quantitative Applications in Geography/Lab .......................................(3)
Geog 471/471L .................Cartography and Computer-Assisted Mapping/Lab ..................................(4)
Geog 474 .....................Introduction to GIS ..........................................................................(3)
Geog 475 .....................Digital Image Processing .................................................................(3)

Any combination of courses from the following fields: Biology, Chemistry, Computer Science, Geology, Math, and Physics.
Courses

The geography courses that may be used to satisfy the 4-credit General Education laboratory science requirement include: Geography 121 and 122.

Geography courses that may be used to satisfy the 9-credit General Education social science requirement include: Geography 151, 161, 262, 352, and 354.

121. Global Physical Environment. (CCN) 3 credits. A study of the pattern of distribution of the physical elements of the global environment. The origin and characteristics of the terrestrial grid, earth-space relations, climate, landforms, vegetation, and soils. F,SS

121L. Global Physical Environment Laboratory. (CCN) 1 credit. A basic environmental science laboratory to complement Geography 121. F,SS

134. Introduction to Global Climate, (CCN) 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,SS

134L. Introduction to Global Climate Laboratory. (CCN) 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,SS

151. Human Geography. (CCN) 3 credits. A systematic analysis of people’s cultural regions including settlement patterns and change via migration and diffusion. F,SS

161. World Regional Geography. (CCN) 3 credits. Development of the concept of region with analysis of the relationship of physical and cultural features to the contemporary world situation. F,SS

262. Geography of North America I. (CCN) 3 credits. A spatial approach to the development of Canada and the United States which emphasizes the transformation of the culture landscape by examining the contributions of the diverse peoples who inhabit the two nation-states and deal with a global economy. S

263. Geography of North Dakota. (CCN) 3 credits. Study of the interrelationships that exist between North Dakota’s physical and cultural environments. Specific topics include physiography, climate, flora, prehistoric occupation, historic development, demography, and economic structures. S

271. Map Use and Interpretation. (CCN) 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. 1-3 credits. Repeatable to six credits. Topic of course will change from semester to semester but will typically emphasize recent developments in geography. F,SS

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/2

334. Climatology. 4 credits. Prerequisite: Geol 134 or Met 150. An overview of the fundamentals of climatology, emphasizing surface transfers of energy and water, the general circulation of the atmosphere, and climate change. Includes a weekly laboratory. S/2

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,SS

352. Economic Geography. (CCN) 3 credits. Prerequisites: Sophomore standing or consent of instructor. A study of the local, national, and global economic life describing and explaining the geographic factor involved in the production, distribution, and consumption of the major commodities and resources of the world. Special emphasis is placed upon the global issue of the underdeveloped or Third World countries and theories, which have been developed to explain spatial structure. Classes may be conducted over Interactive Video Network (IVN). F

354. Conservation of Resources. 3 credits. Geographic principles applied to the analysis of resources and their efficient utilization. Emphasis is placed upon proper resource development. F

373. Geology and Geographical Engineering (Geol and GeoE)

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

377. Quantitative Applications in Geography. 2 credits. Prerequisite: Math 103 or consent of instructor. Geographical application of statistical and mathematical techniques to research topics in geography. F

377L. Spatial Analysis Laboratory. 1 credit. Prerequisite: Math 103. Co-requisite: Geog 377. Practical applications of statistical and mathematical techniques for geographic problems. Students work on projects which involve solving problems by spatially-oriented computations. Use of relevant statistical programs on computers are emphasized. F

421. Selected Topics in Physical Geography. 3 credits. Prerequisites: Geog 121, or consent of instructor. An examination of an advanced physical geography topic chosen from field methods, environmental history, soils-biogeography, or others. Repeatable to nine credits if different topics are 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/2

425. Selected Topics in Economic Geography. 3 credits. Selected topics in economic geography including but not limited to international location, transportation, rural economic development, and others. Repeatable to nine credits if different titles are examined. F, S

435. Historical Geography. 3 credits. Using the spatial approach, landscape change is analyzed over time in various regions of the world using a variety of scales of study. Emphasis is placed upon the relationship of historical geography to historic preservation and tourism. SS. On demand.

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 analysis of the physical, cultural, and economic features of a selected region or group of regions within North America. May be repeatable to six credits if a different region is examined. On demand.

483. 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. F, 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 principles 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

494. 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,SS

Geology and Geographical Engineering

Beaver, Forsman, Gerla, Ghassemi, Gosnold, Groenewold, Karner, Korom, LeFever, Matheney, and Perkins

Our mission is to provide challenging programs in the geosciences adapted not only to the needs of undergraduate and graduate majors, but also non-majors seeking to gain a greater understanding of Earth and planetary environments and resources. Our focus is on the geological interpretation and proper utilization of knowledge of materials, surface and internal features, dynamic processes, and developmental histories of Earth and other planetary bodies. Teaching and research are concentrated in the following areas: environmental studies, hydrogeology, geological engineering, sedimentary geology, field mapping, paleontology, surface processes, petrology, geochemistry, planetary geology, geophysics, and tectonics.
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 Finnigan-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.

College of Arts and Sciences

B.S. IN GEOLOGY

Required 125 credits (36 of which must be numbered 300 or above, and 60 of which must be from a 4 year institution) including:

I. General Education Requirements, see pages 27-31.

II. The Following Curriculum:

47-48 major hours, including:

Geol 101 & 101L................Introduction to Geology and Laboratory ..................(4)
Geol 102 & 102L.................The Earth Through Time and Laboratory ..............(4)
Geol 311........................Geology I: Structural Geology.................................(4)
Geol 318......................Mineralogy.............................................................(3)
Geol 320......................Petroleum.............................................................(3)
Geol 330........................Structural Geology..............................................(3)
Geol 356........................Geochemistry Lectures ......................................(2)
Geol 411......................Sedimentology & Stratigraphy...............................(5)
Geol 420......................The Evolving Earth...............................................(3)
Geol 422......................Seminar ................................................................(1)
The Geological Engineering curriculum gives the student a strong background in engineering and geology that serves as a foundation for meaningful professional practice. Geological engineering encompasses 1) exploration and extraction of mineral and energy resources, 2) geomechanics, 3) hydrogeology, 4) reclamation and contaminant remediation, 5) environmental site assessment, and 6) natural hazard investiga-
tion. These areas of expertise span the gap between civil, mining, environmental engineering and geology. To meet these demands, the curriculum contains a broad background in the physical and social sciences, humanities, communications, mathematics, geology, and engineering topics. The program is accredited by action of the Engineering Accreditation Commission of the Accreditation Board for Engineering and Technology. Courses in the curriculum are arranged and integrated to provide the student with progressive preparation for engineering evaluation and design. To facilitate the transition from student to professional, the senior year has a capstone experience that incorporates student creativity and sociological and engineering criteria into a major design project.

As the demand for mineral, energy, and water resources increases and population growth and urbanization place a greater strain on the environment, the nation and world will need engineers with a thorough knowledge of geologic materials, processes, and history. The goal of the geological engineering program at the University of North Dakota is to provide students with the engineering skills and geological expertise necessary to assure that geological, social, and environmental factors are incorporated in the design, construction, operation, and maintenance of engineered structures and systems within their natural setting. Through its strong environmental emphasis, the department strives to develop in its engineering graduates keen insight and abilities to design an environmentally sound and sustainable future for humanity.

To achieve this goal, the department has the following objectives for its engineering graduates.

Graduates must have the ability to identify and formulate engineering problems and design a system, component, or process to solve them. This requires that graduates be able to: (a) apply knowledge of mathematics, science and engineering; (b) design and conduct experiments, as well as to analyze and interpret data; (c) use the techniques, skills, and modern engineering tools necessary for the engineering practice; and (d) understand professional and ethical responsibility.

In addition, the department recognizes that society’s problems are becoming increasingly complex and that their solution may require collaboration with experts in related disciplines. Therefore our graduates must be able to: (e) contribute effectively to multi-disciplinary teams; (f) communicate effectively, both orally and in writing; (g) understand contemporary issues, including the impact of engineering solutions in a societal and global context; and (h) engage in life-long learning.

**B.S. IN GEOLOGICAL ENGINEERING**

Required: 141 credits (36 of which must be numbered 300 or above, and 60 of which must be from a 4 year institution) including:

I. General Education Requirements, see pages 27-31.

II. The Following Curriculum:

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<th>Freshman Year</th>
<th>First Semester</th>
<th>Second Semester</th>
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<td>Math 165 ......</td>
<td>Calculus I and</td>
<td>Laboratory ....</td>
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<td>General Chemistry I and</td>
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<td>Geol 101 ....</td>
<td>Graphical Communication</td>
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<td>Eng 110 ....</td>
<td>College Composition I</td>
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<td>Geol 203 ....</td>
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<td>Geol 318 ....</td>
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<td>or Engr 202</td>
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<td>Engl 125 ......</td>
<td>Technical and Business Writing</td>
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<th>Junior Year</th>
<th>First Semester</th>
<th>Second Semester</th>
</tr>
</thead>
<tbody>
<tr>
<td>Math 266 ....</td>
<td>Introduction to Differential Equations</td>
<td>(3)</td>
</tr>
<tr>
<td>Engr 203 ....</td>
<td>Mechanics of Materials</td>
<td>(3)</td>
</tr>
<tr>
<td>ME 341 ......</td>
<td>Thermodynamics</td>
<td>(3)</td>
</tr>
<tr>
<td>Geol 311 ....</td>
<td>Geomorphology</td>
<td>(4)</td>
</tr>
<tr>
<td>Geol 411 ....</td>
<td>Sedimentology &amp; Stratigraphy</td>
<td>(5)</td>
</tr>
<tr>
<td>Engr 306 ....</td>
<td>Fluid Mechanics</td>
<td>(3)</td>
</tr>
<tr>
<td></td>
<td>Technical Elective*</td>
<td>(3)</td>
</tr>
<tr>
<td></td>
<td>And Arts and Humanities (See page 28)</td>
<td>(3)</td>
</tr>
<tr>
<td></td>
<td>Soil Mechanics</td>
<td>(3)</td>
</tr>
<tr>
<td></td>
<td>Fluid Mechanics</td>
<td>(3)</td>
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</tbody>
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<table>
<thead>
<tr>
<th>Summer</th>
<th>First Semester</th>
<th>Second Semester</th>
</tr>
</thead>
<tbody>
<tr>
<td>Field Geology (South Dakota School of Mines and Technology Black Hills Field Station)</td>
<td></td>
<td>(6)</td>
</tr>
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</table>

<table>
<thead>
<tr>
<th>Senior Year</th>
<th>First Semester</th>
<th>Second Semester</th>
</tr>
</thead>
<tbody>
<tr>
<td>Geol 414 ....</td>
<td>Geophysics</td>
<td>(3)</td>
</tr>
<tr>
<td>Phil 370 ....</td>
<td>M Q &amp; P: Ethics in Engineering</td>
<td>(3)</td>
</tr>
<tr>
<td>Geol 417 ....</td>
<td>Hydrogeology</td>
<td>(3)</td>
</tr>
<tr>
<td>Geol 455 ....</td>
<td>Geomicrobiology</td>
<td>(3)</td>
</tr>
<tr>
<td>Geol 484 ....</td>
<td>Geological Engineering Design</td>
<td>(3)</td>
</tr>
<tr>
<td>CEn 412 ....</td>
<td>Soil Mechanics</td>
<td>(3)</td>
</tr>
<tr>
<td>Engr 460 ....</td>
<td>Engineering Economy</td>
<td>(3)</td>
</tr>
<tr>
<td>Geol 485 ....</td>
<td>Geological Engineering Design</td>
<td>(4)</td>
</tr>
<tr>
<td>Geol 422 ....</td>
<td>Seminar</td>
<td>(1)</td>
</tr>
<tr>
<td></td>
<td>And Arts and Humanities (See page 28)</td>
<td>(3)</td>
</tr>
<tr>
<td></td>
<td>Technical Elective*</td>
<td>(3)</td>
</tr>
</tbody>
</table>

*Technical Electives: 6 credits required from courses approved by Geological Engineering Curriculum Committee.

**B.S. IN ENVIRONMENTAL GEOLOGY AND TECHNOLOGY**

Required 125 credits (36 of which must be numbered 300 or above, and 60 of which must be from a 4 year institution) including:

I. General Education Requirements, see pages 27-31.

II. The following Core Curriculum (51 hours):

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Geol 101, 101L</td>
<td>Introduction to Geology (or Geol 203)</td>
<td>3</td>
</tr>
<tr>
<td>Geol 102, 102L</td>
<td>The Earth Through Time and Laboratory</td>
<td>3</td>
</tr>
<tr>
<td>Geol 311</td>
<td>Geomorphology</td>
<td>3</td>
</tr>
<tr>
<td>Geol 318</td>
<td>Geology</td>
<td>3</td>
</tr>
<tr>
<td>Geol 322</td>
<td>Environmental Geology</td>
<td>3</td>
</tr>
<tr>
<td>Geol 422</td>
<td>Seminar</td>
<td>1</td>
</tr>
<tr>
<td>Geol 356</td>
<td>Geoscience Lectures</td>
<td>2</td>
</tr>
<tr>
<td>Biol 130, 131L</td>
<td>General Biology I &amp; II</td>
<td>3</td>
</tr>
<tr>
<td>Biol 130L, 131L</td>
<td>General Biology I &amp; II Laboratory</td>
<td>2</td>
</tr>
<tr>
<td>Chem 121, 121L</td>
<td>General Chemistry I and Laboratory</td>
<td>3</td>
</tr>
<tr>
<td>Econ 200</td>
<td>Computer Applications in Engineering</td>
<td>2</td>
</tr>
<tr>
<td>Econ 201</td>
<td>Principles of Microeconomics</td>
<td>3</td>
</tr>
<tr>
<td>Engl 110</td>
<td>College Composition</td>
<td>3</td>
</tr>
<tr>
<td>Engl 125</td>
<td>Technical and Business Writing</td>
<td>3</td>
</tr>
<tr>
<td>Geog 354</td>
<td>Conservation of Resources</td>
<td>3</td>
</tr>
<tr>
<td>AeSc 110</td>
<td>Meteorology</td>
<td>3</td>
</tr>
<tr>
<td>Biol 101, 101L</td>
<td>Introduction to Biology</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>Geoscience Lectures</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>General Geology II</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>General Geology Laboratory</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>Environmental Geology</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>Geology for Engineers</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>General Geology I and Laboratory</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>Technical Elective*</td>
<td>3</td>
</tr>
</tbody>
</table>

One of the following options is required:

A. ENVIRONMENTAL STUDIES OPTION: 74 Hours

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Geol 330</td>
<td>Structural Geology</td>
<td>3</td>
</tr>
<tr>
<td>Biol 332</td>
<td>General Ecology</td>
<td>3</td>
</tr>
<tr>
<td>Comm 110</td>
<td>Fundamentals of Public Speaking</td>
<td>3</td>
</tr>
<tr>
<td>Comm 303</td>
<td>Principles of Public Relations</td>
<td>3</td>
</tr>
<tr>
<td>Math 103</td>
<td>College Algebra</td>
<td>3</td>
</tr>
<tr>
<td>Math 105</td>
<td>Trigonometry</td>
<td>2</td>
</tr>
<tr>
<td>Math 146</td>
<td>Applied Calculus I (or CSci 260 or Econ 210)</td>
<td>3</td>
</tr>
<tr>
<td>Phys 211</td>
<td>Applied Calculus II</td>
<td>3</td>
</tr>
<tr>
<td>Option Electives, 24 hours of course work directly related to degree</td>
<td>24</td>
<td></td>
</tr>
</tbody>
</table>

General Electives (includes General Education Requirements) | 26 |

B. WATER RESOURCES OPTION: 74 hours

Required Courses (42 hours):

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Geol 321</td>
<td>Geochemistry</td>
<td>3</td>
</tr>
<tr>
<td>Geol 417</td>
<td>Hydrogeology</td>
<td>3</td>
</tr>
<tr>
<td>Geol 418</td>
<td>Hydrological Methods</td>
<td>2</td>
</tr>
<tr>
<td>Engr 201</td>
<td>Statics</td>
<td>2</td>
</tr>
</tbody>
</table>
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 featured. 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, maps, and aerial photographs. Geol 101L may be taken concurrently. F:S:S

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:S

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 102L may be taken concurrently. F:S

102L. The Earth Through Time Laboratory. 1 credit. Prerequisite or corequisite: Geol 102. An introductory laboratory to complement Geol 102. Field trip included. F:S

103. Introduction to Environmental Issues. 3 credits. Introduction to Environmental Issues. A survey of environmental issues concerning society’s interaction with Earth’s natural systems and exploitation of Earth’s resources. F:S

104. Geology of National Parks. 3 credits. An overview of the geology of U.S. National Parks. Unifying geological principles are emphasized. Major topics: sandstone parks, volcanic parks, hot springs and geothermal areas, caves and limestone parks, reefs and fossilized reefs, rivers and erosion, ice and glaciers, mountain building and mountain ranges. S

105. Selected Topics. 1-4 credits. Repeatable when topics vary. A special topic course intended for non-geology majors. Subjects will include many issues of interest to non-geologists and non-scientists, such as earthquakes, evolution, gems, and the geology of National Parks. On demand.

111. Views of the Earth and Planets. 3 credits. An introduction to the Earth and the Solar System. Coverage includes: the planets and their moons, comets, asteroids, impact craters, meteors, the sun, the solar system’s origin, planetary atmospheres, the living Earth, the question of life elsewhere. 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 engineering and geological engineering. Includes laboratory. F

302 (GeoE). Reclamation Engineering. 3 credits. Prerequisites: Geology 101 or Geol 203 or consent of instructor. Principles of reclamation emphasizing: the need for reclamation; geology and hydrogeology of disturbed landscapes, geological, hydrological, and ecological reclamation objectives; current reclamation practices; reclamation of abandoned mine lands; reclamation design; laws, regulations, permits, bonds, and public perception. Includes laboratory and field trip. S

303. Selected Topics in Geology. 1-4 credits. Prerequisite: Geology 100, 101, 102 or consent of instructor. Each topic is concerned with a special aspect of geology. May be repeated to a maximum of 8 hours. F:S

311. Geomorphology. 4 credits. Prerequisites: Geol 101 and 102. Dynamics of weathering, mass movement, running water, groundwater, waves, wind and ice in the production of landforms. Includes field trips and laboratory. F

318. Mineralogy. 3 credits. Prerequisite: Geol 101 or Geo 203, and Chem 105 or consent of instructor. Survey of the origin, distinction and uses of rock-forming minerals. Introduction to mineral structures, crystal chemistry, and crystallography. Laboratory identification of common minerals in hand sample and petrographic thin section. Introduction to the use of the polarizing microscope. Includes field trip. S

320. Petrology. 3 credits. Prerequisite: Geol 318. Description, classification and origin of igneous, metamorphic, and sedimentary rocks. Field and laboratory study of rocks. Engineering properties of earth materials. Advanced aspects of optical mineralogy. Includes laboratory. F

321. Geochemistry. 3 credits. Prerequisite: 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 radioactivity, isotope geochronology, and stable-isotope geochemistry. S

322. Environmental Geology. 3 credits. Prerequisite: One introductory geology course or upper division standing in 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, 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. S

350. Structural Geology. 3 credits. Prerequisites: Geol 318, Geol 320, and Math 105. Mechanics of rock deformation, analysis of rock structures, preparation and interpretation of geologic maps and cross sections showing structural and tectonic features. Includes laboratory. S

357 (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:S:S

342. Environmental and Conservation Hydrology. 3 credits. Prerequisites: introductory geology course or upper division standing, Math 103. Topics relating hydrology to the environment and water conservation, including the global and local hydrological cycle, flood occurrence and prediction, water pollution, erosion and sedimentation, wetlands, and water management. S:2

351 (GeoE). Petroleum Development Engineering. 3 credits. Well spacing and location, drilling equipment and methods, fishing tools, casing, cementing, oil field hygiene, and well completion. S

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. Geoscience 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 Geo 422. F:S

360 (GeoE). Subsurface Disposal of Liquid Wastes. 3 credits. Prerequisites: Geol 101, or Geol 203, and Chem 101 or consent of instructor. Introduction to geologic requirements for subsurface disposal of liquid wastes and design, operation, and maintenance of deep injection wells. S:2

401. Remote Sensing in Geology. 3 credits. Prerequisite: Geol 311 or consent of instructor. Use of remotely-sensed imagery to interpret geological structures, processes, and resources. Includes laboratory. S

407. Petroleum Geology. 3 credits. Prerequisites: Geol 101 or Geo 203, and Geol 102. Origin, accumulation and geologic occurrence of petroleum and gas. F:2 (odd numbered years).

411. Sedimentology and Stratigraphy. 5 credits. Prerequisite: Geol 320. Origin, transportation, deposition, and diagenesis of sediments; principles and applications of stratigraphy. Includes field trip and laboratory. F

414. Geophysics. 3 credits. Prerequisites: Geol 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: Geol 102. Recommended: Biology 101, 102. Major invertebrate groups preserved as fossils and their stratigraphic and paleoecologic use; invertebrate relationships; independent study of fossils. Includes field trip and laboratory. F

417 (Geo/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: Geo/GeoE 417. Field and laboratory methods used in hydrogeology, techniques of drilling, well and piezometer installation, determination of aquifer parameters, geophysical exploration, soil classification and analysis, ground water sampling and analysis. Includes field trip. F

419 (GeoE). Groundwater Monitoring and Remediation. 3 credits. Prerequisites: Math 212, Geo/GeoE 417 and a statistics course (Econ 210, Psy 241, Math 321 or 353) or consent of instructor. Statistical methods for groundwater sampling and monitoring network design. Groundwater remediation and design; including strategies that remove contaminants for external treatment and strategies for on-site contaminant treatment. F

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 unifying 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 Geo/GeoE 417. Principles of chemistry, geology, hydrodynamics, and hydrology applied to natural and constructed wetlands and other small catchments. S

450 (GeoE). Petroleum Reservoir Engineering. 3 credits. Prerequisites: Math 212 or Physics 206 or consent of instructor. Darcy’s law, application of material balance equations to oil and gas reservoirs, pressure buildup and drawdown analysis. S

453 (GeoE). Explosives and Blasting Technology. 3 credits. Prerequisites: Consent of the instructor. Introduction to explosives and rock blasting; theory and application of mechanics and blasting fundamentals. Includes laboratory. F

455 (GeoE). Geomechanics. 3 credits. Prerequisites: GeoE 323 and CE/En 412 or consent of instructor. Principles of geomechanics and its application to geological engineering. F
History (Hist)

Berger, Clingan, Ellis, Ettling, Handy-Marchello, Issminger, Mochoruk, and Porter

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.

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 credits (36 of which must be numbered 300 or above, and 60 of which must be from a 4-year institution) including:

I. General Education Requirements, see pages 27-31.

II. One of the following curriculum options:

Option A

35 major hours, including:

9 hours from:

Hist 101 .................Western Civilization I .........(3)
Hist 102 .................Western Civilization II .......(3)
Hist 103 .................United States to 1877 .......(3)
Hist 104 .................United States since 1877 ...(3)
Hist 240 .................The Historian’s Craft ..........(3)
Hist 440 .................Research .........................(3)

Electives (16 must be upper level) ..........(21)

Required in other departments:

Level IV proficiency in a foreign language.

Option B

35 major hours, including:

Hist 101 .................Western Civilization I .........(3)
Hist 102 .................Western Civilization II .......(3)
Hist 103 .................United States to 1877 .......(3)
Hist 104 .................United States since 1877 ...(3)

Hist 440 .................Research .........................(3)

Electives (16 must be upper level) ..........(21)

Of the 18 elective hours 12 must form a concentration in either World or American History.

MINOR IN HISTORY

Required 20 credits, at least 6 must be in upper division courses, including:

9 hours from:

Hist 101 .......................Western Civilization I .........(3)
Hist 102 .......................Western Civilization II .......(3)
Hist 103 .......................United States to 1877 .......(3)
Hist 104 .......................United States since 1877 ...(3)

History electives ..................(11)

RELATED FIELD CONCENTRATION IN INTELLLECTUAL HISTORY, MINOR ONLY:

Required: 20 credits Upper Level work approved by the chairs of the History or Philosophy Departments.

Courses

101. Western Civilization I. (CCN) 3 credits. An interpretive survey of Western civilization from earliest times to the close of the European Middle Ages. F,S

102. Western Civilization II. (CCN) 3 credits. A comprehensive survey of Western Civilization from the Reformation to the present, with emphasis on movements and institutions common to Western Europe and their influence on the rest of the world. F,S

103. United States to 1877. 3 credits. A survey of early American history, including old world background, transformation of British institutions into American institutions, revolution, and the establishment of the Union with its temporary breakup in Civil War. F,S

104. United States since 1877. 3 credits. A survey of the 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 adjustments. F,S

106. Middle Eastern Civilization From Islam to Present Time. 3 credits. A survey of the history of the civilizations of the Eastern Mediterranean since the rise of Islam to the time of the formation of the present nation states. S/F

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/F

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/F

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 Europe and North 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 modern era. S/F

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 influences 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 intrusion and conquest, and the character of colonial rule. F/S

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 attention is paid to the Nonpartisan League story and the evolution of isolationist sentiment among North Dakotans. Recommended for Social Science major certification. F/S

221. The Scandinavian Countries Since 1500. 3 credits. A survey of Denmark, Norway, Sweden, Finland, and Iceland from the Lutheran Reformation to the welfare state. S/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

269. World War II (CCN) 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

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 major or to the history minor; 12 credits may apply to the history major and minor. S/2

310. 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 American West to 1890. 3 credits. An examination of major issues in the American West beginning with the trans-Appalachian West and proceeding to the trans-Mississippi West. The course will examine social, political, military, and economic developments in the context of the Western environment. F/S

330. The American West since 1890. 3 credits. An examination of the major issues in the trans-Mississippi West during the twentieth century. This course will examine social, political and economic developments in the context of the Western environment. S/2

331. 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, intellectuals, and class status, and minor groups 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/S

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. F/S

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 the nuclear implications of the end of the Cold War and the development of new nuclear states in the last years of the 20th century. The course will include—from an historian’s point of view—some technical material necessary to a reasonable and realistic understanding of the subject. 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 briefly the developments 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

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/S

347. The Ancient Near East. 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

350. Europe: The Reformation, 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/S

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 Napoleonic Era, 1789-1815. 3 credits. An engaging course that serves as an admirable vehicle with which to observe human nature at its best and worst, as people responded to unprecedented and unexpected problems and opportunities. Neither Europe nor the world were the same after this classic revolution and studying it compels a conclusion on how revolutions begin and, once begun, whether they move under their own momentum from moderation to excess to reaction. S/2

353. Europe: 1815-1918. 3 credits. A study of such movements as industrialism, socialism, nationalism, and imperialism, developing the theme that those who sought to change behavior, institutions, frontiers, or governments from 1815 to 1848 employed idealistic and impractical means. After the 1848 revolutions that swept over Europe, a new “mood” emerged seeking those seeking more practical and pragmatic, as manifested, for example, in Marxism and Realpolitik. F/S

355. Europe Since 1918. 3 credits. A survey of European history from 1914 to the present, with emphasis on the issues, institutions, and problems confronting Europeans after the Great War of 1914-1918, a war that was fought “to make the world safe for democracy,” but which was an event that signified “the end of the European Age,” a period during which Europeans and their institutions had exerted a dominant influence around the world. S/2

362. Modern China. 3 credits. A survey of the political, economic, social, and intellectual history of China from the Opium War (1842) until the present. Special attention will be paid to the problems of modernization in traditional societies and to the nature of developmental social movements. 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/2

403. The United States: The Colonial Period. 3 credits. A survey of the background of British colonization, the development of diverse colonial cultures, and the transformation in major provinces of the European heritage. The seven-teenth-century Age of Faith and the eighteenth-century Age of Reason are contrasted to illustrate the changing attitudes of Americans toward themselves and Britain. The underlying theme is long-range causes of American independence. F

404. The United States: Revolutionary Era, 1760-1789. 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 are analyzed; military history is deemphasized. The results of independence are discussed in terms of the changing attitudes reflected in the Declaration of Independence, the Articles of Confederation, and the Constitution. S

405. The United States: Age of Jefferson and Jackson, 1789-1850. 3 credits. A study of the creation of a new, expansive nationalism in the development of new institutions and new national character, and the simultaneous growth of sectional forces which brought the new nation to the brink of Civil War. F/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/2

407. The United States: Rise of Industrial America, 1877-1917. 3 credits. A survey of the rise of America to industrial and world power. Emphasis is placed upon the great reforms which the Industrial Revolution brought about 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 beginning of World War I through the Great Depression. Emphasis will be placed on the Republican ascendancy 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

410. History of Mexico. 3 credits. A 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/2

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/2

413. The United States since 1945. 3 credits. An advanced examination of the United States as it has developed from the height of its power, influence, and prosperity through years of upheaval, cultural and political transformation, and economic decline. F/S

414. France Since 1815. 3 credits. A survey of French history from Napoleon to Chirac focusing on the polarization that led to France’s collapse in 1940 and how that split was healed. F

415. Germany Since 1815. 3 credits. A survey of German history from Kant to Kultur focusing on the social and religious divisions in Germany that led to the catastrophe of the Nazi regime. 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 revolutionarity. F

417. Russia Since 1855. 3 credits. A survey of Russia’s political, economic, social, and cultural development from the great reforms of Alexander II until the present — including the collapse of the Russian Empire, the rise and fall of the Soviet Union,
and the rebirth of Russia. This course has two main themes: it considers the relation
of Russian civilization to the West, and it examines the problems of "modernization" of tra-
ditional societies. S/2

419. Great Britain Since 1815. 3 credits. A survey of British history since 1815
with an emphasis on the state of mind of being known as "Victorian," as it was manifest-
ed, practiced, or criticized in the nineteenth century; its influence on economics, politics,
foreign affairs, and social policy; and its vestiges in modern-day Britain. F/2

421. The British Empire, 1496-1884. 3 credits. A survey of British Imperial his-
tory from the Tudors to the "Scramble for Africa." Particular attention will be paid to
the social, economic, and political factors which shaped Britain's Imperial history as well as
the history of its colonies. F/2

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/2

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 doc-
uments, 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
tri-partite relationship between the U.S., Canada, and Great Britain. F/2

481. Public History Practice. 3 credits. A practicum in which the student learns
through experience the techniques of public history work. S/2

489. Senior Honors Theses. (CCN) 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

494. Readings in History. (CCN) 1-3 credits. Repeatable to 6. F/S

 Honors
(Jon 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 credits (36 of which must be numbered 300 or above and 60 of which
must be from a 4 year institution), including 24 credits of Honors coursework:

I. The Honors Program Requirements are in lieu of University General Education
Requirements.

II. The Honors Program English Composition Requirement.
One of the following courses (Honors sections preferred):

Eng 120 Composition II ....................................(3)
Eng 125 Technical and Business Writing.............(3)
Eng 308 Advanced Composition I ..........................(3)
Eng 408 Advanced Composition II ..........................(3)

III. Honors coursework from:
Hon 101 Inquiry in the Humanities .................(3)
Hon 102 Inquiry in the Social Sciences ............(3)
Hon 103 Inquiry in the Sciences ....................(3)
Hon 250 Sophomore Honors Essay ...................(1)
Hon 291 Colloquium in the Humanities ..........(1-4)
Hon 292 Colloquium in the Social Sciences .......(1-4)
Hon 293 Colloquium in the Sciences ...............(1-4)
Hon 301 Honors Mode ................................(1)
Hon 391 Advanced Colloquium in the Humanities ..(1-4)
Hon 392 Advanced Colloquium in the Social Sciences ..(1-4)
Hon 393 Advanced Colloquium in the Sciences ..(1-4)
Hon 399 Independent Study ..........................(1-4)
Hon 499 Senior Honors Thesis ........................(6-15)

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 Honor 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 methodolo-
gy and concerns of the social sciences; orientation to methods of Honor 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 Honor work. May include laboratory
component. Normally taken by first-year candidate-members of the Honors Program.
F/S

250. 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. 1-4 credits, repeatable. Prerequisite: admit-
tance 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, 1-4 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

301. Honors Mode. 1 credit. Corequisite: Standard course which Honors Mode
complements. A method of using a 1 credit study load to increase the level of any stan-
dard course to an Honors quality course. It provides an intellectual enhancement to a
standard course. F/S/SS

391. Advanced Colloquium in the Humanities. 1-4 credits, repeatable.
Prerequisite: admittance to the Honors Program. Advanced interdisciplinary courses on
varying topics in the humanities. F/S

392. Advanced Colloquium in the Social Sciences, 1-4 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, 1-4 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

101. Introduction to Humanities I. (CCN) 4 credits. This course is designed to
introduce beginning university students to the major disciplines of the Humanities; litera-
ture, 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

102. Introduction to Humanities II. (CCN) 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 non-reservation settings, and (4) background for graduate work in Indian Studies. The degree of Bachelor of Arts is offered through the College of Arts and Sciences. For the greater University community, the courses in Indian Studies, together with the research conducted or sponsored by the Department, provide an expanded approach to the study of American history. Another purpose of the program is to enable the University to serve the reservation communities, especially in their educational and human service programs. As the Indian Studies program develops, more basic information, teaching materials, technical data, and staff assistance will be available to Indian schools, programs, and Indian leaders.

College of Arts and Sciences

B.A. WITH MAJOR IN INDIAN STUDIES

Required 125 credits (36 of which must be numbered 300 or above, and 60 of which must be from a 4 year institution) including:

I. General Education Requirements, see 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 370 North American Indians (3)
- IS 375 History of Federal Indian Law and Policy (3)
- 6 hours from Arts, Literature and Language:
  - Engl 161 American Indian Languages I (3)
  - Engl 162 American Indian Languages II (3)
  - Engl 265 American Indian Literature (3)
  - Engl 369 Literature and Culture: Traditional Amer. Indian Lit (3)
  - IS 255 Survey of Native American Arts (3)
  - Anth 220 Native American Technology (3)
- 3 hours from History:
  - IS 201 History of the Sioux (3)
  - IS 203 History of the Chippewa (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 345 Contemporary American Indian Issues (3)
  - IS 346 American Indian Child Development (3)
  - IS 363 Native American Child Development (3)
  - IS 371 Reservation Government and Politics (3)
- Electives

Any of the courses listed above that are not used to meet requirements may be taken as electives. Other electives in Indian Studies include IS 151, 379, 492 and 494.

A concentration in an area or field other than Indian Studies is also required of all majors. This concentration may be met in the following ways:

1. Proficiency in a language (equivalent to Level IV in a Native American or other language)
2. A minor in another subject matter field
3. In special instances, a supplementary concentration of at least 24 hours can be arranged between the student and the faculty of the Department. These concentrations are designed for students to obtain 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 credits including:

- IS 121 Introduction to Indian Studies (3)
- IS 240 Research and Writing in Indian Studies (3)
- IS 370 North American Indians (3)
- IS 375 History of Federal Indian Law and Policy (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, sociology, etc. Finally, students will analyze some recent examples of these stereotypes and ethnocentrism in print and film. Every two years.

201. History of the Sioux, 3 credits. The history of the Sioux from their earliest known beginnings to the present day, with special emphasis on the Lakota division. F

203. History of the Chippewa, 3 credits. A study of Ojibway history, life, and culture from the original contacts with White traders; successive relocations in the interior of North America; warfare and contact with other tribes; treaties and land cessions and establishment upon reservations; and contemporary status and problems. F

207. History of the Three Affiliated Tribes, 3 credits. A survey of the history of the Mandan, Hidatsa, and Arikara people. The first part of the course deals with the history of the separate tribes, and the second part is concerned with their corporate history since 1862. S

240. Research and Writing in Indian Studies, 3 credits. The course will introduce students to professional writing in Indian Studies. The final goal is for students to turn out a 20-25 page research paper in an area of interest to them. S

255. Survey of Native American Art, 3 credits. Examination of the methods, materials, and techniques of Native American visual arts, music, dance, and drama. F

330. Contemporary Plains Indian Culture, 3 credits. An examination of the ecology, social structure, economics, politics, and values of contemporary Plains Indians with special emphasis on reservation systems. S

331. Traditional Plains Indian Culture, 3 credits. An examination of the environment, social structure, political organization, religion and other aspects of Plains Indian life before the establishment of the reservations. S

345. Contemporary American Indian Issues, 3 credits. Study and discussion of issues of general importance to contemporary Native American males. F

346. Contemporary Indian Women, 3 credits. An examination of the historical and contemporary traditions, role, contributions, and issues concerning Indian women. F

352. Native American Philosophical Thought, 3 credits. Introduces students to the complex and rich “religions” of Native American tribes as well as to the Church of Native Americans and the Native American Religious Freedom Act. Both traditional and contemporary belief systems and their importance are discussed. F

363. Native American Child Development, 3 credits. Examines the physical, mental and social development of Native American children from birth to puberty. Differences between traditional tribal ways and modern concerns are related to historical and cultural factors. F

370. North American Indians, 3 credits. Origins and nature of cultures in America north of Mexico. Study basic culture areas and representative groups, culminating with a view of the status and prospects of the modern Indian and Eskimo in Canada and the United States. F

371. Reservation Government and Politics, 3 credits. To acquaint students with functions of diverse government agencies and the politics of Indian reservation self-government. F

375. History of Federal Indian Law and Policy, 3 credits. A detailed discussion of Federal Indian law and policy from their colonial antecedents into contemporary times. Among other dimensions, an examination of motives, court decisions, statutes, executive orders and proclamations, and their consequences.

379. Special Topics, 1-3 credits (Repeatable when topics vary). Topics and credits will vary with availability of staff, and with student interests.

492. Directed Readings in Indian Studies, (CCN) Prerequisites: Underclass standing or consent of instructor. Under the direction of Indian Studies faculty, students will select readings in subjects not covered in sufficient detail in other Indian Studies classes. F, S, SS

494. Independent Study in Indian Studies, (CCN) 1-3 credits. Maximum 9 credits. Consent of Instructor required. F, S, SS
Industrial Technology (IT)

S. Moser (Division Director), Diez, Holten, Huang, Smart, and Yearwood

The Faculty of Industrial Technology has a program accredited by the National Association of Industrial Technology (NAIT) and offers three four-year undergraduate Bachelor of Science (B.S.) degree programs and a graduate program leading to the Master of Science degree (thesis and non-thesis options). The undergraduate degree programs offered through the College of Business and Public Administration are Bachelor of Science in Industrial Technology (BSIT) Industrial Technology Management, Bachelor of Science in Industrial Technology (BSIT) with Teacher Certification, and Bachelor of Science in Occupational Safety and Environmental Health (BSOSEH), see page 132. A minor in Industrial Technology is an integral part of faculty offerings.

College of Business and Public Administration

B.S. INDUSTRIAL TECHNOLOGY (IT) DEGREE PROGRAM

Industrial Technology is a field of study designed to prepare technical/manager-oriented professionals for employment in business, industry, and government. The curriculum is organized into three integrated technological systems areas: Energy & Electronics, Graphic Communication, and Manufacturing. Required 125 credits (36 of which must be numbered 300 or above, and 60 of which must be from a 4 year institution) including:

I. General Education Requirements, see pages 27-31.
 II. The College of Business and Public Administration Requirement, see pages 42-45.
 III. Industrial Technology Major Program Requirements: At least a 2.50 GPA in all courses that apply toward the degree and major, and the following:

A. Technical Foundation Requirements (17 Credit Hours Required)
   IT 110.........Principles of Industrial Technology...............................(2)
   IT 201.........Electromechanical Fundamentals.................................(3)
   IT 202.........Technical Drawing......................................................(3)
   IT 203.........Production Processes: Manufacturing..........................(3)
   IT 260.........Computer Applications in Industrial Technology..........(3)
   IT 312.........Computer Aided Design/Drafting...............................(3)

B. Management Foundation Requirements (18 Credit Hours Required)
   IT 300.........Technology and Society.............................................(3)
   IT 330.........Quality Assurance.....................................................(3)
   IT 340.........Cost Estimating.........................................................(3)
   IT 403.........Product Research and Development...........................(3)
   IT 420.........Facilities Design.......................................................(3)
   OSEH 440........Industrial Safety...................................................(3)

IV. Selected Electives for Industrial Technology Majors (21 credits required).
Emphasis may be chosen from the following Technology Systems areas. However, a minimum of one course having each of the third digit 1, 2, and 3 must be included.

Energy and Electronics Technology Systems
   IT 211.........Electric Circuits and Devices........................................(3)
   IT 301.........Microelectronic Circuits..............................................(3)
   IT 341.........Digital Integrated Circuits...........................................(3)
   IT 401.........Electronic Communication Systems..........................(3)
   IT 441.........Computer-Aided Circuit Analysis...............................(3)

Graphic Communication Technology Systems
   IT 212.........Principles of Graphic Design and Layout......................(3)
   IT 302.........Applied Graphic Design and Layout...........................(3)
   IT 322.........Fundamentals of Photography...................................(3)
   IT 432.........Advanced Photography.............................................(3)
   IT 442.........Desktop Publishing..................................................(3)

Manufacturing Technology Systems
   IT 204.........Industrial Materials..................................................(3)
   IT 213.........Production Processes: Construction...........................(3)
   IT 223.........Applied Synthetics....................................................(3)
   IT 363.........Manufacturing Automation.........................................(3)
   IT 423.........Computer Integrated Manufacturing..........................(3)

Industrial Technology General Electives
   IT 316......... Technology Education for Teaching and Learning..........(3)
   IT 337.........Cooperative Education..............................................(3)
   IT 343.........Motion and Time Study..............................................(3)
   IT 404.........Materials Testing.....................................................(3)
   IT 412.........Design/Drafting...........................................................(3)
   IT 493.........Workshop.................................................................(1-6)
   IT 497.........Directed Studies in Industrial Technology...................(1-8)

V. Students must select one of the following:

INDUSTRIAL MANAGEMENT OPTION

Students preparing for a career in industry will complete the following course work in addition to the BSIT course work listed under I, II, III, and IV above...

Required Support Courses: Select from the following or higher level (35 hours minimum)

CSci 120..............Computer Programming I........................................(3)
Math 103..............College Algebra.......................................................(3)
Math 105..............Trigonometry...........................................................(2)
Math 146/166........Applied Calculus I/Calculus I.................................(3-4)
Chem 121, 121L......General Chemistry I and Laboratory...................(4)
Phys 161, 161L......Introductory College Physics I and Laboratory........(4)
Phys 162, 162L......Introductory College Physics II and Laboratory........(4)
Econ 210.........Intro to Bus & Econ Statistics......................................(3)
Mgmt 300............Principles of Management.....................................(3)
Mgmt 301............Production Management........................................(3)
Mgmt 302............Human Resources Management.............................(3)

and either

Mkt 305.........Marketing Foundations..............................................(3)
Phl 370.........Ethics in Engineering and Science.............................(3)

Seniors are encouraged to apply for the Certified Industrial Technologist (CIT), offered by the National Association of Industrial Technology (NAIT). Those in Manufacturing and Electronic Technology Systems are requested to take the Certified Manufacturing Technology (CMfgT) examination, conducted by the Society of Manufacturing Engineers (SME) or the Certified Quality Technician examination, conducted by American Society of Quality Control (ASQC).

Teacher Education

Students preparing for a career in technology teacher education will complete the following course work in addition to the BSIT course work listed under I, II, III, and IV above.

The teacher certification program offers students an opportunity to major in Industrial Technology and to complete the Secondary Education program of the Department of Teaching and Learning on page 155. Successful completion of the requirements of both programs qualifies the student for teacher certification in Technology Education. Successful completion of the BSIT selected electives section IV requirements must include the following:

IT 204.........Industrial Materials.....................................................(3)
IT 211.........Electric Circuits and Devices........................................(3)
IT 212.........Principles of Graphic Design and Layout........................(3)
IT 213.........Production Processes: Construction..............................(3)
IT 223.........Applied Synthetics.......................................................(3)
IT 400.........Teaching Technology Education..................................(3)

Secondary Teacher Certification Requirements:
29 credits minimum, see page 155. Formal admission to Teacher Education is required and is normally sought while enrolled in T & L 200 and requires a minimum of 2.50 GPA. To be accepted for student teaching, a student must have a 2.75 GPA in the major field of study and a 2.50 GPA in all course work attempted prior to applying for student teaching. Industrial Technology majors seeking teacher certification must have an advisor from the Faculty of Industrial Technology and the Department of Teaching and Learning.

MINOR IN INDUSTRIAL TECHNOLOGY

A total of 23 credits should be chosen in consultation with an academic advisor to assure that the courses are related and form a cohesive unit.

1. The following fourteen (14) credits are required:
   IT 110..........Principles of Industrial Technology.............................(2)
   IT 201..........Electromechanical Fundamentals................................(3)
   IT 202..........Technical Drawing....................................................(3)

 OR

   IT 312..........Computer Aided Design Drafting...............................(3)
   IT 203..........Production Processes: Manufacturing........................(3)
   IT 330..........Quality Assurance....................................................(3)

2. Nine (9) credits selected from one or a combination of any two of the following:

A. Energy and Electronic Technology Systems
B. Graphic Communication Technology Systems
C. Manufacturing Technology Systems

Courses

110. Principles of Industrial Technology, 2 credits. The study of the philosophy and objectives of Industrial Technology with emphasis on the theories, principles, and objectives of technological systems in business, industry, and educational institutions. F,S

201. Electromechanical Fundamentals, 3 credits. Prerequisites: Math 103; Co- requisite: Phys 101. The study of fundamental mechanical, hydraulic, 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. F

203. Production Processes: Manufacturing. 3 credits. Prerequisite: IT 110. Fundamental concepts of processing industrial materials, especially those utilized in manufacturing products, with emphasis on tools and techniques. S

204. Industrial Materials. 3 credits. The study of the characteristics, structure, properties and physical nature of organic and inorganic materials for industrial conversion processing; to include wood, metallics, ceramics, polymers, and ceramics laboratory activities. F

211. Electric Circuits and Devices. 3 credits. Prerequisites: IT 201 and Math 103 and 105. Concepts, principles, and operational characteristics of electric components and circuits, hands-on operation and experiments of electric devices and equipment. 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

213. Production Processes: Construction. 3 credits. Prerequisite: IT 110 or 204 or consent of instructor. A study of material processing methods and techniques utilizing tools and machines leading to the production of constructed assemblies. F/2

223. 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

260. Computer Applications in Industrial Technology. 3 credits. Overview of software and computer hardware applications used in industrial technology to include PC computing, peripheral devices, and network systems. Also covered are main-frame and mini computer applications. S

300. Technology and Society. 3 credits. A lecture-recitation course emphasizing the various impacts of technology on the individual, society, environment and basic institutions. Technological matrix of various cultures. F/S

301. Microelectronic Circuits. 3 credits. Prerequisite: IT 211. Study of electronic components and circuits (discrete and integrated) and their functional and operational characteristics. F

310. Applied Graphic Design and Layout. 3 credits. Prerequisite: IT 212 or consent of instructor. Photo regraphics concepts and techniques; emphasis on message preparation, photo conversion and image transfer through offset and screen processes. S

312. 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

316. Technology Education for Teaching and Learning. 3 credits. A study of technology that involves the identification, creation, and evaluation of hands-on technology activities for educators to use in the classroom. Activities include, but are not limited to, computer applications, robotics, energy and power projects, photography, field trips, and problem solving. The course concludes with a technology fair at a local school. F/2

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 system measurement techniques, and data handling procedures. F

337. Cooperative Education. 1-6 credits. Prerequisite: Junior standing; 2.5 overall GPA, and faculty approval. A practical work experience with approved industrial enterprise, arranged by the student, faculty and employer. Repeatable to 6 credits. S/U grading. F,S,SS

340. Cost Estimating. 3 credits. Prerequisites: Econ 210, Math 204, or equivalent or instructor consent. Principles and techniques necessary for the economic analysis and evaluation of industrial design projects. 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

343. Motion and Time Study. 3 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/2

363. Manufacturing Automation. 3 credits. Prerequisites: IT 201 and IT 203. Co-requisite: IT 312. The study of the fundamentals of automation as it relates to contemporary industry to include NC and CNC programming and systems, computer-assisted parts programming, industrial robot configurations, industrial automation applications, and integration of control systems and manufacturing technology. F

400. Teaching Technology Education. 3 credits. Prerequisite: Junior standing and consent of instructor. An analysis of various methods employed in instructional techniques for industry and education. Development of methods and strategies of instruction use and ordering of instructional materials based on behavioral objectives and classroom application of instructional techniques; lab activities. F/2

401. Electronic Communication Systems. 2 credits. Prerequisite: IT 301 or consent of instructor. Study and use of electronic methods of aural, visual and data communication including modulation, transmission, reception, and reconstitution of information. F

403. Product Research and Development. 3 credits. Prerequisite: IT 203 or consent of instructor. The study of product development and production planning for manufacture through the application of research methodologies, design processes, and prototype development. F

404. Materials Testing. 3 credits. Prerequisites: IT 201, 202, 203, 212, Chem 121 and 121L or equivalent. Methods by which properties (i.e., physical, mechanical, thermal, electrical, optical, and chemical) of industrial materials are tested for determination of applications. F/2

412. Design/Drafting. 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. F/2

420. Facilities Design. 3 credits. Prerequisite: IT 312. Principles and applications of designing industrial/business facilities with emphasis on site location, environmental consideration, qualitative and quantitative modeling. Computer application in facility planning and quantitative analysis; lab activities. S

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. S

432. Advanced Photography. 3 credits. Prerequisites: IT 322 or instructor consent. Advanced photography is a course designed to enhance students' understanding of imaging techniques using advanced darkroom effects and digital photography to manipulate images utilizing various methods. F

441. Computer-Aided Circuit Analysis and Design. 3 credits. Prerequisite: IT 301. An in-depth study of the concepts and technologies of computer-aided circuit analysis and design. Emphasis on the use of commercial computer-aided design tools used in industry for analysis and design of analog and digital circuits. S/2

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

493. Workshop. 1-6 credits. A workshop course on a specific topic, primarily for, but not confined to, Continuing Education. F,S,SS

497. Directed Studies in Industrial Technology. 1-8 credits. Prerequisites: Junior standing and instructor consent. Studies in topics pertinent to the students' needs in selected topics including (a) Curriculum Innovation, (b) Energy/Power, (c) Graphic Communication, (d) Production, and (e) Materials Science. F,S

Information Management

S. Moser (Division Director), Braathen, Haga, O’Keefe, Prigge, and Robles

The Bachelor of Business Administration with a major in Information Management is offered through the Faculty of Business and Vocational Education in the Division of Organizational Systems and Technology. This major offers broad preparation for a variety of records and information management careers in corporate, government, and small business environments. UND Information management graduates go into careers as records managers, records analysts, records retention managers, records management consultants, office managers, managers of administrative services, managers of computer-based information systems, equipment and systems vendors, and into a wide variety of traditional and emerging positions within the broad information industry. Job titles range from entry-level records and information systems positions to those in senior management.

College of Business and Public Administration

B.B.A. WITH A MAJOR IN INFORMATION MANAGEMENT

Required 125 credits (36 of which must be numbered 300 or above, and 60 of which must be from a 4 year institution) including:

I. General Education Requirements, see pages 27-31.
II. College of Business and Public Administration requirements, see page 42 and including:

Acct 200, 201 ..........................Elements of Accounting I & II .................(6)
Acct 315 ..........................Business in the Legal Environment ..................(3)
BVED 217 ..........................Fundamentals of Management .....................(3)
Comm 110 ..........................Fundamentals of Public Speaking ..............(3)
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)
III. Information Management Major Courses:

BVED 152  .....  Keyboarding II  .....  (2)
BVED 305  .....  Microcomputer Applications for Business  .....  (3)
BVED 309  .....  Office Management  .....  (3)
BVED 310  .....  Information Management Systems  .....  (3)
BVED 315  .....  Records & Information Management  .....  (3)
BVED 320  .....  Professional Communication for Business  .....  (3)
BVED 405  .....  Records Management Systems  .....  (3)
BVED 409  .....  Data Resource Management  .....  (3)
BVED 411  .....  Information Management Seminar  .....  (2)
BVED 413  .....  Telecommunications  .....  (3)
BVED 414  .....  Office Systems Design  .....  (3)
Mgmt 302  .....  Human Resource Management  .....  (3)

Courses (BVED)

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.

147. Word Processing Applications. (CCN: BOT1) 3 credits. Orientation to word processing and data processing software, hands-on applications, and skill development. F

152. Keyboarding II. 2 credits. Prerequisites: BVED 147. Development of speed and accuracy, letter writing, manuscripts, and tabulation techniques. F


305. Microcomputer Applications for Business. 3 credits. Prerequisite: 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

309. Office Management. 3 credits. Introduction to information management and office management concepts and technologies including office automation, office facilities development, technology selection and implementation, office systems, and procedures analysis, and office personnel supervision. F,S

310. Information Management Systems. 3 credits. Information Management Systems concepts for the user and/or designer of information systems, systems analysis, design system outputs, inputs, data files, methods and procedures, and system controls. S

315. Records & Information Management. 3 credits. An orientation to business records management including systematic control over the creation, distribution, utilization, retention, storage, protection, preservation and final disposition of all types of records within an organization. F,S

320. Professional Communication for Business. 3 credits. Composition of business letters and reports with emphasis on clear, concise, effective presentation and logical organization. It includes a brief review of writing mechanics. F,S

337. Cooperative Education. 1-6 credit, 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

405. Records Management Systems. 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; micro-graphics systems; forms management systems; optical and video systems, emerging concepts. S

409. Data Resource Management. 3 credits. Prerequisite: BVED 305, 310. Stresses design and utilization of databases, emphasis on both minicomputer 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. S

413. Telecommunications. 3 credits. Scope of business telecommunications, principles of design of systems and approach to solving communication problems. Includes: transmission systems, software, hardware and applications. F

547. 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. 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.

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

#### Integrated Studies

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 degrees. (See pages 27-30 for information on these requirements.) Each semester includes credit 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 Education major.

Students interested in the Integrated Studies Program can call (701) 777-3622, or write to PO Box 7117, Grand Forks, ND 58202-7117. The Program’s office is located in 134 O’Kelly 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 credits (36 of which must be numbered 300 or above, and 60 of which must be from a 4 year institution) including:

I. General Education Requirements, see pages 27-31.

II. The Following Curriculum:

Total of 30 credits plus language requirement:

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Geog 161</td>
<td>World Regional Geography</td>
<td>(3)</td>
</tr>
<tr>
<td>Pols 220</td>
<td>International Politics</td>
<td>(3)</td>
</tr>
<tr>
<td>Anth 171</td>
<td>Cultural Anthropology</td>
<td>(3)</td>
</tr>
<tr>
<td>History 102</td>
<td>Western Civilization II</td>
<td>(3)</td>
</tr>
<tr>
<td>Pols 225</td>
<td>Comparative Politics I</td>
<td>(3)</td>
</tr>
<tr>
<td>Rel 203</td>
<td>World Religions</td>
<td>(3)</td>
</tr>
</tbody>
</table>

Three (3) credits from the following:

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hist 106</td>
<td>Middle Eastern Civilization</td>
<td>(3)</td>
</tr>
<tr>
<td>Hist 215</td>
<td>Latin America since 1825</td>
<td>(3)</td>
</tr>
<tr>
<td>Hist 362</td>
<td>Modern Chinese Civilization</td>
<td>(3)</td>
</tr>
<tr>
<td>Hist 364</td>
<td>Modern Japanese Civilization</td>
<td>(3)</td>
</tr>
</tbody>
</table>

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 courses 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. Study abroad is strongly encouraged.

Language Level Four Proficiency and additional three hours

International Studies Minor Requirements

1. Required Courses

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
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<td>(3)</td>
</tr>
<tr>
<td>Rel 203</td>
<td>World Religions</td>
<td>(3)</td>
</tr>
</tbody>
</table>

2. One Additional Course selected from the following:

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hist 106</td>
<td>Middle Eastern Civilization</td>
<td>(3)</td>
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<td>(3)</td>
</tr>
<tr>
<td>Hist 364</td>
<td>Modern Japanese Civilization</td>
<td>(3)</td>
</tr>
</tbody>
</table>

3. The minor must contain at least three credits of upper division coursework which may come from additional courses or from substitution for one of the above courses with the approval of the Director in International Programs.

4. Other courses may be substituted only with the consent of the Advisor in International Programs.

5. Language required: Level III proficiency.

Languages: Department of Modern and Classical Languages & Literatures (Lang)

J. Berne (Chair), Bakken, Benoit, DuBois, Fleshman, Hall, Koprince, 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 Native American languages of North Dakota. 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 requirements for a major or minor including any course work in related fields, are listed below under each language. Since the schedule for courses in related fields can vary from semester to semester, students must consult their faculty 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 which is currently taught at UND 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.

Credits earned through Language Placement Exams do not satisfy the World Cultures General Education Requirement. See pages 27-31. Credit which a student has earned through College Level Examination Program (CLEP) tests may be recognized by UND for courses in related fields, are listed below under each language. 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>Level</th>
<th>Course 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>
</tr>
<tr>
<td>II</td>
<td>102</td>
<td>8 hours</td>
<td>201 courses</td>
</tr>
<tr>
<td>III</td>
<td>201</td>
<td>12 hours</td>
<td>202 courses</td>
</tr>
<tr>
<td>IV</td>
<td>202</td>
<td>16 hours</td>
<td>Upper Division courses</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 credits (36 of which must be numbered 300 or above, and 60 of which must be from a 4 year institution) including:
I. General Education Requirements, see pages 27-31.
II. Major Curriculum Listed Under Specific Language.

MINOR IN A LANGUAGE
I. Minor curriculum listed under specific language.

College of Arts & Sciences

B.A. WITH A MAJOR IN A LANGUAGE
Teacher Certification
Students seeking secondary teacher certification in a language must complete the following:
General Education Requirements (see pages 27-31).
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.
Students seeking teacher certification in all languages must also take these additional courses:
Hist 101 & 102 Western Civilization I and II (6)
English courses beyond Composition II (4)
Language majors should have advisors in both the Languages Department and the Department of Teaching and Learning.
The Program in Secondary Education (see pg. 155) is to include:
- T&L 400 Methods and Materials of Teaching a Foreign Language
- 2 credits of T&L 390, supervised by Languages Department faculty (see pg. 156).

CLASSICAL STUDIES

B.A. WITH A MAJOR IN CLASSICAL STUDIES
Required: 36 credits distributed between Parts A and B as follows:
I. General Education Requirements, see pages 27-31.

Part A: Language requirement (16 credits)
A student may fulfill the language requirement in one of three ways:
Option 1, Latin:
CLAS 101 First Year Latin I (4)
CLAS 102 First Year Latin II (4)
CLAS 201 Second Year Latin I (4)
CLAS 202 Second Year Latin II (4)

Option 2, Greek:
CLAS 151 First Year Greek I (4)
CLAS 152 First Year Greek II (4)
CLAS 251 Second Year Greek I (4)
CLAS 252 Second Year Greek II (4)

Option 3, Greek and Latin:
CLAS 101 First Year Latin I (4)
CLAS 102 First Year Latin II (4)
CLAS 151 First Year Greek I (4)
CLAS 152 First Year Greek II (4)

Part B: Courses in classical civilization, literature, culture (20 credits)
The remaining 20 credits should be chosen from the following. A minimum of 15 credits must be at the 300 level or above:

VA 420 Greek and Roman Art (3)
Additional 100- and 200-level Latin courses, other than those used to satisfy Part A*
Additional 100- and 200-level Greek courses, other than those used to satisfy Part A*
Other courses as approved by Classical Studies adviser.
*i.e. a student may not use the same courses to satisfy Part A and Part B.

MINOR IN CLASSICAL STUDIES
Required: 28 credits distributed between Parts A and B as follows:
Part A: Language requirement (16 credits)
A student may fulfill the language requirement in one of three ways:
Option 1, Latin:
CLAS 101 First Year Latin I (4)
CLAS 102 First Year Latin II (4)
CLAS 201 Second Year Latin I (4)
CLAS 202 Second Year Latin II (4)

Option 2, Greek:
CLAS 151 First Year Greek I (4)
CLAS 152 First Year Greek II (4)
CLAS 251 Second Year Greek I (4)
CLAS 252 Second Year Greek II (4)

Option 3, Greek and Latin:
CLAS 101 First Year Latin I (4)
CLAS 102 First Year Latin II (4)
CLAS 151 First Year Greek I (4)
CLAS 152 First Year Greek II (4)

Part B: 12 credits are to be selected from the courses listed below — 9 of these credits must be at the Upper Division level (300 or above).

CLAS 185 Introduction to Classical Mythology (3)
CLAS 362 Masterpieces of Latin Literature (3)
CLAS 364 Special Topics in Classical Literature (3)
CLAS 301 Latin Prose (3)
CLAS 404 Latin Poetry (3)
HIST 101 Western Civilization I (3)
HIST 343 Ancient Greece (3)
HIST 344 Ancient Rome (3)
HIST 345 The Ancient Near East (3)
HUM 102 Introduction to the Humanities II (4)
PHIL 300 Classical Greek and Hellenistic Philosophy (3)
PHIL 301 Medieval Philosophy (3)
POLS 311 Development of Political Thought I (3)
REL 103 Introduction to the New Testament (3)
REL 228 Early Christian Traditions (3)

CLASSICAL STUDIES Courses (Clas)

101. First Year Latin I. (CCN) 4 credits. Introduction to Latin grammar and syntax, with selected readings from ancient authors. F
102. First Year Latin II. (CCN) 4 credits. Prerequisite: Class 101 with a grade of C or better. Continued study of Latin grammar and syntax, with selected readings from ancient authors. S
151. First Year Greek I. (CCN) 4 credits. Introduction to Ancient Greek grammar and syntax, with selected readings from ancient authors. F
152. First Year Greek II. (CCN) 4 credits. Prerequisite: Class 151. Continued study of Ancient Greek grammar and syntax, with selected readings from classical authors. Grade of “C” or better in Class 151 recommended. S
185. Introduction to Classical Mythology. (CCN) 3 credits. Study of literary and artistic representations of Greek and Roman mythology. Different methods of interpreting myths will also be explored. These include anthropological, philosophical and psychological approaches. On Demand.
201. Second Year Latin I. (CCN) 4 credits. Prerequisite: Class 102 or equivalent. Conclusion of basic grammar and introduction to Latin authors, such as Cicero, Nepos, Petronius, or Phaedrus. F
202. Second Year Latin II. (CCN) 4 credits. Prerequisite: Class 201 or equivalent. Readings in Latin literature such as the works of Catullus, Ovid, or Vergil. S
251. Second Year Greek I. (CCN) 4 credits, not repeatable. Prerequisite: Class 152 or equivalent. Conclusion of basic grammar and introduction to Ancient Greek authors, such as Plato, Lysias, Xenophon, or Euripides. On Demand.
A B.A. with a major in French requires a minimum of 21 credits with at least 6 credits in each of the following areas: Grammar & Writing (Fren 301, 302, 413); Literature & Civilization (Fren 371, 372, 373, 471, 494); Culture & Conversation (Fren 304, 305, 306, 307, 340, 491, 494).

The following courses are required: Fren 301, 302, 304, 305, 306, 307, 308, and 312. A French minor consists of Fren 301, 302, 304, 305, 306 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 taking Fren 301, 305, 306, 340 and a minimum of 4 additional credits of Upper Division courses for a total of 14 credits.

Study abroad is encouraged; however, all majors are required to take on campus a minimum of 3 hours in each of the three areas (see above), regardless of the number of credits acquired through transfer, including study abroad. All minors are required to take on campus a minimum of 3 hours in at least two of the areas (see above).

Courses (Fren)

100. 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.


102. First Year French II. (CCN) 4 credits. Prerequisite: Fren 101 with a grade of C or better. Continued study of fundamentals of French grammar, oral use of the language and reading of easy French. Attendance in the language laboratory required. F,S

201. Second Year French I. (CCN) 4 credits. Prerequisite: Fren 102, or equivalent. Review of the structure of the language; readings in French, practice in oral and written expression. F,S

202. Second Year French II. (CCN) 4 credits. Prerequisite: Fren 201 or equivalent. Review of the structure of the language; readings in French, practice in oral and written expression. F,S

301. Third Year French. 3 credits. Prerequisite: Fren 202 or equivalent. Grammar review and introduction to literature. Emphasis on reading and writing skills. F

302. Third Year French. 3 credits. Prerequisite: Fren 301 or equivalent. Grammar review and introduction to literature. Emphasis on reading and writing skills. S


305. French Conversation and Culture. 2 credits. Prerequisite: Fren 202 or consent of instructor. A conversational approach to civilization and contemporary culture. Emphasis on oral skills. F

306. French Conversation and Culture. 2 credits. Prerequisite: Fren 202 or consent of instructor or French 305. Contemporary world issues from a French perspective. S

307. A Social and Cultural History of Québec. 3 credits. Prerequisites: Fren 202 or consent of instructor. This course focuses on the topics of geography, history, language, ideology, politics, and religion in their relationship to architecture, painting, popular crafts, song, film, and literature in Québec. On demand.

Lang 318. Individually Arranged Study Abroad. 1-12 credits, repeatable to 12. Prerequisite: Permission of Department. Participation in individually arranged programs of study abroad. For major or minor credit, the language used abroad must correspond to the language being studied at UND. The Department reserves the right to test the student upon his or her return to Grand Forks. S/U grading only. On demand.

Lang 319. University Sponsored Study Abroad. 1-12 credits, repeatable to 12. Prerequisite: Lang 102 or equivalent. Participation in UND-sponsored programs of study abroad. For major or minor credit, the language used abroad must correspond to the language being studied at UND. Repeatable when programs or topics within a program vary. On demand.

340. Business French. 3 credits. Prerequisite: Fren 301. Oral and written practice with terminology and idioms used in commerce and business correspondence. Readings on such topics as banking, employment, markets, production, services, trade and practices in the French business world. On demand.

371. History of French Literature. 3 credits. Prerequisite: Fren 302 or consent of instructor. French literature from its origins to 1700; representative works with lectures, outside readings and reports. On demand.

372. History of French Literature. 3 credits. Prerequisite: Fren 302 or equivalent. French literature from 1700 to the present day; representative works with lectures, outside readings and reports. On demand.

373. French-Canadian and Québec Literature and Thought. 3 credits. Prerequisite: Fren 302. A survey of French-Canadian and Québec authors who express the consciousness and universal themes associated with being French in North America. On demand.

413. Advanced French Grammar Review. 2 credits. Prerequisite: Fren 302 or equivalent. An oral and written approach to French grammar and stylistics. On Demand.

491. Seminar in French. (CCN) 1-2 credits. Prerequisite: Fren 301 or consent of instructor. Advanced work in French language, literature or culture. May be repeated up to 12 credits. On Demand.

494. Individual French Readings. (CCN) 1-3 credits. Prerequisite: Fren 302 or equivalent. Topics vary with individual interests and needs. May be repeated to a total of six hours. May be taken only with the consent of the department. F,S

German

A major in German for the Bachelor of Arts (B.A.) degree includes a minimum of 21 semester credit hours of Upper Division (Ger 300-400) course work: Ger 307, 308, 407, 408, and three additional courses (Ger 304, 312, 403, 404, 406, 409, 413, LANG 318 or 319). In addition, at least eight credit hours of course work in fields related to German approved by the faculty advisor in Languages are required.

A minor in German consists of at least twelve credit hours: Ger 307, 308, and two additional courses (Ger 304, 312, 403, 407, 408, LANG 318 or 319).

Students interested in business may obtain a minor in German by completing Ger 307, 308, 340, and one additional course (Ger 304, 312, LANG 318 or 319).

Majors and minors are encouraged to make their interests known, including interest in studying in a German-speaking area in Europe, for which UND may grant academic credit. In addition to the departmental Arneberg and the Larsen scholarships awarded to students in several languages including German, the Max Kade, Stolz and Rogers scholarships are awarded exclusively to qualified students of German.

Courses (Germ)

100. 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.

101. First Year German I. (CCN) 4 credits. Fundamentals of German grammar, oral use of the language and reading of easy German. Attendance in the language laboratory required. F,S

102. First Year German II. (CCN) 4 credits. Prerequisite: Ger 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. Attendance in the language laboratory required. F,S

201. Second Year German I. (CCN) 4 credits. Prerequisite: Ger 102, or equivalent. Review of the structure of the language; readings in German, practice in oral and written expression. F,S

202. Second Year German II. (CCN) 4 credits. Prerequisite: Ger 201 or equivalent. Review of the structure of the language; readings in German, practice in oral and written expression. F,S

301. Third Year German. 3 credits. Prerequisite: Ger 202 or equivalent. Grammar review and introduction to literature. Emphasis on reading and writing skills. F

302. Third Year German. 3 credits. Prerequisite: Ger 301 or equivalent. Grammar review and introduction to literature. Emphasis on reading and writing skills. S

304. German Phonetics. 2 credits. Prerequisite: Ger 201. A practical approach to the pronunciation and intonation of the German language. On Demand.

305. German Conversation and Culture. 2 credits. Prerequisite: Ger 202 or consent of instructor. A conversational approach to civilization and contemporary culture. Emphasis on oral skills. F

306. German Conversation and Culture. 2 credits. Prerequisite: Ger 202 or consent of instructor or German 305. Contemporary world issues from a German perspective. S

307. A Social and Cultural History of Germany. 3 credits. Prerequisites: Ger 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 Germany. On demand.

Lang 318. Individually Arranged Study Abroad. 1-12 credits, repeatable to 12. Prerequisite: Permission of Department. Participation in individually arranged programs of study abroad. For major or minor credit, the language used abroad must correspond to the language being studied at UND. The Department reserves the right to test the student upon his or her return to Grand Forks. S/U grading only. On demand.

Lang 319. University Sponsored Study Abroad. 1-12 credits, repeatable to 12. Prerequisite: Lang 102 or equivalent. Participation in UND-sponsored programs of study abroad. For major or minor credit, the language used abroad must correspond to the language being studied at UND. Repeatable when programs or topics within a program vary. On demand.

340. Business German. 3 credits. Prerequisite: Ger 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 German business world. On demand.

371. History of German Literature. 3 credits. Prerequisite: Ger 302 or consent of instructor. German literature from its origins to 1700; representative works with lectures, outside readings and reports. On demand.

372. History of German Literature. 3 credits. Prerequisite: Ger 302 or equivalent. German literature from 1700 to the present day; representative works with lectures, outside readings and reports. On demand.

373. German-Canadian and German Literature and Thought. 3 credits. Prerequisite: Ger 302. A survey of German-Canadian and German authors who express the consciousness and universal themes associated with being German in North America. On demand.

413. Advanced German Grammar Review. 2 credits. Prerequisite: Ger 302 or equivalent. An oral and written approach to German grammar and stylistics. On Demand.

491. Seminar in German. (CCN) 1-2 credits. Prerequisite: Ger 301 or consent of instructor. Advanced work in German language, literature or culture. May be repeated up to 12 credits. On Demand.

494. Individual German Readings. (CCN) 1-3 credits. Prerequisite: Ger 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
307. Third Year German. 3 credits. Prerequisite: Germ 202 or equivalent.
Further improvement of the four language skills: listening, writing, reading and speaking. Thorough grammar review. F
308. Third Year German. 3 credits. Prerequisite: Germ 307 or equivalent.
Further improvement of the four language skills: listening, writing, reading and speaking. Thorough grammar review. S
312. Topics in German Culture. 3 credits. Prerequisite: Germ 202 or equivalent.
A study of various aspects of German culture through the centuries. S
Lang 318. Individually Arranged Study Abroad. 1-12 credits, repeatable to 12.
Prerequisite: Permission of Department. Participation in individually arranged programs of study abroad. For major or minor credit, the language used abroad must correspond to the language being studied at UND. The Department reserves the right to test the student upon his or her return to Grand Forks. S/U grading only. On Demand.
401. Norwegian Literature. 3 credits. Prerequisite: Norw 302 or equivalent. Norwegian literature, with special attention given to recognized masterpieces, past and present. On Demand.
402. Norwegian Literature. 3 credits. Prerequisite: Norw 401 or equivalent. Norwegian literature, with special attention given to recognized masterpieces, past and present. On Demand.
403. Ibsen. 3 credits. Ibsen’s literary career, with intensive study of several of his most important dramas. Course offered in English for students in other fields. Norwegian minors and majors read in Norwegian. On Demand.
494. Individual Norwegian Readings, (CCN) 1-3 credits. May be repeated to a total of six hours. Prerequisite: Norwegian 302 or equivalent. May be taken only with the consent of the department. F,S

Russian
A minor in Russian includes Russ 301 and 302, plus a minimum of four additional credit hours from among: Russ 161, 162, 494, Lang 318 or 319. With the permission of the department, other relevant courses may be elected to fulfill the requirements for a minor in Russian.

Courses (Russ)
101. First Year Russian I. (CNN) 4 credits. Fundamentals of Russian grammar, oral use of the language and reading of easy Russian. Attendance in the language laboratory required. F
102. First Year Russian II. (CNN) 4 credits. Prerequisite: Russian 101 with a grade of C or better. Continued study of fundamentals of Russian grammar, oral use of the language and reading of easy Russian. Attendance in the language laboratory required. S
161. Short Masterpieces of Russian Literature. 3 credits. An introduction to Russia’s writers of the 19th and 20th centuries. In English, but students with adequate language preparation may do some assignments in Russian. On Demand.
162. Introduction to Russian Culture. 3 credits. A survey of Russian culture with emphasis on the 19th and 20th centuries. In English, but students with adequate language preparation may do some assignments in Russian. On Demand.
201. Second Year Russian I. (CNN) 4 credits. Prerequisite: Russian 102 or equivalent. Review of the structure of the language, readings in Russian, practice in oral and written expression. F
202. Second Year Russian II. (CNN) 4 credits. Prerequisite: Russian 201 or equivalent. Review of the structure of the language, readings in Russian, practice in oral and written expression. S
301. Third-Year Russian. 3 credits. Prerequisite: Russian 202 or equivalent. Intensive oral drill, short readings, systematic review of grammar. Emphasis on developing a practical command of spoken Russian. F
302. Third-Year Russian. 3 credits. Prerequisite: Russian 301 or equivalent. Intensive oral drill, short readings, systematic review of grammar. Emphasis on developing a practical command of spoken Russian. F/S
390. Independent Study. 1-3 credits, repeatable to 6 credits. Prerequisites: Russian 202 or equivalent. Supervised independent study. May be taken only with consent of instructor. F,S
494. Individual Russian Readings. (CNN) 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

Italian (Ital)
101. First Year Italian I. (CNN) 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.
102. First Year Italian II. (CNN) 4 credits. Prerequisite: ItaL 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: Norw 301, 302, 401, 402; a minimum of 8 credit hours selected from Norw 403, 404, and 494; and at least 8 credit hours of approved course work in related fields.
A minor in Norwegian includes Norw 301, 302, and 401 or 402, plus a minimum of one additional credit hour in Upper Division Norwegian courses.

Courses (Norw)
101. First Year Norwegian I. (CNN) 4 credits. Introduction to the basic Norwegian language skills: reading, writing, speaking and listening; fundamentals of grammar. Language laboratory attendance required. F
102. First Year Norwegian II. (CNN) 4 credits. Prerequisite: Norw 101 with a grade of C or better. Basic Norwegian language skills; continuation of fundamentals of grammar. Language laboratory attendance required. S
201. Second Year Norwegian I. (CNN) 4 credits. Prerequisite: Norw 102 or equivalent. Selected cultural and literary readings, review of the structure of the language, and continued development of readings, writing, speaking, and listening skills. F
202. Second Year Norwegian II. (CNN) 4 credits. Prerequisite: Norw 201 or equivalent. Selected cultural and literary readings, continued review of the structure of the language and development of language skills. S
301. Advanced Norwegian. 3 credits. Prerequisite: Norw 202 or equivalent. Reading of selected works by leading Norwegian authors, interpretation and discussion. F
302. Advanced Norwegian. 3 credits. Prerequisite: Norw 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.
401. Norwegian Literature. 3 credits. Prerequisite: Norw 302 or equivalent. Norwegian literature, with special attention given to recognized masterpieces, past and present. On Demand.
402. Norwegian Literature. 3 credits. Prerequisite: Norw 401 or equivalent. Norwegian literature, with special attention given to recognized masterpieces, past and present. On Demand.
494. Individual Norwegian Readings, (CCN) 1-3 credits. May be repeated to a total of six hours. Prerequisite: Norwegian 302 or equivalent. May be taken only with the consent of the department. F,S

Spanish
A major in Spanish includes the following courses beyond Lower Division work: Span 304 or 450, 307, 308, 309, 311, 410; three courses from Span 420, 421, 422, 423; and a minimum of six credit hours selected from other Upper Division courses, of which at least three credit hours must be at the 400 level.
A major in Spanish with a field in teaching includes the following courses beyond Lower Division work: Span 304, 307, 308, 309, 310, 311, 450; three courses from Span 420, 421, 422, 423; and a minimum of six credit hours selected from other Upper Division courses (300/400 level).
A Spanish minor consists of Span 307, 309, and three courses from among Span 301, 311, 420, 421, 422, 423, of which one must be either Span 310, or 311; and a minimum of six credit hours selected from other Upper Division courses, of which at least three credit hours must be at the 400 level.
Courses (Span)

101. First Year Spanish I. (CCN) 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

102. First Year Spanish II. (CCN) 4 credits. Prerequisite: Span 101 with a grade of C or better. Continued study of pronunciation and fundamental grammatical principles through the development of skill in listening comprehension and speaking, followed by practice in reading and writing. Language laboratory attendance required. S

201. Second Year Spanish I. (CCN) 4 credits. Prerequisite: Span 102 or equivalent. Review of the structure of the language, readings in Spanish, practice in oral and written expression. S

202. Second Year Spanish II. (CCN) 4 credits. Prerequisite: Span 201 or equivalent. Review of the structure of the language, readings in Spanish, practice in oral and written expression. S

304. Spanish Phonetics. 3 credits. Prerequisite: Span 202 or equivalent or permission of instructor. A scientific approach to the pronunciation and enunciation of Spanish. On Demand.

307. Literary Analysis. 3 credits. Prerequisite: Span 202 or equivalent or permission of instructor. An introduction to the analysis of Hispanic literature, with particular emphasis on poetry, novel, and drama. On Demand.

308. Spanish Civilization. 3 credits. Prerequisite: Span 202 or equivalent. Practice in a variety of forms of oral Spanish. F

309. Spanish Composition. 3 credits. Prerequisite: Span 202 or equivalent. Practice in a variety of forms of written Spanish. S

310. Spanish Civilization and Culture. 3 credits. Prerequisite: Span 202 or equivalent or permission of instructor. Readings, lectures and discussions in Spanish civilization and culture. On Demand.

311. Spanish American Civilization and Culture. 3 credits. Prerequisite: Span 202 or equivalent or permission of instructor. Readings, lectures and discussions in Spanish American civilization and culture. On Demand.

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.

319. University Sponsored Study Abroad. 1-12 credits, repeatable to 12. Prerequisite: Span 102 or equivalent. Participation in UND-sponsored programs of study abroad. For major or minor credit, the language used abroad must correspond to the language being studied at UND. Repeatable when programs or topics within a program vary. On Demand.

401. Cervantes and the Golden Age. 3 credits. Prerequisite: Span 420 or 421 or permission of instructor. A study of the writings of Cervantes and his contemporaries. Topic will vary. Repeatable with new topic. On Demand.

410. Modern Spanish American Novel. 3 credits. Prerequisite: Span 422 or 423 or permission of instructor. Readings in the 20th-Century novel of Spanish America. With lectures. On Demand.

411. History of Spanish Literature, Beginnings-1681. 3 credits. Prerequisite: Span 307 or equivalent. May be repeated to a total of six hours. May be taken only with the consent of the department. F,S

412. History of Spanish Literature, 1681-1811. 3 credits. Prerequisite: Span 307. A study of the development of the peninsular literary tradition from the Middle Ages to 1681, with lectures, readings, and analysis of representative texts. F

413. History of Spanish Literature, 1811-Present. 3 credits. Prerequisite: Span 307. A study of the development of the peninsular literary tradition from 1811 to the present, with lectures, readings and analysis of representative texts. S

414. Topics in Spanish American Literature. 3 credits. Prerequisite: Span 422 or 423 or permission of instructor. Topics, on an alternating basis, include Colonial Literature and Culture, Boom and Postboom Narrative, Chronicles of the Conquest, Modernismo, 19th-Century Novel, Novel of the Mexican Revolution. Repeatable with different topic. On Demand.

419. University Sponsored 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.

420. History of Spanish Literature, Beginnings-1811. 3 credits. Prerequisite: Span 307. A study of the development of the peninsular literary tradition from the Middle Ages to 1811, with lectures, readings, and analysis of representative texts. F

421. History of Spanish Literature, 1811-Present. 3 credits. Prerequisite: Span 307. A study of the development of the peninsular literary tradition from 1811 to the present, with lectures, readings and analysis of representative texts. S

422. History of Spanish American Literature, Conquest-Independence. 3 credits. Prerequisite: Span 307. Literature of the Spanish American countries written in the Spanish language, from Conquest to the Independence. With lectures, readings, and discussions. F

423. History of Spanish American Literature, Independence-Present. 3 credits. Prerequisite: Span 307. Literature of the Spanish-American countries written in the Spanish language, from Independence to the Present. With lectures, readings, and discussions. S

450. Advanced Spanish Grammar. 3 credits. Prerequisite: Span 309 or permission of instructor. An in-depth examination of the grammar of the Spanish language. Emphasis will be placed on those elements of Spanish which present the greatest difficulties for native speakers of English. On Demand.

451. Seminar in Hispanic Linguistics. 3 credits. Prerequisite: Span 304 or 450 or permission of instructor. Advanced work in a variety of alternating topics related to Hispanic linguistics such as syntax, morphology, dialectology, and history of the Spanish language. Repeatable with different topic. On Demand.

462. Seminar in Hispanic Literature and Culture. 3 credits. Prerequisite: Span 420, 421, 422, or 423 depending on topic or permission of instructor. Advanced work on a specific aspect of the Hispanic literary and cultural tradition. Repeatable with different topic. Topic subject to review by Spanish faculty. On Demand.

494. Individual Hispanic Readings. (CCN) 1 to 3 credits. Prerequisite: Spanish 307 or equivalent. May be repeated to a total of six hours. May be taken only with the consent of the department. F,S

SPECIAL COURSES (Lang)

207. Introduction to Linguistics. 3 credits. An introduction to the nature of language, phonology, grammar, semantics, and historical, geographical, social and educational aspects of language. Same course as Engl 209.

250. Topics in World Languages and Cultures. 1-4 credits. Repeatable with change in topic. Beginning or intermediate instruction on subjects not covered by regular departmental offerings. No prerequisite unless one is specifically announced in the Time Schedule. On Demand.

318. Individually Arranged Study Abroad. 1-12 credits, repeatable to 12. Prerequisite: Permission of Department. Participation in individually arranged programs of study abroad. For major or minor credit, the language used abroad must correspond to the language being studied at UND. The Department reserves the right to test the student upon his or her return to Grand Forks. S/U grading only. On Demand.

319. University Sponsored Study Abroad. 1-12 credits, repeatable to 12. Prerequisite: Lang 102 or equivalent. Participation in UND-sponsored programs of study abroad. For major or minor credit, the language used abroad must correspond to the language being studied at UND. Repeatable when programs or topics within a program vary. On Demand.

331. Foreign 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 of which no more than 2 hours may result from participation in the French Manitou Program. 333a. regular grading; 333b. S/U grading. Prerequisites: Language 102 or equivalent. Special subjects to be announced. F,S

389. Honors Tutorial. (CCN) 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 Title 494. F

489. Senior Honors Thesis. (CCN) 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. The director of SIL is Steve Marlett, PO Box 8987 CRB, Tucson, AZ 85738 (520/825-9316 or smarlett@sill.org). 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: CSD 223; Engl 207, 309, 361, 362, 370, 417, 419, 442; Language 304, 413 (French; German; Spanish 304 only).
Management

(Mgmt)

S. Moser (Division Director), Chong, Dougan, Eberhardt, Nam, Park, Vitton, and Zahrly

The mission of the Faculty of Management is to provide practical and innovative management courses for undergraduate management and other business majors and graduate students. The Faculty of Management are part of the Division of Organizational Systems and Technology in the College of Business and Public Administration and 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 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 Faculty of Management offers an 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.

College of Business and Public Administration

B.B. A. WITH MAJOR IN MANAGEMENT

Required 125 credits (36 of which must be numbered 300 or above, and 60 of which must be form a 4 year institution) including:

I. General Education Requirements, see pages 27-31.
II. The College of Business and Public Administration Requirements, see page 42.

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

III. The Following Curriculum: (Suggested Sequence)

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<tr>
<th>Freshman</th>
<th>First Semester</th>
<th>Second Semester</th>
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<tr>
<td>Engl 110, 120..................</td>
<td>College Composition I, II</td>
<td>(3)</td>
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<tr>
<td>Pcls 115......................</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 111........................</td>
<td>Introduction to Psychology</td>
<td>(3)</td>
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<tr>
<td>Arts and Humanities...........</td>
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<tr>
<td>Comm 110......................</td>
<td>Fundamentals of Public Speaking</td>
<td>(3)</td>
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<tr>
<td>Soc 110.......................</td>
<td>Introduction to Sociology</td>
<td>(3)</td>
</tr>
<tr>
<td>Mgmt 171......................</td>
<td>Introduction to Cultural Anthropology</td>
<td>(3)</td>
</tr>
<tr>
<td>Math 146*.....................</td>
<td>Applied Calculus I</td>
<td>(3)</td>
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</tbody>
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Sophomore Year

| Econs 201*................... | Principles of Microeconomics | (3) |
| Econs 202*................... | Principles of Macroeconomics | (3) |
| Acc 200, 201*................ | Elements of Accounting I & II | (3) |
| Econs 210*................... | Introduction to Business and Economic Statistics | (3) |
| Arts and Humanities........... | | (3) |
| BVED 217...................... | Fund. of Management | (3) |
| 4 credits | | |

Junior Year

| Acc 315....................... | Business in the Legal Environment | (3) |
| Econs 303..................... | Money and Banking | (3) |
| Mgmt 300..................... | Principles of Management | (3) |
| Mgmt 301*.................... | Production Management | (3) |
| Mktg 305*................... | Marketing Foundations | (3) |
| BVED 320*.................... | Professional Communication for Business | (3) |
| Fin 310*...................... | Principles of Financial Management | (3) |
| Mgmt 302*.................... | Human Resource Management | (3) |
| Mgmt 309*.................... | Quantitative Approaches to Business Decisions | (3) |
| Mgmt 310*.................... | Organizational Behavior | (3) |
| Mgmt 400*.................... | Organizational Theory and Analysis | (3) |
| Mgmt 475*.................... | Strategic Management | (3) |

Senior Year

| 6 credits | | |
| Mgmt 395..................... | Special Topics | (3) |
| Mgmt 405*.................... | Entrepreneurship and Small Business Management | (3) |
| Mgmt 407..................... | Wage and Salary Administration | (3) |
| Mgmt 408..................... | Issues in Human Resource Management | (3) |
| Mgmt 409*.................... | Union Management Relations | (3) |
| Mgmt 420..................... | Multinational Management | (3) |

2-4 credits

| Acc 207....................... | Managerial Accounting | (2) |
| Acc 218....................... | Computer Applications in Business | (2) |
| Acc 301....................... | Intermediate Accounting I | (4) |
| BVED 305*................... | Microcomputer Applications for Business | (3) |
| BVED 309*................... | Office Management | (3) |
| BVED 315*................... | Records and Information Management | (3) |
| Econ 308..................... | Intermediate Microeconomic Theory | (3) |
| Econ 309*................... | Intermediate Macroeconomic Theory | (3) |
| Econ 310*................... | Intermediate Business and Economic Statistics | (3) |
| Econ 341*................... | Labor Economics and Labor Relations | (3) |
| Fin 360....................... | Capitol Market Financing and Investment Strategies | (3) |
| Mktg 310..................... | Buyer Behavior | (3) |
| Mktg 315*................... | Retail Management | (3) |
| Mktg 320..................... | Marketing Research I: Design | (3) |
| Mktg 430..................... | Small Business Projects | (3) |
| Plus 14 hours of non-business electives and 11 hours of business or non-business electives to bring the total hours to 125. | | |

*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. 3 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 include: decision theory, simulation, inventory models, linear programming, queuing, economic evaluation, game theory and Markov process. F,S

310. Organizational Behavior. 3 credits. Prerequisites: Econ 210, Mgmt 300. The objective of this course is to allow the student to become acquainted with and experience various ways of thinking about and responding to the issues of human relations and management. The course is designed to survey the following topics at the individual, group, and organizational levels: individual perceptions, attitudes, values, motivation, leadership, communication, group dynamics, and problem solving. F,S

320. 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. S/U grading only. F,S,SS

395. 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 organizations may be set up to accomplish their tasks. The course reviews the development of organization theories, their current status, and their future. Emphasis is placed on the analyses of system theories pertaining to structure, process, and context. F,S

405. Entrepreneurship and Small Business Management. 3 credits. Prerequisites: Fin 310, Mgmt 300, Mktg 305. This course involves students in starting businesses, in buying businesses, in selling businesses, in assessing the possibility of new ventures, and in solving problems of small businesses. A term project is required. On Demand.

407. Wage and Salary Administration. 3 credits. Prerequisite: Mgmt 302. The role of a wage and salary administrator is studied. The course focuses on the fundamentals of wage theory, job evaluation and pricing, employee evaluation, individual and group incentive plans, benefits, and managerial/executive compensation. On Demand.

408. Issues in Human Resource Management. 3 credits. Prerequisite: Mgmt 302. This course is designed to facilitate a more in-depth study of selected issues confronting organizations in the area of personnel administration. Treatment of these issues will be accomplished utilizing some combination of the following methods: extensive reading and class discussion, individual student reports, case study analysis, and individual student projects. On Demand.

409. Union-Management Relations. 3 credits. Prerequisite: Mgmt 302. This course provides the student with an overview of the role of labor unions in contemporary organizations. The primary emphasis of the course is on the collective bargaining process. Students are shown processes in the negotiation setting and causes of industrial disputes. On Demand.

420. Multinational Management. 3 credits. Prerequisite: Mgmt 300 and Fin 310. This course is an introduction to the dynamics of management processes encountered in a multinational business setting. It covers comparative management systems and analysis of various environmental conditions for making effective managerial decisions within a multinational company. Adaptation to different cultures is emphasized as one of the emergent components of the successful multinational management equation. On Demand.

475. Strategic Management. 3 credits. Prerequisites: Mgmt 300, 301, Fin 310, Mktg 305; and 105 credits. This is the capstone course in business. Students apply knowledge gained in accounting, economics, finance, management, and marketing to develop business strategies. Case studies, simulations, and other exercises are used to develop executive skills. F,S,SS

490. Internship Management. 1 to 4 credits. Prerequisite: Management major, senior standing, and consent of instructor. Guided, practical experience in personnel, production, and administration with selected participating businesses and other organizations is the essence of this course. S/U grading only. F,S

494. Readings in Management. 1 to 4 credits. Prerequisite: Senior or graduate standing, and consent of instructor. Selected readings in management. F,S

Marketing (MRKT)

S. Moser (Division Director), Askim, Bateman, Chacko, Elbert, Faircloth, Nelson, and Tangsrud

The Faculty of Marketing are part of the Division of Organizational Systems and Technology in the College of Business and Public Administration. The Faculty offers a program in Marketing which is designed to prepare students for domestic and international managerial careers in sales, advertising, distribution, marketing research and product planning. In accordance with the mission of the College of Business and Public Administration, the mission of the Faculty of Marketing is: To provide a high quality marketing program which attracts a diversity of achievement-oriented students as a foundation for student, University, and state advancement. The Faculty 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 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 an environment and support system conducive to the encouragement of intellectual contributions that are consistent with the mission of the Faculty, College, and University.

College of Business and Public Administration

B.B.A. WITH MAJOR IN MARKETING

Required 125 credits (36 of which must be numbered 300 or above, and 60 of which must be from a 4 year institution) including:

I. General Education Requirements, see pages 27-31.

II. The College of Business and Public Administration Requirements, see page 42 and including:

Acct 200, 201 Elements of Accounting I & II (6)
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)
BVED 217 Fundamentals of Management Information Systems (4)
Acct 315 Business in the Legal Environment (3)
Math 104, 146 Finite Mathematics, Applied Calculus I (6)
Mgmt 300 Principles of Management (3)
Mgmt 301 Production Management (3)
Fin 310 Principles of Financial Management (3)
Mgmt 475 Strategic Management (3)
Mktg 305 Marketing Foundations (3)
Pols 115 American Government I (3)
Comm 110 Fundamentals of Public Speaking (3)
One course selected from the following:
Anth 171 Introduction to Cultural Anthropology (3)
Psyc 111 Introduction to Psychology (3)
Soc 110 Introduction to Sociology (3)

Major in Marketing

Mktg 310 Buyer Behavior (3)
Mktg 325 International Marketing (3)
Mktg 320 Marketing Research I: Design (3)
Mktg 420 Marketing Research II: Application (3)
Mktg 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 ................................... (3-6)

Courses

201. Personal Marketing, 3 credits. The course applies the marketing concept to planning of career tracks. Emphasis is placed on the development of individual marketing plans during the sophomore/junior year thus initiating a systematic career planning process. Career planning prior to the senior year helps incorporate internships, job shadowing, and/or cooperative education into students’ program of study. Particular emphasis is placed on the application of the marketing concepts in professional career initiation and on the development and delivery of marketing presentations. The course also incorporates attitude testing, mock interviews, discussion of job search using the Internet, networking, and time management strategies, and portfolio development. S

205. Marketing Foundations, 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 305. Theoretical and applied analysis of consumer and organizational buying behavior. F,S

311. Personal Selling, 3 credits. Prerequisite: Mrkt 305. The personal selling process including prospecting, qualifying, handling objections, and closing, F,S

312. Advertising, 3 credits. Prerequisite: Mrkt 305. Thorough examination of the basis for designing an advertising campaign. Special emphasis on buyer perceptions, theories of communication and learning, and their relation to message, media, and vehicle selection. F,S

315. Retail Management, 3 credits. Prerequisites: Mrkt 305, and Acct 201. Application of marketing and financial principles to the planning and execution of retail management. Includes analyses of relevant institutions and interest groups. F

320. Marketing Research I: Design, 3 credits. Prerequisites: Mrkt 305, and Econ 210. 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 305. Fundamentals of conducting marketing operations across national boundaries; market potential estimation, 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

340. Internship in Marketing, 1-3 credits. Prerequisites: Mrkt 305, 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 310, 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 305. The practice of sales management including sales force recruiting, training, organization, motivation, compensation, and evaluation. S

412. Promotional Strategy, 3 credits. Prerequisite: Mrkt 312. Relationship of marketplace activities to promotional processes; integration of promotional tools into marketing strategy. F

415. Retail Buying, 3 credits. Prerequisite: Mrkt 315. Analysis of buying practices and techniques, with a focus on the impact of consumer buying power, resources, governmental regulations, merchandise planning and control, pricing, purchase negotiations and open-to-buy. S

420. Marketing Research II: Application, 3 credits. Prerequisite: Mrkt 320. Application of procedures appropriate for the analysis and interpretation of marketing data. F,S

425. Current Perspectives in Global Marketing, 3 credits. Prerequisite: Mrkt 305. An examination of emerging worldwide economic, political, and cultural trends and the resulting challenges to international marketing. Students will be introduced to major international organizations and regional trade blocs to explore their implications on global marketing and trade.

430. Small Business Projects, 3 credits. Prerequisite: Senior Standing. Offered under the auspices of the U.S. Small Business Administration. Student teams are assigned to work with selected small business clients. F, S

440. Special Topics in Marketing, 3 credits. Prerequisites: Mrkt 305, and Senior Standing. Investigation of selected topics of importance to the marketing of goods, services, or ideas. May be taken a maximum of two times for credit. S

450. Marketing Management, 3 credits. Prerequisites: Mrkt 310, Mrkt 320, and Senior Standing. Capstone course addressing the firm’s micro and macro environments from a strategic marketing decision making perspective. F,S

Mathematics (Math)

Collings, Dearden, Dunningan, Gilsdorf, Gregory, Harris, liams, Khavanin, Metzger, Millsbaugh, Peterson, Prigge, Richards, Uherka 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 subordinated to the more important tasks of formulating problems in mathematical language and of dealing effectively with mathematical structures and abstract ideas.

It should be stressed that an effective mathematician in any type of employment should be a well-educated person. He/she should have not only the technical background of calculus and differential equations taken by most scientists and engineers, and the more advanced mathematical training required for a major in mathematics, but should also have taken a selection of courses from other disciplines. A student who plans to continue beyond the bachelor’s degree in mathematics should also acquire a reading knowledge of at least one and preferably two of the foreign languages in which much of the current literature in mathematics is written, namely, German, Russian, and French. All students should, of course, acquire fluency in the written and oral expression of ideas in English.

The main fields of opportunity in mathematics today are teaching, mathematical statistics, mathematics in industry, mathematics in government and actuarial mathematics. The Mathematics Department provides a test center for Actuarial Examinations and offers several courses which enable the student to prepare for them.

Students may pursue the B.S. degree with a major in mathematics through the College of Arts and Sciences. Teacher certification is possible provided appropriate requirements are met.

Elective courses to be taken toward the bachelor’s degree are decided in consultation with an adviser from the Mathematics Department, and vary according to the needs of the student, consistent with the particular objective of the general education and mathematical education of the student.

Placement in Mathematics. Appropriate initial enrollment in mathematics courses at UND is determined by a combination of entrance and placement tests or the acceptance of credits for transfer, Advanced Placement (AP) and College Level Examination Program (CLEP). Students enrolling without such previous credit are directed to entry level mathematics courses, courses numbered 102 through 165 and 277 depending on their scores on the ACT Mathematics test and/or a combination of scores on tests from the Placement Testing Program (PTP) sponsored by the Mathematical Association of America.

Anyone without the required prerequisites enrolling in a mathematics course may be dropped from the class by the instructor.

College of Arts and Sciences

B.S. WITH MAJOR IN MATHEMATICS

Required 125 credits (36 of which must be numbered 300 or above, and 60 of which must be from a 4 year institution) including:

I. General Education Requirements, see pages 27-31.

II. Non-Mathematics Requirements: Computer Science 120 or 160 and 9 hours of writing courses, including composition required under I. (Possible courses might be Engl 125, 210, 305 or BVED 320).

121 Mathematics
III. The Following Curriculum:

36 major hours including:
Math 165, 166, 265............Calculus I, II, III.................................(12)
Math 327..................Applied Linear Algebra.................................(3)
Math 442..................Linear Algebra......................................................(3)
Math 266..................Elementary Differential Equations.................(3)

Two full two-semester sequences from the list below.
Math 208 & 408............Discrete Mathematics & Discrete Structures
Math 352 & 412................Advanced Engineering Mathematics I
Math 409, 435, 471...........Any two of these three (for at most one sequence):
Math 421 & 422................Statistical Theory I & II
Math 431 & 432................Advanced Calculus I & II
Math 441 & 442................Abstract Algebra & Linear Algebra
Math 461 & 462................Numerical Analysis I & II

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, 471...........Any two of these three (for at most one sequence):
Math 421 & 422................Statistical Theory I & II
Math 431 & 432................Advanced Calculus I & II
Math 441 & 442................Abstract Algebra & Linear Algebra
Math 461 & 462................Numerical Analysis I & II

Teacher Certification

Students seeking secondary teacher certification in Mathematics must complete
the Department of Teaching and Learning Requirements in Secondary
Education on page    . Students seeking certification must follow the curriculum
for the B.S. in Mathematics and complete items (a) and (b) below:

a. Choose the Math sequences of:
Math 441 & 442
Math 409 & 435


Students considering graduate school are urged to take a full year of Advanced
Calculus, Math 431, 432.

All students are urged to take courses in disciplines which make use of mathe-
matics such as Physics, Chemistry, Engineering, Computer Science and
Biology.

MINOR IN MATHEMATICS

Required 20 credits, including:
Math 165, 166, 265............Calculus I, II, III.................................(12)
All electives must be chosen from courses numbered 208 and above, not includ-
ing 277, 377, or 477.

MINOR IN STATISTICS (Plan A)
T. Harris (Advisor)

Requires 3 semesters of calculus (Math 165, 155, 265) as prerequisite.
Required: 9 credits, including:

*Math 421, 422................Statistical Theory I, II.................................................(6)

3 hours from:
Biol 470..................Biometry.................................................................(3)
CTL 513..................Basic Computer Applications in
Math 107. Precalculus. (CCN)
Math 105. Trigonometry. (CCN)
Math 146. Applied Calculus I. (CCN)
Math 166. Calculus II. (CCN)
Math 352 & 412................Advanced Engineering Mathematics I
Math 415..................Topics in Applied Math
Math 416..................Topics in Statistics
Psy 541..................Advanced Univariate Statistics
Psy 542..................Test Construction and
Psy 543..................Experimental Design

*ChE515..................Design of Engineering Experiments

*EE 415..................Communications Engineering

*EE 411..................Communications Engineering

*Math 403..................Theory of Probability

*Math 415..................Topics in Applied Math

Math 416..................Topics in Statistics

Soc 521..................Advanced Analytical Methods

*Indicates calculus as a prerequisite.

MINOR IN STATISTICS (Plan B)

Requires Math 104, Finite Mathematics, and Math 146, Applied Calculus I, as prerequi-
sites.
Required: 12 credits from:
Biol 470..................Biometry
EFR 516..................Statistics II

*ChE515..................Design of Engineering Experiments

EEE 511..................Design of Engineering Experiments

No more than 1 class from:
Econ 210..................Elementary Business and
Econ 310..................Intermediate Business and
Econ 510..................Econometrics

*EE 411..................Communications Engineering

*Math 321..................Applied Statistics

*Math 403..................Theory of Probability

*Math 415..................Topics in Applied Math

Math 416..................Topics in Statistics

Math 421..................Statistical Theory I

Math 422..................Statistical Theory II

Psy 541..................Advanced Univariate Statistics

Psy 542..................Test Construction and

Psy 543..................Experimental Design

*Indicates calculus as a prerequisite.

Courses

NOTE: PTP* indicates an appropriate score in the Placement Testing Program (PTP) is
required.

102. Intermediate Algebra. (CCN) 3 credits. (Does not count toward graduation
at UND.) Prerequisite: PTP* or Math 101. An
introduction to some of the mathematical techniques which have applications
in the management, life, and social sciences. Topics covered include systems of linear
and inequalities, matrices, linear programming, mathematics of finance,
and elementary probability.

103. College Algebra. (CCN) 3 credits. Prerequisite: PTP* or Math 102. Sections
meeting 5 days per week are offered for students determined eligible by the Math
Department. Polynomial and rational functions, inverse functions, exponential and
logarithmic functions, simple conics, systems of equations, determinants, arithmetic and
geometric sequences, the Binomial Theorem.

104. Finite Mathematics. (CCN) 3 credits. Prerequisite: PTP* or Math 102. An
introduction to some of the mathematical techniques which have applications in
the management, life, and social sciences. Topics covered include systems of linear
equations and inequalities, matrices, linear programming, mathematics of finance,
and probability.

105. Trigonometry. (CCN) 2 credits. Prerequisite: One year of high school geom-
etry and either PTP* or Math 102. Angles, trigonometric functions and their inverses,
solving triangles, trigonometric identities.

107. Precalculus. (CCN) 5 credits. Prerequisite: Math 102 or PTP*. Equations
and inequalities; polynomial rational, exponential, logarithmic and trigonometric func-
tions; inverse trigonometric functions; algebraic and trigonometric methods commonly
needed in calculus.

115. Introduction to Mathematical Thought. 3 credits. The course will focus on
analysis and interpretation of common types of mathematical arguments as well as hav-
ing students construct their own arguments. A combination of topics will be included,
such as: elementary combinatorics, probability, statistics, set theory, number theory,
geometry and topology, mathematical logic, the mathematics of voting, etc. S or on
demand.

146. Applied Calculus I. (CCN) 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.

165. Calculus I. (CCN) 4 credits. Prerequisites: PTP* or Math 107. Limits, contin-
uitv, differentiation, Mean Value Theorem, integration, Fundamental Theorem of
Calculus.

166. Calculus II. (CCN) 4 credits. Prerequisite: Completion of Math 165 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.

208. Discrete Mathematics. 3 credits. Prerequisite: PTP* or Math 103. An
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.

265. Calculus III. (CCN) 4 credits. Prerequisite: Math 166. Multivariate and vector
calculus including partial derivatives, multiple integration, line and surface integrals,
Green’s Theorem, Stokes’ Theorem, the Divergence Theorem.

266. Elementary Differential Equations. (CCN) 3 credits. Prerequisite: Math
265 and proficiency in a programming language. Solution of elementary differential
equations by elementary techniques. Laplace transforms, introduction to matrix theory
and systems of differential equations.

277. Math for Elementary School Teachers. 3 credits. Prerequisite: PTP* or
Math 103. Elementary education majors only. Development of the number systems
used in elementary schools. Includes some methods and work with laboratory materi-
als.

321. Applied Statistical Methods. 3 credits. Prerequisite: Math 212. Introductory
statistical course for students with a background in single-variable calculus. Topics include
descriptive statistics, continuous and discrete probability density functions, sampling distri-
butions, point and interval estimation, and tests of hypotheses.

University of North Dakota
Mathematics Department. May be repeated to maximum of 6 credits. On Demand.


415. Topics in Applied Mathematics. 1-3 credits. Prerequisite: Math 265 and consent of instructor. An introduction to selected areas in applied mathematics chosen from a variety of topics including: Applied algebra, difference equations, linear programming, modeling and simulation, 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.

414. Statistics. 3 credits. Prerequisite: Math 265. Sets, sample spaces, discrete probability, distribution functions, density functions, characteristic functions, study of normal, Poisson, binomial and other distributions with applications. S/2

405. Selected Topics in Mathematics. 1-3 credits. Prerequisite: permission of the Mathematics Department. May be repeated to maximum of 6 credits. On Demand.

407. Discrete Structures. 3 credits. Prerequisites: Math 208 and 166. 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 166. Metric and synthetic approach to Euclidean geometry. The usual topics in elementary geometry treated in a mathematically logical way. Topics include congruence, inequalities, parallelism, similarity, area, solid geometry and the circle. F

412. Differential Equations. 3 credits. Prerequisite: Math 266. Basic types of ordinary differential equations. Existence and uniqueness of solutions. F/2

411. Advanced Calculus I and II. 3 credits each. Prerequisite: Math 265 or Math 266. Basic properties of numbers, including divisibility, primes, congruences, Diophantine equations and residue theory. S/2

410. Linear Algebra. 3 credits. Prerequisite: Math 265 and 330 or consent of instructor. A theoretical treatment of systems of linear equations, matrices, vector spaces, linear transformations and elementary canonical forms. S

408. Differential Equations. 3 credits. Prerequisite: Math 208 and 166. This course introduces the techniques and types of reasoning needed in combinatorial problem-solving. The course includes topics from graph theory and combinatorics. 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.

376. Theory of Probability. 3 credits. Prerequisite: Math 265. Sets, sample spaces, discrete probability, distribution functions, density functions, characteristic functions, study of normal, Poisson, binomial and other distributions with applications. S/2


352. Advanced Engineering Mathematics II. 3 credits. Prerequisite: Math 266 and proficiency in a programming language. An introduction to several topics in applied mathematics, such as numerical analysis, statistics and complex variables. F/2, S/2, SS

375. Cooperative Education. Prerequisite: Math 300 or consent of instructor. For credit up to six credits. For elementary education majors only. Selected topics from Mathematical concepts appropriate to the elementary school curriculum. On Demand.

374. Reading Course in Mathematics. 1-3 credits, repeatable to 6 credits. Consent of instructor required. Directed individual reading on selected topics not developed in other courses. F/2, S/2, SS

Mechanical Engineering

D. Moen (Chair), Ames, Bandyopadhyay, Bibel, Grewal, Ness, Stanlake, Tolbert, and Zhu

The Mechanical Engineering Department prepares graduates to function effectively as mechanical engineers in a wide spectrum of industries. Mechanical Engineers most often work in thermal sciences, mechanical design, or manufacturing processes. The required curriculum includes the fundamentals of each of these areas with opportunity to specialize in one area provided by technical electives. In all cases, however, the program’s educational objectives are:

a) to develop depth in mathematics, science, and mechanical engineering topics
b) to develop experimental capabilities
c) to develop design skills
d) to develop teamwork experience and skill
e) to develop problem solving skills
f) to develop an understanding of professional and ethical issues
g) to develop communications skills
h) to develop global and societal perspectives of engineering work
i) to instill an ability and desire for lifelong learning
j) to develop knowledge of contemporary mechanical engineering issues
k) to develop skill in application of modern engineering tools.

Beginning with the freshman year, teamwork, problem solving, and design exercises are interwoven throughout the curriculum; culminating in a two-semester capstone design project during the senior year. Several courses include laboratories which develop experimental, teamwork, and communication skills. Technical papers required by selected courses develop knowledge of contemporary issues as well as communication skills. State-of-the-art computer software is used extensively throughout the curriculum. Students are strongly encouraged to prepare for a professional license by taking the national fundamentals of engineering (FE) exam prior to graduation. Students who excel academically are also well qualified to pursue graduate work in Mechanical Engineering or a related field.

School of Engineering and Mines

B.S. IN MECHANICAL ENGINEERING

Required 136 credits (36 of which must be numbered 300 or above, and 60 of which must be from a 4 year institution) including:

I. General Education Requirements, see pages 27-31.

II. Engineering Requirements
II. The Following Curriculum:

<table>
<thead>
<tr>
<th>Freshman Year</th>
<th>First Semester</th>
<th>Second Semester</th>
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<tbody>
<tr>
<td>Chem 121</td>
<td>General Chemistry</td>
<td>(3)</td>
</tr>
<tr>
<td>Chem 121L</td>
<td>General Chemistry Lab I</td>
<td>(3)</td>
</tr>
<tr>
<td>Engl 110</td>
<td>College Composition I</td>
<td>(3)</td>
</tr>
<tr>
<td>Eng 125</td>
<td>Intro to Professional Writing</td>
<td>(3)</td>
</tr>
<tr>
<td>Engr 101</td>
<td>Graphical Communication</td>
<td>(3)</td>
</tr>
<tr>
<td>Engr 200</td>
<td>Computer Applications in Engineering</td>
<td>(2)</td>
</tr>
<tr>
<td>Math 165, 166</td>
<td>Calculus I, II</td>
<td>(4)</td>
</tr>
<tr>
<td>Phys 251L</td>
<td>University Physics Lab I</td>
<td>(1)</td>
</tr>
<tr>
<td>Phys 252L</td>
<td>University Physics I</td>
<td>(3)</td>
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<tr>
<td>Arts and Humanities</td>
<td>(See page 45)</td>
<td>(3)</td>
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<thead>
<tr>
<th>Sophomore Year</th>
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<tbody>
<tr>
<td>Engr 201</td>
<td>Statics</td>
<td>(3)</td>
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<tr>
<td>Engr 203</td>
<td>Mechanics of Materials</td>
<td>(3)</td>
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<tr>
<td>Econ 201</td>
<td>Principles of Microeconomics</td>
<td>(3)</td>
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<tr>
<td>EE 208</td>
<td>Circuit Analysis</td>
<td>(3)</td>
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<tr>
<td>Math 265</td>
<td>Calculus III</td>
<td>(4)</td>
</tr>
<tr>
<td>Math 266</td>
<td>Intro to Differential Equations</td>
<td>(3)</td>
</tr>
<tr>
<td>ME 203</td>
<td>Mechanical Design Fundamentals</td>
<td>(3)</td>
</tr>
<tr>
<td>Phys 252</td>
<td>University Physics II</td>
<td>(3)</td>
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<td>Phys 252L</td>
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<td>or Chem 122</td>
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<th>Junior Year</th>
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<tbody>
<tr>
<td>Social Science</td>
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<tr>
<td>ME 301</td>
<td>Materials Science</td>
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<tr>
<td>ME 331</td>
<td>Fluid Mechanics</td>
<td>(3)</td>
</tr>
<tr>
<td>ME 313</td>
<td>Manufacturing Processes I</td>
<td>(3)</td>
</tr>
<tr>
<td>Math 321</td>
<td>Applied Statistical Methods</td>
<td>(3)</td>
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<tr>
<td>or Math 353</td>
<td>Advanced Engr Math II</td>
<td>(3)</td>
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<tr>
<td>ME 322</td>
<td>Kinematics and Dynamics of Machines</td>
<td>(3)</td>
</tr>
<tr>
<td>ME 323</td>
<td>Mech Component Design</td>
<td>(3)</td>
</tr>
<tr>
<td>ME 324</td>
<td>Dynamic Systems Analysis</td>
<td>(3)</td>
</tr>
<tr>
<td>ME 341, 342</td>
<td>Thermodynamics</td>
<td>(3)</td>
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<tr>
<td>Engr 460</td>
<td>Engineering Economy</td>
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<thead>
<tr>
<th>Senior Year</th>
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<tbody>
<tr>
<td>ME 418</td>
<td>Manufacturing Processes II</td>
<td>(3)</td>
</tr>
<tr>
<td>ME 474</td>
<td>Fund Heat &amp; Mass Transfer</td>
<td>(3)</td>
</tr>
<tr>
<td>ME 480</td>
<td>Mechanical Engineering Seminar</td>
<td>(3)</td>
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<tr>
<td>ME 483</td>
<td>Mechanical Measurements Lab</td>
<td>(3)</td>
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<tr>
<td>ME 486</td>
<td>Mechanical Engineering Practice</td>
<td>(3)</td>
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<tr>
<td>ME 487</td>
<td>Engineering Design</td>
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<tr>
<td>ME 488</td>
<td>Engineering Design</td>
<td>(2)</td>
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<td>Phil 370</td>
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<td>(3)</td>
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<td>Social Science</td>
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<tr>
<td>Technical Electives</td>
<td>(3)</td>
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</table>

**Technical Electives:**

| ME 416         | Advanced Manufacturing Processes | (3)   |
| ME 426         | Mechanical Vibrations | (3)             |
| ME 429         | Introduction to Finite Element Analysis | (3) |
| ME 445         | Energy Technology | (3)              |
| ME 446         | Gas Turbines | (3)              |
| ME 449         | Internal Combustion Engines | (3)   |
| ME 451         | Heating and Air Conditioning | (3)   |
| ME 462         | Introduction to Nuclear Engineering | (3) |
| ME 476         | Intermediate Fluid Mechanics | (3)   |
| ME 490         | Special Laboratory Problems | (3)   |
| ME 514         | Processing of Advanced Materials | (3) |
| ME 523         | Advanced Machine Design | (3) |
| ME 526         | Advanced Vibrations | (3)             |
| ME 529         | Advanced Finite Element Methods | (3) |
| ME 541         | Advanced Thermodynamics | (3)             |
| ME 545         | Fluidized-Bed Combustion | (3)         |

| ME 574         | Advanced Heat Transfer | (3)   |
| ME 590         | Special Topics | (3)              |

* Some of the following courses may be waived by completing Engr 100 — Professional Assessment Evaluation: Engr 101, Engr 200, ME 203, and ME 480. Phil 370 may also be waived, but not the University’s GER (See Engr 100 course description on pg. 93).

**Aerospace Concentration:** Requires 141 hours

Students completing the above curriculum with the following modifications will be deemed to hold a B.S. in Mechanical Engineering with an Aerospace Concentration.

1. Completion of Avit 102, Introduction to Aviation, 5 credits. This course includes earning a private pilot license and is recommended for the summer session between the freshman and sophomore years.**

2. The requirement of ME 418 will be replaced by a requirement for ME 429 (normally a technical elective).

3. Technical electives must be chosen from the aerospace group of electives as identified by a # in the above technical elective listing. An ME 490 or an ME 590 may also be included in the aerospace group at the discretion of the Mechanical Engineering Chair.

**Students already holding a private pilot license may earn a commercial license or an acceptable advanced rating through UND as a substitute for Avit 102.

<table>
<thead>
<tr>
<th>Courses</th>
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<tbody>
<tr>
<td>203. Mechanical Design Fundamentals</td>
<td>3 credits. Prerequisite: Engr 101. Corequisites: Engr 200 and Phys 251 or Engr 201. Academic career plan, computational aids to engineering, shop familiarization analysis of a machine or system, specification, writing and design of a simple machine or system. F</td>
</tr>
<tr>
<td>290. Special Laboratory Problems</td>
<td>1 to 3 credits. Repeatable to a maximum of 6 credits. Consent of instructor. Laboratory investigations of interest to student and faculty. On Demand.</td>
</tr>
<tr>
<td>301. Materials Science</td>
<td>3 credits. Prerequisites: Chem 121, Phys 252. The theory of the structure of matter, the prediction and evaluation of engineering properties of materials. F</td>
</tr>
<tr>
<td>306. Fluid Mechanics</td>
<td>3 credits. Prerequisites: Phys 251, Math 265. Fluid properties; fluid statics and dynamics; transport theory and transport analogies, conservation of mass, energy, and momentum; dimensional analysis; boundary layer concepts; pipe flows; compressible flow; open channel flow. F,S</td>
</tr>
<tr>
<td>311. Manufacturing Processes I</td>
<td>3 credits. Prerequisites: ME 301 and Engr 203. Corequisites: Engr 460. Descriptive and analytical study of manufacturing methods and economics as they pertain to casting, welding and forming processes. Includes lab. S</td>
</tr>
<tr>
<td>313. Engineering Materials</td>
<td>2 credits. Prerequisite: ME 301. Relationships between materials, manufacture and design of engineering components. S</td>
</tr>
<tr>
<td>322. Kinematics and Dynamics of Machines</td>
<td>3 credits. Prerequisite: Engr 101, 200, 202. Analytical and graphical study of motions, velocities, accelerations and forces for design of machine elements such as linkages, cams and gears. F</td>
</tr>
<tr>
<td>323. Machine Component Design</td>
<td>3 credits. Prerequisite: Engr 203, 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 lab. S</td>
</tr>
<tr>
<td>337. Cooperative Education</td>
<td>1-3 credits repeatable to 12. Prerequisite: Eligible for admission to the mechanical engineering degree program. A practical work experience with an employer closely associated with the student’s academic area. Arranged by mutual agreement among student, department and employer. S/U grading only. F,SS</td>
</tr>
<tr>
<td>341. Thermodynamics</td>
<td>3 credits. Prerequisites: Phys 251, Math 166. Fundamental concepts of thermal energy relationships, processes and cycles. F-S</td>
</tr>
<tr>
<td>342. Thermodynamics</td>
<td>3 credits. Prerequisite: ME 341. Real vapors, gas-vapor mixtures, power and refrigeration cycles. S</td>
</tr>
<tr>
<td>416. Advanced Manufacturing Processes</td>
<td>3 credits. Prerequisites: ME 311, 418. Individual projects involving the manufacturing economics and flow charts for selected products and basic technical principles of manufacturing processes. Includes laboratory. On Demand.</td>
</tr>
<tr>
<td>418. Manufacturing Processes II</td>
<td>3 credits. Prerequisites: ME 311, 418. Descriptive and analytical study of manufacturing methods and economics as they pertain to machining, metrology and automation. Includes laboratory. F</td>
</tr>
<tr>
<td>423. Computer Aided Design</td>
<td>3 credits. Prerequisites: Engr 200, ME 322 and 323. Computer aided design topics including interactive graphics, engineering drafting, solids modeling, analysis and design of machine components, numerical methods, simulations, CAD hardware and software. On Demand.</td>
</tr>
</tbody>
</table>
426. Mechanical Vibrations. 3 credits. Prerequisite: ME 324. Vibration analysis and design as it applies to single and multidegree freedom mechanical systems, isolation and absorption of vibration, vibration of continuous systems, numerical methods of solution. On Demand.

429. Introduction to Finite Element Analysis. 3 credits. Prerequisite: Engr 202. Finite element analysis is introduced as a design tool. Emphasis is given to modeling techniques and element types. Matrix and energy methods are also introduced. On Demand.

445. Energy Technology. 3 credits. Prerequisite: ME 342. Study of energy sources, energy conversion systems and related economics. On Demand.


454. Refrigeration. 3 credits. Prerequisite: ME 342. Mechanical and absorption refrigeration cycles, low temperature refrigerations and properties of refrigerants. On Demand.

474. Fundamentals of Heat & Mass Transfer. 3 credits. Prerequisites: Math 266, ME 306 and 341. Convection, conduction, radiation, dimensional analysis and design of heat transfer equipment. F


480. Mechanical Engineering Seminar. 3 credits. Prerequisite: Senior standing. Reports and discussions on current developments in mechanical engineering. F

483. Mechanical Measurements Laboratory. 3 credits. Prerequisites: ME 342, EE 206*. Experiments and written reports on the operation and performance of instruments and basic mechanical engineering equipment. F

486. Mechanical Engineering Practice. 3 credits. Prerequisites: ME 483. Continuation of ME 483 with emphasis shifted to instrumentation, operation, and analysis of mechanical equipment and processes. S

487. Engineering Design. 2 credits. Prerequisites: ME 323, 342. Corequisites: Engr 460, ME 474, 483. The first course of a 2 course sequence in Engineering Design, establish concepts and important features of the machine or system, do market analysis, establish design objectives, explore alternatives, conduct research, specify constraints. F

488. Engineering Design. 3 credits. Prerequisites: ME 487. Systematic study and practice essential to the optimal design of a complete machine or system, utilizing economic and social constraints together with current mechanical and thermal design techniques. The course is a continuation of ME 487 taken the preceding 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

Medicine (Med)

100. Introduction to Health Sciences Professions. 2 credits. Introduction to the roles, ethics, certification, education, employment and fundamental knowledge and skills related to the health science professions. F,S

Microbiology and Immunology (MBio)

Melvold (Chair), Flower, Hill, Sailer, and Young

202. Introductory Medical Microbiology Lecture. 3 credits. Prerequisite: Chem 105 or 107. Three hours lecture per week. An introductory medical microbiology course primarily for nursing and clinical lab science students but open to allied health students with permission of the instructor. This course provides a background in all aspects of microbial agents and disease. F

202L. Introductory Medical Microbiology Laboratory. 2 credits. Prerequisite: Chem 105 or 107. Corequisite: MBio 202. Four hours laboratory per week. An introductory laboratory course in the isolation and identification of all types of microorganisms with an emphasis on those that cause disease. F

302. General Microbiology Lecture. 2 credits. Prerequisite: Biol 150 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. Prerequisites: Biol 150, 151, or BiCh 301 or equivalent. An introduction to the fundamentals of immunology including immunochemistry, humoral and cellular response, hypersensitivity, immunodeficiency, immunogenetics, tolerance and immunodiagnosis. F

402. Clinical Microbiology Lecture. 2 credits. Prerequisite: MBio 302 or equivalent. Survey of bacterial and fungal infections of humans. S

402L. 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. S

494. Directed Studies. (CCN) 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 required. F,S,SS

Military Science (MSci)

M. Drumm (Chair), Allen, Davis, Thatcher, and Thomas,
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 only by nonscholarized 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 credits, 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)
- HPER 102 ................................Fitness, Military Physical Conditioning ........... (1)
- Hist 210 ................................Military History ............................................................... (3)

3 credits from the following:

- Pols 220 ................................International Politics ..................................................... (3)
- Pols 225 ................................Comparative Politics ...................................................... (3)
- Hist 239 ................................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:

- Comm 212 .....................Interpersonal Communication ....................................... (3)
- Mgmt 300 ......................Principles of Management (Restricted to BPA Majors) ...... (3)
- Mgmt 305 ......................Managerial Concepts (Restricted to non-BPA Majors) .... (3)
- Nurs 478 .....................Leadership and Management (Restricted to Nursing Majors) .... (3)
- Phil 370 .....................Morals and the Professions: Ethics in Science and Engineering ... (3)
- Phil 370 .....................MQP: Ethics in Business and Public Administration ........... (3)
- BVED 217 ..................Fundamentals of Management Information Systems ............... (4)
- BVED 309 ..................Information Management Systems .................................. (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. F

102. Military Science II. 2 credits. Learn and apply the principles of effective leadership. Reinforce self-confidence through participation in physically challenging exercise with upper division ROTC students. Develop oral and written communication skills that will improve individual and group interaction. Develop skills in basic first aid, land navigation, and radio communications. S

201. Military Science II. 2 credits. Learn/apply ethics-based leadership skills that develop individual abilities and contribute to the building of effective teams of people. Develop skills in oral presentations, writing concisely, planning of events, coordination of group efforts, advanced first aid, land navigation and basic military tactics. Learn fundamentals of ROTC’s Leadership Assessment Program. Leadership lab, MSci 202L, and a weekend exercise is optional. F

202. Military Science II. 2 credits. Introduction to individual and team aspects of military tactics in small unit operations. Includes use of radio communications, 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. S

211. Combat Operations. 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 participa-

Music

Music is offered at the University of North Dakota in the belief that it contributes to the aesthetic development of humankind. Fully accredited 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 also encouraged to contribute any other materials (compositions, papers, recordings, etc.) for consideration. The purpose of this advisory process is to ensure that students are capable of college-level music study, and to select the degree program most appropriate to their goals and abilities.

The pre-professional study of music at the University begins with a series of core courses common to all music major degree programs along with individual lessons in the appropriate area and ensemble participation. Students must complete an audition in 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 desiring admittance into the applied lesson sequence for performance majors (Mus 196, 296, 396, 496) must present a formal audition before the appropriate applied faculty. Students accepted for this program must demonstrate exceptional potential for performance excellence. The Performance student is expected to pass a Qualifying 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. Students in the Bachelor of Music with a Major in Music Education and B.S.Ed. with a Combined Major in Elementary Education and Music degree programs must complete all levels of the Piano Proficiency Sequence (or Class Lessons: Keyboard Skills I-IV) 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 of Piano Proficiency (or Class Lessons: Keyboard Skills I). 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 credits (36 of which must be numbered 300 or above, and 60 of which must be from a 4 year institution) including:

I. General Education Requirements, see pages 27-31.

II. College of Arts and Sciences Requirements, see page 39.

III. The Following Curriculum:

   (May be waived by examination)

   Core Courses

   Mus 100       Introduction to the Understanding of Music                  (3)

   (Credits apply toward CTL 390)

   Mus 111, 112, 211, 212       Theory I, II, III, IV                          (12)
   Mus 113, 114, 213, 214       Ear Training & Sight
   Singing I, II, III, IV        (4)
   Mus 227                   Popular 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                      (4)

   Ensembles, Large and Small          (12)

   Mus 450       Applied Music Pedagogy                              (2)

   VITAL MAJORS

   Other Supportive 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    (8)

   Electives                                 (8)

   Electives in disciplines other than the major

   INSTRUMENTAL MAJORS

   Other Supportive Courses

   History and Literature                  (3)

   Theory and Composition                (6)

   Music Electives (Other than performance) (3)

   Music 423 (required for Keyboard Performance majors) (3)

   Electives                                 (13)

   Electives in disciplines other than the major.

BACHELOR OF MUSIC WITH A MAJOR IN MUSIC EDUCATION

(Instrumental or Choral Emphasis)

Required 132 credits (36 of which must be numbered 300 or above, and 60 of which must be from a 4 year institution) including:

I. General Education Requirements, see pages 27-31.

II. College of Arts and Sciences Requirements, see page 39.

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 113, 114, 213, 214       Ear Training & Sight
   Singing I, II, III, IV        (4)
   Mus 227                   Popular 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                      (4)

   Ensembles, Large and Small          (12)

   Mus 450       Applied Music Pedagogy                              (2)

   INSTRUMENTAL EMPHASIS

   Other studies

   Mus 411       Instrumental and Choral Arranging                    (2)
   Mus 414       Analysis of Musical Form                               (2)
   Mus 429       Instrumental Literature                               (2)

   Performance Courses

   Major Instrument                          (7)

   Major Instrumental Ensemble         (7)

   Piano as a secondary instrument (can include Mus 131 Piano Class I and Mus 132 Piano Class II) (4)

   Mus 341, 342   Choral, Instrumental Conducting                    (4)
   Mus 497       Recital                                               (1)

   Music Education

   Mus 131, 132   Class Lessons                                       (5)
   Mus 432       Instrumental Methods                                (3)

   Music Technology

   Mus 318       Introduction to MIDI Technology                    (2)

   VOCAL/CHORAL EMPHASIS

   Other Studies

   Mus 411       Instrumental and Choral Arranging                    (2)
   Mus 414       Analysis of Musical Form                               (2)
   Mus 428       Choral Literature                                   (2)

   Performance Courses

   Major Instrument                          (7)

   Major Choral Ensemble                    (7)

   Voice or Piano as a secondary instrument (can include Mus 131 Piano Class I and Mus 132 Piano Class II) (4)

   Mus 341, 342   Choral, Instrumental Conducting                    (4)
   Mus 497       Recital                                               (1)

   Music Education

   Mus 131, 132   Class Lessons                                       (4)
   Mus 201       Diction for Singers                                  (1)
   Mus 439       Choral Methods                                     (3)

   Music Technology

   Mus 318       Introduction to MIDI Technology                    (2)
PROFESSIONAL EDUCATION*

*See Department of Music Advisor for professional education course sequence.

BACHELOR OF ARTS WITH A MAJOR IN MUSIC

Required 125 credits (36 of which must be numbered 300 or above, and 60 of which must be from a 4 year institution) including:

I. General Education Requirements, see pages 27-31.

II. The Following Curriculum:

MUS 100................................Introduction to the Understanding of Music
(May be waived by examination).....................................................(3)

Core Courses

MUS 111, 112, 211, 212 ..........Theory I, II, III, IV .....................................(12)
MUS 113, 114, 213, 214 ..........Ear Training & Sight Reading I, II ..........(2)
MUS 227..............................Popular and Classical Musics of the World .....(3)
MUS 330, 331, 332..............Music History Survey I, II, III ...................(9)

Other Supportive Courses

Performance (one instrument or voice) ..................................................(4)
Major Ensemble .................................................................................(3)
Electives in Theory/Comp, History/Lit. or Applied Music ......................(7)
MUS 494................................Senior Project .................................................(2)

Additional Courses in Music ................................................................(10)

Performance (Applied music, conducting, ensembles) .............................(4)
Electives in History/Literature/Theory/Composition ................................(6)
(May include, but not limited to, other courses in music major Core, such as 211, 212, 227, 330, 331, 332, 340).

MINOR IN MUSIC

Required 21 credits:

MUS 100.............................Introduction to the Understanding of Music
(May be waived by examination).....................................................(3)

Core Courses

MUS 111, 112 .................Theory I, II .........................................................(6)
MUS 113, 114 .................Ear Training and Sight Singing I, II ..............(2)
MUS 330, 331, 332.........Music History Survey I, II, III .......................(9)
MUS 340.............................Basic Conducting ........................................(2)

Additional Courses in Music ...................................................................(10)

Performance (Major instrument) ...........................................................(4)
Ensembles .........................................................................................(4)
Voice lessons .....................................................................................(1)
Music 341.............................Choral Conducting ..................................(2)
Music Education ..............................................................................(7)
MUS 131 or 132.................Voice or Piano Class ..................................(1)
T&L 426............................Methods & Materials in Elementary Music ..........(3)

Electives in Music. .............................................................................(3)

MINOR IN MUSIC

Required 23 credits:

MUS 100.............................Introduction to the Understanding of Music
(May be waived by examination).....................................................(3)

Core Courses in Music

MUS 111, 112 .................Theory I, II .........................................................(6)
MUS 113, 114 .................Ear Training and Sight Singing I, II ..........(2)
MUS 340.............................Basic Conducting ........................................(2)
MUS 330 or 331 or 332......Music History Survey I, II, III ..............(3)

Additional Courses in Music ...............................................................(10)

Applied Music ..................................................................................(4)
Ensembles .........................................................................................(2)
T&L 426............................Elem Music Methods and Materials ..............(3)

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

108. 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. Dictation 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

201. 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 I,II. 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; rhythmic, melodic, and harmonic patterns. F/S

113,114,115. Ear Training and Sight Singing I,II,III. 2 credits. 113 is prerequisite for 114. 114 is a co-requisite for 113 and a prerequisite for 114. Training in reading at sight and 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: 213, 211. Continuation of Theory III with primary emphasis on 20th Century musical thought and techniques. S

213,214. Ear Training and Sight Singing IV, V. 2 credits. 114 is prerequisite for 213 which is prerequisite for 214. Continuation of the development of sight reading and aural recognition skills including music dictation. F/S

411. Instrumental and Choral Arranging. 2 credits. Prerequisite: Music 112. Scoring techniques for instrumental and vocal ensembles, including band, orchestra, jazz ensemble, choir and children’s chorus. Specific areas of focus to be determined by abilities and interests of the students. S

414. Analysis of Musical Form. 2 credits. Prerequisite: Mus 211. Analysis of the principal forms of musical composition. S


416. Composition. 2 credits (repeatable). Prerequisite: Music 112. 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.

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; includes Native American, Jazz, Popular, and World music. F/S

276. Collegium Musicum. 1 to 4 credits not to exceed 1 credit per semester. Study and performance of vocal and instrumental music of the Medieval, Renaissance, and Baroque eras and other selected compositions which are rarely performed. On Demand.

330. Music History Survey I. 3 credits. Prerequisite: Music 100 or instructor’s permission. A survey of western music history Ancient Times through the Middle Ages and Renaissance. S

331. 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/S

332. 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

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

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/S

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/S

**Music Education**

131. **Class Lessons**. 1 credit. Beginning class instruction in any of the following instrumental classes: Bassoon, 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: Bassoon, 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 112, 114. Introduction to the use of the World Wide Web, computers and synthesizers, samplers, and computer assisted instruction software in composition, performance and music education. S


341. **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/S/2

433. **Orchestra Directors' Course**. 1 credit. Organizational and administrative problems of the orchestra director such as curriculum, recruiting, scheduling, programming, promotion of the string program, and literature. On Demand.

437. **Music Education Special Topics**. 1 to 3 credits. F/S

439. **Choral Methods**. 3 credits. F/S

**Music Performance**

a. **Conducting**

340. **Basic Conducting**. 2 credits. Prerequisite: Music 112, 114. 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/S, Voice F/S, 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 Bards**. 1 credit. F/S

264. **Women's Chorus**. 1 credit. F/S

266. **Olde English Christmassse Feaste**. 1 credit. Corequisite: MUS 260. Participation in all scheduled activities for the Olde English Christmassse Feaste, to include singing (large groups and strolling minstrels), serving meals, acting, and ushering. F

267. **class Lessons: Keyboard Skills III**. 1 credit. Prerequisite: MUS 131K. Continuation of the development of fundamental piano skills with emphasis on the improvement of keyboard technique and repertoire. F

268. **Class Lessons: Keyboard Skills IV**. 1 credit. Prerequisite: MUS 267. Continuation of the development of fundamental piano skills with emphasis on the improvement of keyboard technique and repertoire. S

269. **Opera Workshop**. 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/Athletic Band**. 1 credit. The Pride of the North Band is open to all students on campus, and performs on the field and in the stands at all home games for the UND football, men's and women's basketball, and hockey teams. 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, woodwind quintets, 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 audition 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, Birger, Bjerke, Burg, Christian, Gielje, Gragert, Gross, Guido, Hanson, Helgeson, Henly, Heuer, Hunter, Hurley, Ide, Iszler, Klose, Kunz, Labun, Langemo, Lindseth, Macejkovic, Mallow, Melland, Milburn, O'Connor, Olson, Radel, Schauer, B. Thompson, M. Thompson, Tyree, Volden, Youngs, and Yorkovich

**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 Accrediting Commission, have initial approval from the Commission on Collegiate Nursing Education and are approved by the North Dakota State Board of Nursing.

**B.S. IN NURSING**

Required 129 credits (36 of which must be numbered 300 or above, and 60 of which must be from a 4 year institution) including:

1. General Education Requirements (Including 9 credits of Arts and Humanities, 9 credits of Communications 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 27-31.
II. College of Nursing Degree Requirements, see page 57.

III. The Following Curriculum:

**Freshman Year (Prenursing)**

*Engl 110..........................College Composition I..........................(3)
*Chem 115, 115L..................Introduction to Organic and Biochemistry and Laboratory..........................(4)
*Chem 116, 116L..................Introduction to Organic and Biochemistry and Laboratory..........................(4)
*Psy 111..........................Introduction to Psychology..........................(3)
* Anat 204..........................Anatomy for Paramedical Personnel..........................(3)
* Anat 204L.........................Anatomy Laboratory..........................(2)
* Soc 110..........................Introduction to Sociology..........................(3)
* Soc 115..........................Social Problems..........................(3)
* Anth 171..........................Cultural Anthropology..........................(3)
* Engl 120..........................College Composition II..........................(3)
* Engl 125..........................Technical and Business Writing..........................(3)

*** Electives/Arts & Humanities

**Sophomore Year**

<table>
<thead>
<tr>
<th>Course</th>
<th>First Semester</th>
<th>Second Semester</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Phy 301</strong></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>(3)</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>Pharm 315</td>
<td>Introduction to Pharmacology</td>
<td>(3)</td>
</tr>
<tr>
<td>Psy 250</td>
<td>Developmental Psychology</td>
<td>(4)</td>
</tr>
<tr>
<td>Nutr 240</td>
<td>Fundamentals of Nutrition</td>
<td>(3)</td>
</tr>
<tr>
<td>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>
<tr>
<td>*** Electives/Arts &amp; Humanities</td>
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</table>

**Junior Year**

<table>
<thead>
<tr>
<th>Course</th>
<th>First Semester</th>
<th>Second Semester</th>
</tr>
</thead>
<tbody>
<tr>
<td>Psy 270</td>
<td>Abnormal Psychology</td>
<td>(4)</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>(4)</td>
</tr>
<tr>
<td>Nurs 383</td>
<td>Childbearing Nursing I</td>
<td>(2)</td>
</tr>
<tr>
<td>Nurs 384</td>
<td>Childbearing 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>Childbearing Nursing III</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>(1)</td>
</tr>
<tr>
<td>Statistics</td>
<td></td>
<td>(1)</td>
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<tr>
<td>Nurs 392</td>
<td>Nursing Research</td>
<td>(3)</td>
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<tr>
<td>*** Electives/Arts &amp; Humanities</td>
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**Senior Year**

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<tr>
<th>Course</th>
<th>First Semester</th>
<th>Second Semester</th>
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</thead>
<tbody>
<tr>
<td>Nurs 478</td>
<td>Leadership and Management</td>
<td>(3)</td>
</tr>
<tr>
<td>Nurs 448</td>
<td>Community Health Nursing</td>
<td>(3)</td>
</tr>
<tr>
<td>Nurs 484</td>
<td>Community Health</td>
<td>(3)</td>
</tr>
<tr>
<td>Nurs 481</td>
<td>Multisystem Complex Care</td>
<td>(4)</td>
</tr>
<tr>
<td>Nurs 488</td>
<td>Nursing Practice Theory</td>
<td>(2)</td>
</tr>
<tr>
<td>Nurs 498</td>
<td>Nursing Practice</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>(2)</td>
</tr>
</tbody>
</table>

Students are encouraged to consider Cooperative Education, Independent Study and Honors courses; students should obtain supplemental information from the College of Nursing and Director of Student Affairs or faculty advisor.

* Required Courses for Admission to the Nursing major.

*** A total of 9 hours of Arts & Humanities required by graduation to meet General Graduation Requirements. Sufficient elective credits needed by graduation to reach 129 total credits (usually 6 credits).

Courses

Unless otherwise indicated, nursing courses are open only to those admitted to the Nursing Program or with the consent of the instructor.

The methods for achievement of curriculum/course objectives may be individualized as needed.

NOTE: Some clinical courses may require early morning, evening, night, or weekend clinicals to provide the most varied and rewarding experience for the students. Some experiences may be at places distant from Grand Forks.

231. 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.

232. Social Problems. 3 credits. 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. Seminar. F.S. Open to non-majors.


297. Cooperative Education. (CCN) 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. Qualifled 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.
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 a Registered Dietitian (R.D.). Students work in a variety of settings to assist clients to improve or maintain nutritional health. Upon completion of this degree, the graduate is eligible to take the examination for professional registration and 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 a “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 for Dietetics Education of The American Dietetic Association, a specialized accrediting body recognized by the Council on Higher Education Accreditation and the United States Department of Education.

The major in Community Nutrition enables students to develop a thorough understanding of the science of nutrition as well as the ability to communicate nutrition principles effectively and accurately to the public. The focus of study is on the role of nutrition in achieving and maintaining health, emphasizing changing needs throughout the life cycle. Graduates will be prepared to complete community nutrition assessments and to work individually or collaboratively with other professionals in identifying problems and developing, conducting and evaluating interventions to improve the overall health of individuals and communities. Students majoring in Community Nutrition select from two options. Graduates completing Option A are eligible to become Licensed Nutritionists (L.D.) in the state of North Dakota.

Nutrition and Dietetics
(N&D)

J. Hall (Chair), Goodwin, and Rude

B.S. IN COMMUNITY NUTRITION

Required 125 credits (36 of which must be numbered 300 or above, and 60 of which must be from a 4 year institution) including:

I. General Education Requirements, see pages 27-31.
II. College of Nursing Requirements, see page 57.
III. Prerequisite Courses:

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chem 121, 121L</td>
<td>General Chemistry I &amp; II and Laboratories</td>
<td>8</td>
</tr>
<tr>
<td>Chem 240, 240L</td>
<td>Survey of Organic Chemistry and Laboratory</td>
<td>5</td>
</tr>
<tr>
<td>BiCh 301</td>
<td>Biochemistry</td>
<td>3</td>
</tr>
<tr>
<td>Anat 204/204L</td>
<td>Anatomy for Paramedical Personnel and Laboratory</td>
<td>5</td>
</tr>
<tr>
<td>or</td>
<td>Biol 150, 150L</td>
<td>General Biology I and Laboratory</td>
</tr>
<tr>
<td>or</td>
<td>Phy 301</td>
<td>Mechanics of Human Physiology</td>
</tr>
<tr>
<td>or</td>
<td>Psych 111</td>
<td>Introduction to Psychology</td>
</tr>
<tr>
<td>or</td>
<td>Mgmt 305</td>
<td>Managerial Concepts</td>
</tr>
<tr>
<td>or</td>
<td>MBio 302/302L</td>
<td>General Microbiology and Laboratory</td>
</tr>
<tr>
<td>or</td>
<td>Mkt 201</td>
<td>Personal Marketing</td>
</tr>
<tr>
<td>or</td>
<td>Soc 326</td>
<td>Sociological Statistics</td>
</tr>
<tr>
<td>or</td>
<td>Psy 241</td>
<td>Introduction to Statistics</td>
</tr>
<tr>
<td>or</td>
<td>Comm 110</td>
<td>Fundamentals of Public Speaking</td>
</tr>
<tr>
<td>or</td>
<td>N&amp;D 100</td>
<td>Introduction to Nutrition and Dietetics</td>
</tr>
<tr>
<td>or</td>
<td>Swk 200</td>
<td>Introduction to Helping Skills</td>
</tr>
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</table>

IV. Required Courses:

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>N&amp;D 100</td>
<td>Introduction to Nutrition and Dietetics</td>
<td>1</td>
</tr>
<tr>
<td>N&amp;D 200</td>
<td>Nutrition Promotion Strategies</td>
<td>1</td>
</tr>
<tr>
<td>N&amp;D 241</td>
<td>Fundamentals of Nutrition</td>
<td>3</td>
</tr>
<tr>
<td>N&amp;D 241</td>
<td>Maternal and Child Nutrition</td>
<td>2</td>
</tr>
<tr>
<td>N&amp;D 242</td>
<td>Nutrition in the Aging Process</td>
<td>2</td>
</tr>
<tr>
<td>N&amp;D 260</td>
<td>Principles of Foods and Food Science</td>
<td>5</td>
</tr>
<tr>
<td>N&amp;D 335</td>
<td>World Food Patterns</td>
<td>3</td>
</tr>
<tr>
<td>N&amp;D 341</td>
<td>Maternal and Child Nutrition</td>
<td>2</td>
</tr>
<tr>
<td>N&amp;D 342</td>
<td>Community Nutrition</td>
<td>3</td>
</tr>
<tr>
<td>N&amp;D 345</td>
<td>Nutrition in the Aging Process</td>
<td>2</td>
</tr>
<tr>
<td>N&amp;D 400</td>
<td>Professional Issues</td>
<td>2</td>
</tr>
<tr>
<td>N&amp;D 498</td>
<td>Research in Nutrition and Dietetics</td>
<td>1</td>
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</table>

V. Choice of either Option A or Option B.

Option A:

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>N&amp;D 340</td>
<td>Foodservice Management</td>
<td>3</td>
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<tr>
<td>N&amp;D 441</td>
<td>Advanced Nutrition</td>
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Option B:

<table>
<thead>
<tr>
<th>Course Code</th>
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<th>Credits</th>
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<tbody>
<tr>
<td>Soc 335</td>
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<td>3</td>
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<tr>
<td>PEXS 327</td>
<td>Fitness for Life</td>
<td>3</td>
</tr>
<tr>
<td>or</td>
<td>N&amp;D 348</td>
<td>Sports Nutrition</td>
</tr>
<tr>
<td>or</td>
<td>Soc 355</td>
<td>Drugs and Society</td>
</tr>
<tr>
<td>or</td>
<td>Phar 315</td>
<td>Introduction to Pharmacology</td>
</tr>
<tr>
<td>or</td>
<td>Soc 352</td>
<td>Aging</td>
</tr>
</tbody>
</table>

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 credits (36 of which must be numbered 300 or above, and 60 of which must be from a 4 year institution) including:

I. General Education Requirements, see pages 27-31.
II. College of Nursing Requirements, see page 57.
III. The Following Curriculum:

Pre-professional Requirements:

- Anat 204 and 204L. Anatomy for Paramedical Personnel and Laboratory (5)
- or
- Biol 150, 150L. General Biology I and Laboratory (4)
- Chem 121, 121L. General Chemistry I and Laboratory (8)
- Chem 240, 240L, Survey of Organic Chemistry and Laboratory (5)
- Math 105, College Algebra (3)
- MBio 302. General Microbiology (3)
- Mkt 201. Personal Marketing (3)
- N&D 100. Introduction to Nutrition and Dietetics (1)
- N&D 260. Principles of Foods and Food Science (5)
- N&D 335. World Food Patterns (3)
- Phy 301. Mechanics of Human Physiology (4)
- Psyc 111. Introduction to Psychology (3)
- Psyc 241. Introduction to Statistics. (4)
- Swk 200. Introduction to Helping Skills (2)

Professional Dietetics Requirements:

BiCh 301. Biochemistry. (3)
- Mgmt 305. Managerial Concepts. (3)
- N&D 325. Orientation to Dietetics. (1)
- N&D 340. Food Service Systems Production (3)
- N&D 341. Maternal and Child Nutrition. (3)
- N&D 342. Community Nutrition. (3)
- N&D 345. Nutrition In the Aging Process. (2)
- N&D 350. Medical Nutrition Therapy I. (2)
- N&D 400. Professional Issues. (2)
- N&D 440. Food Service Systems Management. (1)
- N&D 441. Advanced Nutrition. (4)
- N&D 442. Medical Dietetics. (4)
- N&D 450. Medical Nutrition Therapy II. (3)
- N&D 491. Dietetic Seminar. (1)
- N&D 498. Supervised Practice Experiences in Dietetics (24)
- N&D 498a. Research in Nutrition and Dietetics (3)

Minor in Nutrition*

A minor in Nutrition requires successful completion of at least 20 credits taken from the following list of courses. Selection of courses should be made in consultation with a faculty member in the Department of Nutrition and Dietetics.

- N&D 100. Introduction to Nutrition & Dietetics (1)
- N&D 200. Nutrition Promotion Strategies (1)
- N&D 335. World Food Patterns (3)
- N&D 340. Food Service Systems Production (3)
- N&D 342. Community Nutrition. (3)
- N&D 346. Principles of Foods & Food Science (5)
- N&D 348. Sports Nutrition (2)
- N&D 397. Cooperative Education (1-2)
- N&D 400. Professional Issues (2)
- N&D 440. Food Service Systems Management (1)
- N&D 441. Advanced Nutrition. (4)

* A maximum of 4 credits form this list of courses may be counted in the minor.

Courses

100. Introduction to Nutrition and Dietetics. 1 credit. The philosophy, history, future trends and career options in nutrition and dietetics will be discussed. S/U grading only. S

200. Nutrition Promotion Strategies. 1 credit. Prerequisites: NUTR 240, N&D 241 and 242. Study of communication and educational theories and techniques used to promote nutritional well-being with applications for a culturally diverse population. S

Nutr 240. Fundamentals of Nutrition. 3 credits. Basic principles of nutrition with applications for individuals and family groups. F/S

241. Maternal and Child Nutrition. 2 credits. Prerequisite: Nutr 240. Investigation and application of nutrition as it impacts the growth and development of humans, including pregnancy, infancy, childhood and adolescence with emphasis on recommendations for promoting healthy lifestyles for each life stage. F

242. Nutrition in the Aging Process. 2 credits. Prerequisite: Nutr 240. Application of physiological, socio-psychological, and educational aspects of nutrition as it impacts the health and well-being of people as they age. F

260. Principles of Foods and Food Science. 5 credits. Prerequisite: College level chemistry course. Introduction to food selection and preparation principles, including consumer trends, sensory evaluation, meal and menu planning and food sanitation. Application of scientific principles in relationship to food composition, physical properties and chemical reactions. S

300. Orientation to Dietetics. 1 credit. Prerequisite: Admission to the dietetic program. Study of the profession of dietetics and its relationship to health care systems including professional concerns and ethical issues. S

335. World Food Patterns. 3 credits. Examination of the food patterns of selected world population groups considering the effect of social, cultural, and economic practices on nutritional values. F

340. Foodservice Systems Production. 3 credits. Prerequisites: N&D 260. Principles of food production as applied to preparation, service, and evaluation of foods; use and operation of food service equipment. F

342. Community Nutrition. 3 credits. Prerequisite: N&D 241, 345 or consent of instructor. Application of nutrition principles to populations in various community environments and stages of life cycle with consideration given to interrelated health, social, and economic concerns. S

348. Sports Nutrition. 2 credits. Prerequisites: Nutr 240. A study of nutrition designed to meet the specialized needs of the athlete. S

350. Medical Nutrition Therapy I. 2 credits. Prerequisites: N&D 241, 242 and Phy 301. The study and application of nutritional assessment techniques, nutrition care planning, methodologies, interviewing and counseling skills and medical nutrition therapy for common medical conditions. F

397. Cooperative Education. 1-2 credits per semester. This course provides practical work experience with an employer closely related to the student’s major and professional goals. S/U grading only. F/S

400. Professional Issues. 2 credits. Prerequisites: Senior status and consent of instructor. Analysis of professional issues including but not limited to grantsmanship, marketing, professional presentations and complementary therapies in nutrition and dietetics. Development of skills to address such issues. F/S

436. Integration of Dietetic Knowledge and Practice. 3 credits. Prerequisites: N&D 340, 342, 448, I, II, III. Synthesizes the skills of program supervised practice experiences and the didactic courses which present the knowledge component. S

440. Food Service Systems Management. 1 credit. Prerequisite: N&D 340. Apply principles of management to quantity and quality food production and analysis. F

441. Advanced Nutrition. 4 credits. Prerequisites: N&D 240, Chem 212. A comprehensive investigation of the nutritional needs of humans with emphasis on nutritional biochemistry and current issues. S

450. Medical Nutrition. 3 credits. Prerequisites: N&D 350 and 441. The study and application of nutritional intervention principles and medical nutrition therapy for complex medical conditions. F/S

491. Dietetic Seminar. 1 credit. Prerequisite: Senior Standing in Dietetics. Class members will plan, prepare, present and evaluate a seminar for a professional audience. S

494. Research in Nutrition and Dietetics. 1-4 credits (repeatable to 6 credits). Prerequisite: A course in statistics and consent of the instructor. Study and application of research designs and procedures appropriate to nutrition and dietetics. F/S

498. Supervised Practice in Dietetics. 1-9 credits, repeatable to 24. Prerequisite: regular grading and 490b. S/U grading. Prerequisite: Consent of instructor one semester prior to enrollment. Development of professional skills and competencies through planned learning experiences in which knowledge and theory are applied to simulated and real life situations in dietetics. F/S

499. Special Topics in Nutrition and Dietetics. 1-4 credits (repeatable to a maximum of 6 credits). Prerequisite: Consent of instructor. Special topics and/or indepth independent study in selected content areas relative to nutrition and dietetics. On demand.

Occupational Safety and Environmental Health (OSEH)

Moser (Division Director) and Diez (Program Coordinator)

The Occupational Safety and Environmental Health (OSEH) program is a 58-credit major leading to the baccalaureate degree, bachelor of science. The OSEH program is administered by the Faculty of Industrial Technology. It has a 30-credit core of interdisciplinary course work, which provides a sound professional background. The remaining 28 credits are selected from one of three technical concentrations: Industrial Safety, Industrial Hygiene, or Hazardous Materials. The degree program draws course work from 12 academic departments and utilizes resources from the University’s Office of Occupational Safety and Environmental Health.
Admission Process

Admission to the occupational safety and environmental health major program of study is on a competitive basis. Ten students may be admitted per academic year. Students not meeting these minimum requirements may be admitted with probationary status upon recommendation of the Occupational Safety and Environmental Health Admissions Committee, program director, and division director of the faculty of Industrial Technology.

A. A student must have completed the equivalent of 48 semester credits of course work.

B. A student must have completed the following courses (or equivalents) with a minimum grade of C:
- Chemistry 121 & 122 and Laboratories ..........(8)
- Math 103 .........................................................(3)
- BVED 217 .........................................................(4)
- Phys 161 and Laboratory ..............................(4)
- Biol 150-151 & Laboratories ........................(8)

C. A student must have completed 15 credits in residence at the University of North Dakota with a minimum 2.20 GPA. Transfer students will have official transcripts evaluated to determine the 15-credit requirement.

Admission Procedure

Obtain the application packet and submit:

A. The application form.

B. One reference. (Sent directly to the University of North Dakota by the person writing the reference).

C. An official transcript of previous course work. (Sent by your institution directly to UND).

D. Essay on “Rationale for Applying for Admission to the Occupational Safety and Environmental Health Program, University of North Dakota” (part of application packet).

E. The submitted materials will be examined, analyzed, and a decision will be made on your application. You will receive written notice of that decision. The decision may be that you have been accepted, placed on the waiting list for a succeeding semester, or denied admission.

College of Business and Public Administration

B.S. in Occupational Safety and Environmental Health

Required 125 credits (36 of which must be numbered 300 or above and 60 of which must be from a 4 year institution) including:

I. General Education Requirements, see pages 27-31.

II. OSEH Admission Requirements (see above)

Occupational Safety and Environmental Health Curriculum:

General Core: (Required) 30 credit hours

58 credits to include:
- Math 146 Applied Calculus I ..............................................(3)
- Anat 204 Anatomy for Paramedical Personnel .................(3)
- Econ 210 Intro to Business & Economic Statistics ............(3)
- Psy 301 Industrial & Organizational Psychology ..............(3)
- IT 312 Computer Aided Design/Drafting ......................(3)
- OSEH 345 Emergency Response ....................................(1)
- PEXS 310 First Aid ....................................................(2)
- Engl 125 Business & Technical Writing .......................(3)
- Acct 312 Principles of Management .........................(3)
- Mgmt 302 Human Resources Management ...................(3)

Plus one of the following three options:

INDUSTRIAL SAFETY CONCENTRATION (OPTION I)

Required: 28 credits including:

1) The following 15 credits:
   - OSEH 305 Fire Safety .............................................(2)
   - OSEH 325 Construction Safety .................................(3)
   - OSEH 355 Inspections .............................................(1)
   - OSEH 405 Industrial Hygiene ................................(3)
   - OSEH 425 OSEH Seminar ......................................(3)
   - OSEH 440 Industrial Safety ...................................(3)

2) 13 credits selected from the following:
   - CIEn 444 Contracts and Specifications ...................(3)
   - IT 212 Principles of Graphic Design & Layout .............(3)
   - IT 337 Cooperative Education .................................(1-3)
   - IT 400 Teaching Technology Education ...................(3)
   - OSEH 335 Hazardous Materials ............................(3)
   - OSEH 375 Asbestos .................................................(2)

INDUSTRIAL HYGIENE CONCENTRATION (OPTION II)

Required: 28 credits including:

1) The following 17 credits:
   - Chem 212 Organic Chemistry ................................(5)
   - OSEH 405 Industrial Hygiene ................................(3)
   - PhTx 410 Drugs Subject to Abuse .........................(2)
   - OSEH 425 OSEH Seminar ......................................(3)

2) 11 credits selected from the following:
   - CIEn 444 Contracts and Specifications ...................(3)
   - IT 212 Principles of Graphic Design & Layout .............(3)
   - IT 337 Cooperative Education .................................(1-3)
   - IT 400 Teaching Technology Education ...................(3)
   - OSEH 355 Inspections .............................................(1)
   - OSEH 375 Asbestos .................................................(2)

HAZARDOUS MATERIALS CONCENTRATION (OPTION III)

Required: 28 credits including:

1) The following 16 credits:
   - Chem 212 Organic Chemistry ................................(5)
   - OSEH 335 Hazardous Materials ............................(2)
   - OSEH 415 Waste Handling/Disposal .........................(2)
   - OSEH 425 OSEH Seminar ......................................(3)

2) 12 credits selected from the following:
   - CIEn 444 Contracts and Specifications ...................(3)
   - IT 212 Principles of Graphic Design & Layout .............(3)
   - IT 337 Cooperative Education .................................(1-3)
   - IT 400 Teaching Technology Education ...................(3)
   - OSEH 226 Transportation Safety ............................(2)
   - OSEH 305 Fire Safety .............................................(2)
   - OSEH 355 Inspections .............................................(1)
   - OSEH 375 Asbestos .................................................(2)
   - PhTx 410 Drugs Subject to Abuse .........................(2)

Graduation Requirements for the BS OSEH Degree

Students must achieve the following to graduate with the Bachelor of Science in Occupational Safety and Environmental Health administered through the Faculty of Industrial Technology and the College of Business and Public Administration.

1. Meet the applicable graduation requirements of the College of Business and Public Administration.
2. Have a 2.50 GPA in the major program of study.
3. Meet the standard for the exit examination of the student’s selected concentration(s).
4. Successful completion of the mid-program review, portfolios, and the written report.

Retention Standards for the BS OSEH Degree

To remain a student in good standing, the student must attain the following:

1. A cumulative GPA of 2.20 and a minimum of 2.50 in the major program of study.
2. Submit a portfolio of materials upon completion of 24 credits in the major for a mid-program evaluation of successful progress. Included in this portfolio will be a position paper relating to the goals, objectives, and responsibilities of the safety and health professional.
3. Upon completion of 35 credits of the major, a written report will be submitted that outlines the student’s philosophical position in relation to the student’s selected concentration within the Occupational Safety and Environmental Health major.

Students not achieving the GPA standard, or deemed to not be making satisfactory progress as a result of the mid-program review or not achieving a satisfactory review of the written report, will be placed on probation for one semester. At the conclusion of that semester, if the student will be reevaluated and either returned as a student in good standing or dropped from the program. After two semesters, the student may apply for readmission to the major program of study.

Courses

226. Transportation Safety, 3 credits. An introductory course in transportation safety pertaining to personalized and fleet transportation systems. Emphasis will be on human characteristics related to driving, driving improvement, and state/national laws.

305. Construction Safety, 2 credits. Prerequisite: Chem 122. Students will explore and familiarize themselves with those codes that are used to ensure fire-safe environments in structures of all types. The student will learn how to apply these codes to various structures, occupancies, and situations.

F/2
Occupational Therapy

S. McIntyre (Chair), Bass, Byram, Fox, Stube, and Zimmerman

The Occupational Therapy program is accredited by the Commission on Accreditation in Occupational Therapy Education. Information regarding accreditation is available at the ACOTE website. 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 eligible for 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 NBCOT 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 the first two years; he/she must make written application for admission to the Bachelor of Science in Occupational Therapy. The student spends the next two years as a professional student in the occupational therapy program. The 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 attend 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 Wyoming residents at Casper College, Casper, WY. Tuition and other information regarding this 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 125 credits (36 of which must be numbered 300 or above, and 60 of which must be from a 4 year institution) including:

I. General Education Requirements, see pages 27-31.
II. School of Medicine and Health Sciences, see page 55.
III. The Following Curriculum:

The following courses are required to be taken prior to starting the Professional Occupational Therapy Program:

Freshman Year

First Semester
Engl 110 ...................... College Composition I ................................. (3)
Biol 150,151L ................ General Biology I (laboratory) .................... (4)
Psyc 111 ...................... Introduction to Psychology .......................... (3)
Arts and Humanities Electives* .................................................... (3)

Second Semester
Engl 120 ...................... College Composition II ................................ (3)
Biol 115,115L or 121,121L Introductory Chemistry (laboratory) .......... (4)
Psyc 241 ...................... Introduction to Statistics** ........................... (4)
Comm 110 ..................... Fundamentals of Public Speaking ............... (3)
Math 103 or 104 .......... College Algebra or Finite Mathematics .......... (3)
Arts and Humanities Electives* .................................................... (3)

Sophomore Year

First Semester
Anat 204 ..................... Anatomy for Paramedical Personnel .......... (3)
Psyc 241 ...................... Introduction to Statistics** ........................... (4)
Psyc 250 ..................... Developmental Psychology ......................... (4)
Soc 110 ...................... Introduction to Sociology ............................. (3)

Second Semester
OT 200 ....................... Introduction to Occupational Therapy .......... (2)
OT 205 ....................... Medical Terminology ................................. (1)
Phy 301 ....................... Mechanics of Human Physiology ................. (4)
Psyc 270 ..................... Abnormal Psychology ............................... (3)
Arts and Humanities Electives* .................................................... (3)

* When completing your Arts and Humanities courses, it is required by the University of North Dakota that at least one course (3 credits) fulfills the World Cultures Requirement. For more information, see page xxx.
** As a prerequisite for PSY 241, student need to take Math 103 or 104.

PROFESSIONAL PROGRAM

Junior Year

First Semester
OT 303 ..................... OT with Infants & Pre-School Children .......... (4)
OT 305 ..................... Group Experience ...................................... (1)
OT 309 ..................... Medical Science ...................................... (2)
OT 315 ..................... Orientation to Occupational Therapy .............. (1)

Second Semester
OT 332 ..................... Anatomy for Occupational Therapy ............. (5)
Second Semester

OT 304 .................................................. Psychosocial Aspects of Occupational Therapy with Children, Adolescents, and Young Adults ................................................. (4)

OT 307 .................................................. Occupational Therapy with School Children and Young Adults .................................................. (4)

OT 308 .................................................. Leadership Skills in Occupational Therapy ................................................. (1)

OT 310 .................................................. Medical Science .................................................. (3)

OT 312 .................................................. Muscle Function in Health and Disease ................................................. (4)

OT 386 .................................................. Practicum: Children and Adolescents ................................................. (1)

Senior Year

In the Senior Year, students will be divided into two groups. This is due to the nature of the courses and the facilities available (Practicum, Community Placement, and Laboratory).

Group A

First Semester

OT 402 .................................................. Orientation to Research in Occupational Therapy .................................................. (2)

OT 404 .................................................. Psychosocial Aspects of Occupational Therapy with the Maturing Adult ................................................. (4)

OT 405 .................................................. Organization and Administration .................................................. (2)

OT 482 .................................................. Practicum: Psychosocial Dysfunction .................................................. (1)

OT 482S .................................................. Seminar: Treatment in Psychosocial Dysfunction .................................................. (1)

Second Semester

OT 401 .................................................. Adaptive Technology for Occupational Therapy .................................................. (2)

OT 403 .................................................. Physical Aspects of OF with the Maturing Adult ................................................. (4)

OT 415 .................................................. Integration of Occupational Therapy with the Maturing Adult ................................................. (4)

OT 483 .................................................. Practicum: Physical Dysfunction .................................................. (2)

OT 484 .................................................. Community and Industrial Aspects of Occupational Therapy .................................................. (1)

OT 483S .................................................. Seminar: Treatment of Physical Dysfunction .................................................. (1)

OT 493 .................................................. Workshop .................................................. (1)

Group B

First Semester

OT 401 .................................................. Adaptive Technology for Occupational Therapy .................................................. (2)

OT 402 .................................................. Orientation to Research in Occupational Therapy .................................................. (2)

OT 403 .................................................. Physical Aspects of Occupational Therapy with the Maturing Adult ................................................. (5)

OT 405 .................................................. Organization and Administration .................................................. (2)

OT 483 .................................................. Practicum: Physical Dysfunction .................................................. (2)

OT 483S .................................................. Seminar: Treatment of Physical Dysfunction .................................................. (1)

OT 484 .................................................. Community and Industrial Aspects of Occupational Therapy .................................................. (1)

Second Semester

OT 404 .................................................. Psychosocial Aspects of Occupational Therapy with the Maturing Adult ................................................. (4)

OT 415 .................................................. Integration of Occupational Therapy Theory .................................................. (1)

OT 482 .................................................. Practicum: Psychosocial Dysfunction .................................................. (2)

OT 482S .................................................. Seminar: Treatment in Psychosocial Dysfunction .................................................. (1)

OT 493 .................................................. Workshop .................................................. (1)

Upon satisfactory completion of all academic courses, students are required to complete at least 6 months of fieldwork to be eligible for graduation.

Fieldwork

OT 485 .................................................. Fieldwork — Psychosocial Dysfunction .................................................. (3 months)

OT 487 .................................................. Fieldwork — Physical Dysfunction .................................................. (3 months)

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. F

304. Psychosocial Aspects of OT with Children, Adolescents & 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 OF 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

307. Occupational Therapy with School Children & Young Adults, 4 credits. Prerequisites: Registered in professional Occupational Therapy program, OT 303, 305, 309, 322. Human development, school years through young adulthood. Effects of physical illness and trauma. Assessment and treatment procedures. Therapeutic techniques and media. 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 OF 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 muscular function on the extremities and trunk. Orientation to patterns of muscle action with neuromuscular involvement. Theory and techniques of muscle testing. Laboratory included. S

315. Orientation to Occupational Therapy Theory, 1 credit. Prerequisite: Registered in professional Occupational Therapy Program. Corequisites: OT 303, 305, and 309. Orientation to philosophical origins and theoretical framework of theories used in occupational therapy practice. F

322. Anatomy for Occupational Therapy, 5 credits. Prerequisite: Registered in professional Occupational Therapy program. Detailed lectures and demonstrations on neuroanatomy and anatomy of the extremities. Laboratory included. F/S

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 40 university credits, and approval of the Director of OF Cooperative Education Program. S-U grading only. F/S, SS

386. Practicum: Children/Adolescents, 1 credit. Prerequisites: Registered in professional OT program. Co-requisites OT 304, 307. Occupational Therapy experience in pediatric fieldwork facilities in the tri-state region supervised by registered occupational therapists and developmental staff. S-U grading only. S

401. Adaptive Technology for Occupational Therapy, 2 credits. Prerequisite: Registered in professional Occupational Therapy program, and OT 304, 307, 309, 310, and 312. Co-requisites: OT 403, 483, 483S, 484. The study of materials, tools, and equipment related to Occupational Therapy with emphasis on technical communication skills. Laboratory included. F/S

402. Orientation to Research in Occupational Therapy, 2 credits. Prerequisite: Registered in Professional Occupational Therapy program. Lecture and practice in the proper use of research design, source material, elementary statistics, and scientific manuscript preparation. F

403. Physical Aspects of OF with the Maturing Adult, 5 credits. Prerequisite: Registered in professional Occupational Therapy program. Physical dysfunction in the maturing adult with the emphasis on Occupational Therapy evaluation, planning, and implementation of treatment. Laboratory included. F/S

404. Psychosocial Aspects of OT with the Maturing Adult, 4 credits. Prerequisite: Registered in professional Occupational Therapy program, OT 304, 305, 308. Psychosocial dysfunction in the maturing adult with the emphasis on OT evaluation, planning, and implementation of treatment. Laboratory included. F/S

405. Organization and Administration of Occupational Therapy, 2 credits. Prerequisite: Registered in the professional Occupational Therapy program. F

415. Integration of Occupational Therapy Theory, 1 credit. Prerequisites: Registered in professional Occupational Therapy program, and OT 303, 304 and 307. Corequisites: OT 403 or 404. Integration of didactic material presented in OT 315: Orientation to Occupational Therapy Theory, all occupational therapy professional theory courses, and level one clinical experiences. S

482. Practicum: Psychosocial, 2 credits. Prerequisites: Registered in professional Occupational Therapy program. Occupational Therapy experience in psychiatric field work facilities in the tri-state region supervised by registered occupational therapists and university faculty. S-U grading only. F/S

482S. Seminar: Practicum Integration I. 1 credit. Prerequisites: Registered in professional Occupational Therapy program. Integration of didactic information with Level I clinical practice in the area of psychosocial dysfunction. F/S

483. Practicum: Physical Dysfunction, 2 credits. Prerequisites: Registered in professional Occupational Therapy program. Observation and experience in field work facilities in the tri-state region supervised by registered occupational therapists and university faculty. S-U grading only. F/S

483S. Seminar: Practicum Integration II. 1 credit. Prerequisites: Registered in professional Occupational Therapy program. Application of Occupational Therapy in industrial and community settings within commuting distance from UND. F/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

101. Introduction to Peace Studies. 3 credits. An introduction to the major content of the Peace Studies Program: problems of peace and war in a nuclear age, alternative means of conflict resolution, a history of nonviolence as a moral and political philosophy, and a variety of social justice issues. F,S

201. Moral Thought in the Nuclear Age. 3 credits. A course in decision making in a nuclear age. The course seeks to discover a modern sense of moral duty by acknowledging the realities of the nuclear age and asking what now we ought to do about them. S

350. Peace Studies Seminar: Interdisciplinary Perspectives. 3 credits. Repeatable. An interdisciplinary seminar taught by two or more faculty members from different disciplines. Topics are variable. Emphasis will be variably historical, issue centered, or text centered. Students will be expected to participate in discussion, do a significant piece of writing, and contribute to a class project or group presentation. F,S

360. Conflict Management. 3 credits. A survey of the nature, causes, and dynamics of conflict and of the ways that conflicts can be managed. F

370. Nuclear Weapons. 3 credits. A study of the history and development of nuclear weapons, their physical characteristics and capabilities and the related political and strategic planning which supports them. S

394. Independent Study. 1-4 credits (maximum of 6 credits). Prerequisite: Consent of instructor. Supervised reading, study or research on an individual topic. On Demand.

491. Senior Seminar. 3 credits. Prerequisites: Senior standing and advisory committee approval. Production of a major academic project, which is shared with other majors, concludes the student’s program. The subject may be any current public issue facing people who are searching for a peaceful resolution to human conflict. On Demand.

497. Internship. 3-6 credits. Prerequisites: 12 credits of Peace Studies courses and consent of Peace Studies director. Required for majors. F,S

Pharmacology and Toxicology (PhTx)

Borg, Clarenz, Drewett, Epstein, Ho, Jahn, and Martsof

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 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 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, 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.

Courses

Phrm 315. Introduction to Pharmacology. (CCN: 215) 3 credits. Prerequisites: Phys 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. S

410. Drugs Subject to Abuse. 2 credits. Biochemical, pharmacological, behavioral and therapeutic aspects of substance abuse. Prerequisite: Advanced undergraduate standing. S

492. Research in Pharmacology and Toxicology. (CCN) 1-4 credits, repeatable to 4 credits. The conduct of laboratory research under faculty supervision. Advanced undergraduate standing and consent of instructor required. F,S,SS

499. Readings in Pharmacology and Toxicology. (CCN) 1-4 credits. Prerequisites: Advanced undergraduate standing and consent of instructor. Topics and credits to be arranged with the instructor. On Demand.

Philosophy and Religion (Phil and Rels)

L. Lindholm, Lowe, McKeon, Miller, and Poochigian

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 traditions.

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 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 credits (36 of which must be numbered 300 or above, and 60 of which must be from a 4 year institution) including:

I. General Education Requirements, see page 27-31.

II. Philosophy Concentration requirements.

- 33 major hours, including:
  - Phil 101. Introduction to Philosophy
  - Phil 220. Introduction to Logic
  - 3 hours from:
    - Religion Curriculum
      - 6 hours from:
        - Phil 300. Classical Greek and Hellenistic Philosophy
        - Phil 301. Medieval Philosophy
        - Phil 302. Renaissance and Enlightenment
        - Phil 303. Kant and the Nineteenth Century
      - A minimum of 18 hours of upper level work in Philosophy.
       - 6 hours from an open-ended list of diversity/multicultural courses, which will include, but not be limited to, the following: (for other possibilities, check with advisors in the department).
       - A&S 225. Introduction to the Study of Women
       - A&S 250. African American Religious History
       - Eng 365. Black American Writers
       - Geog 151. Human Geography
       - Hist 345. The Ancient Near East
       - IS 352. Native American Religious Thought
       - Phil 283. Oriental Philosophy
       - Rel 203. World Religions
       - T&L 433. Multicultural Education
     - 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: PHILOSOPHY CONCENTRATION

Required 20 credits including:

- Rel 210. Old Testament
- Rel 203. World Religion
- Religion Electives (6 hours must be at 300-400 level)...

### 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

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Phil 301. Medieval Philosophy
Phil 302. Renaissance and Enlightenment
Phil 303. Philosophy Since the Enlightenment

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 credits (36 of which must be numbered 300 or above, and 60 of which must be from a 4 year institution) including:

I. General Education Requirements, see pages 27-31.

II. Religion Concentration Requirements:

- 30 hours, including:
  - Rel 101. Introduction to Religion (West)
  - Phil 300. Classical Greek and Hellenistic Philosophy
  - 3 hours from:
    - Rel 102. Introduction to Religion (East)
    - Rel 220. Old Testament
    - Rel 250. East and West in Religions
  - Religion Electives (15 must be at 300-400 level)

- 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
  - A&S 250. African American Religious History
  - Eng 365. Black American Writers
  - Geog 151. Human Geography
  - Hist 345. The Ancient Near East
  - IS 352. Native American Religious Thought
  - Phil 283. Oriental Philosophy
  - Rel 203. World Religions
  - T&L 433. Multicultural Education

Some of these courses simultaneously fulfill other Philosophy/Religion requirements.

Level IV proficiency in a foreign language (i.e., 4 semesters) is strongly recommended.
215. Contemporary Moral Issues, (CCN) 3 credits. An introduction to the problems connected with moral choice. This course examines the moral judgments that follow from the values held by a wide variety of people today on topics ranging from abortion to race, sexual behavior, the environment, etc. F,S

220. Introduction to Logic, (CCN) 3 credits. A theoretical and practical introduction to logical principles—deductive and inductive, 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, (CCN: 383) 3 credits. The main philosophical systems of India, China and Japan will be examined. E.U, Classical Greek and Hellenistic Philosophy 3 credits. The ancient Greeks and Romans laid the foundations for 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 persistence. F

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 AlKhaldi. S

302. Renaissance and Enlightenment, 3 credits. Philosophy from the time of Petrarch (c. 1350) to that of the American Revolution as seen in the writings of such philosophers as Bruno, Bacon, Descartes, Spinoza and Hume. This is the period that sees the origins of modern thought. The implications of the work of the philosophers had an important role in shaping contemporary society, including the arts, literature, science, politics, and economics. F, S/2

303. Kant and the Nineteenth Century, 3 credits. Philosophy from the “Age of Reason” through the Industrial Revolution as reflected in the writings of Kant and other philosophers such as Hegel, Mill, Marx, and Nietzsche. S

304. Twentieth Century Philosophy, 3 credits. Contemporary developments in Philosophy since the beginning of the 20th century. S/2

305. American Philosophy, 3 credits. A survey of major figures and movements in American philosophy. F/S/3

310. Ethics (CCN: 210) 3 credits. A study of traditional problems in ethical theory including the foundations of ethical philosophy, the nature of the good, ethical relativism, 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 Can 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); logistic systems. Students majoring in mathematics or computer science will be especially welcome in this course. S/2

360. Analysis of reasoning; the study of critical thinking and its limits will be covered. F/S

370. Aesthetics: What is Beauty? 3 credits. Theories of aesthetic experience and value; art and the creative process; the philosophic basis of criticism; art and society. Students of any major who are interested in the fine arts and/or literature are encouraged to take this course. S/2

372. 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, 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/good/bad, an update of the two cultures debate. F/S

373. 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. F/S

399. Philosophic Themes, (CCN) 1-3 credits. This course provides an opportunity for detailed examination of important philosophic themes. Topics will vary depending on 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 philosophical problems stemming from the methodology of the behavioral sciences. Students interested 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 justified 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 rules. F/S

430. Philosophy of Science and Technology, 3 credits. A study of the philo- sophic aspects of science and technology. Problems include, what makes a theory sci- entific?, 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

491. Seminar in Philosophy, (CCN) 3-6 credits. Prerequisites: Junior or senior standing and consent of the instructor. A consideration of selected philosophic problems in the form of texts of mutual interest to departmental faculty and more advanced students. Previous work in philosophy related disciplines is recommended. On Demand.

494. Independent Study in Philosophy, (CCN) 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

Religion at the University is not studied with the assumption that one faith is true and the others are false. Rather, all religions are seen as creative, living systems of beliefs and practices that enable men and women around the globe to make sense of their lives. By studying, and to a limited degree projecting ourselves into, these belief systems, we are better able to appreciate the outlooks and values of other cultures and gain new insight into what gives meaning and worth to our lives.

At the University religion is studied as the Supreme Court recommended in a 1963 opinion: “It might be said that one’s education is not complete without the study of comparative religion or the history of religion and its relationship to the advancement of civilization.”

The study of religion is an integral part of a liberal education. It is also an enrichment for courses of study in preparation for careers in business, education, health care, social and psychological services. Courses in religion are a good preparation for 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

116. 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


203. World Religions, (CCN) 3 credits. A general survey of major world reli- gions including Hinduism, Buddhism, Confucianism, Taoism, Islam, Judaism and Christianity. Stress on the major tenets of these religions. S

220. Old Testament, (CCN) 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

228. Early Christian Traditions, 3 credits. A survey of Christian traditions, from their origins in Judaism and Greek philosophy; continuing through the growth of Christian doctrine in the 4th to 8th centuries; and concluding with the church in the Middle Ages. F


247. Introduction to Judaism, 3 credits. Comparative Jewish thought in cultural context and as a manifestation in Jewish literature. Topics to be studied include the sacred, the human community, the role of Israel, ethics, the Holocaust. F/S

250. East and West in Religion, 3 credits. A critical and comparative study of people’s religious orientations between Eastern and Western traditions. F

301. Life and Religion of Paul, 3 credits. A study of the Pauline themes under- lying the Christian faith as seen through the writings of this creative religious personality. Emphasis on current Pauline studies. S

305. Mysticism, 3 credits. A study of mystics and their writings from the Eastern and Western traditions and the application of methods of religious inquiry into the presence of mystical phenomena. F/S
Physical Education and Exercise Science (PEXS)

R. Brinkert (Chair), Steen, Stiles, Von Duveillard, Watson, and Whitehead

The mission of the Department of Physical Education and Exercise Science 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 HPED.

C. Contribution of the department’s particular expertise and talents as a 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, and athletic coaching, or to continue their education in graduate studies.

Basic Instruction Courses — the Department of PEXS also provides basic instruction for all students of the University in a wide variety of sport, aquatics, dance, and fitness classes. Activity courses in physical education may count toward the hours required for graduation. These credit hours may be earned by enrolling in PEXS 101, 102 or 103. In some cases, equipment is provided by the department; however, there are fees assessed for certain specified activities.

College of Education and Human Development

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 K-12. The related area option is for those students who wish to find employment in the commercial fitness field.

B. Minor in Athletic Coaching — offered to students who wish to prepare for athletic coaching.

C. Minor in Health Education. — preparation for school health teaching.

B.S. IN PHYSICAL EDUCATION

Required 125 credits (36 of which must be numbered 300 or above, and 60 of which must be from a 4 year institution) including:

I. General Education Requirements, see pages 27-31.

II. The College of Education and Human Development Requirements, see page 47.

III. Prerequisite courses, 19 hours including: (Some credits may be used to satisfy the General Education requirements.)

- Chem 115 & 115L — Introductory Chemistry and Laboratory, (4)
- Psy 111 — Introduction to Psychology, (3)
- Soc 110 — Introduction to Sociology, (3)
- Anat 204, 204L — Anatomy for Paramedical Personnel and Laboratory, (5)
- Phy 301 — Mechanics of Human Physiology, (4)

IV. Required curriculum, 32 hours including:

- PEXS 101 — Introduction to Physical Education, (3)
- PEXS 223 — Movement Performance and Analysis, (12)
- PEXS 276 — Motor Learning, (3)
- PEXS 332 — Biomechanics, (4)
- PEXS 401 — Sport Sociology, (3)
- PEXS 402 — Exercise Physiology, (4)
- PEXS 440 — Sport Psychology, (3)

V. One of the following options:

A. Teacher Education/Certification Option

Students seeking certification to teach physical education in grades K-12 must complete the requirements for the B.S. in Physical Education and the Secondary Education requirements in the Department of Teaching and Learning. See page 155.

Formal admission to Teacher Education is normally sought while enrolled in T&L 200. See page 48.

Required 22 hours, including:

- PEXS 205 — Physical Education for the Elementary Grades, (3)
- PEXS 310 — First Aid and CPR, (2)
- PEXS 323 — Intro to Teaching in Phys. Ed., and Sport Settings, (3)
- PEXS 323L — Lab — Introduction to Teaching, (1)
- PEXS 355 — Motor Development, (3)
- PEXS 400 Phys. Ed. (included in Secondary Education Certification Sequence, T&L), (3)
- PEXS 400L — Lab — Methods and Materials, (1)
- PEXS 403 — School Health Education, (2)
- PEXS 404 — Adapted Physical Education, (2)
- PEXS 406 — Strategies for Teaching, (3)
- PEXS 406L — Lab — Strategies for Teaching, Elementary School, (1)
- PEXS 487 — Senior Teaching Seminar, (1)

Required in the Department of Teaching and Learning 30 hours consisting of 14 hours of Secondary Education Certification Preparation Sequence and 16 hours of student teaching. See page 155.

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 adviser.
MINOR IN ATHLETIC COACHING

Required 27 credits, including:

PEXS 109 Introduction to Coaching ...........................................(1)
PEXS 207/207L Prevention & Care of Injuries .............(3)
PEXS 223 Movement Performance and Analysis ...................(3)
PEXS 323 Intro to Teaching in Physical Ed. and Sport Settings ...........................................(3)
PEXS 323L Intro to Teaching in Phys. Ed. and Sport Settings — Lab. ..........................................(1)
PEXS 324 Sport Physiology .....................................................(3)
PEXS 325 Youth and Children in Sport ...........................................(3)
PEXS 341 Organization & Administration of Athletics ..........(2)
PEXS 423 Coaching Methods (2 hours each to coincide with sport specific HPER 223s) (6)
PEXS 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:

PEXS 310 First Aid and CPR .....................................................(2)
PEXS 327 Fitness for Life .........................................................(3)
PEXS 403 School Health Education ..........................................(2)
Psy 250 Developmental Psychology ...........................................(4)
Nut 240 Fundamentals of Nutrition .............................................(3)

and 7-10 hours to include one course from each of the following 3 groups:

Biol 124 Environmental Science .............................................(2)
Geol 103 Introduction to Environmental Issues .................(2)
Biol 250 Human Sexuality ......................................................(3)
T&L 252 Child Development ..................................................(3)
Soc 335 The Family ..............................................................(3)
PlTs 410 Drugs Subject to Abuse ............................................(2)
Soc 355 Drugs and Society .....................................................(3)
Swk 410 Drugs: Addition 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.Ed. WITH A COMBINED MAJOR IN ELEMENTARY AND PHYSICAL EDUCATION

For curriculum outline see page 154 under the Department of Teaching and Learning.

Physical Education Courses

101. Physical Education. 1 credit. Instruction in aquatics, dance, fitness, individual sports, team sports, and outdoor pursuits at the introductory level. F,S,SS

102. Physical Education. 1 credit. Prerequisite: PEXS 101 in the same activity or consent of the instructor. Instruction in aquatics, dance, fitness, individual sports, team sports, and outdoor pursuits at the intermediate level. F,S

103. Physical Education. 1 credit. Prerequisite: PEXS 102 in the same activity or consent of the instructor. Instruction in aquatics, dance, fitness, individual sports, team sports, and outdoor pursuits at the advanced level. F,S

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 rules and techniques for officiating various sports. Offered by sport; credit is repeatable by sport. On Demand.


206. PEXS Workshop. 1 credit. Each workshop will emphasize an area related to HPER. Course may be repeated as topics change. On Demand.

207L Prevention and Care of Injuries. 1 credit. An overview of the scope of athletic training with emphasis on injury management and preventative measures. F,S

223. Movement Performance and Analysis. 1 credit, repeatable to 12. Prerequisite: PEXS 101 or performance equivalence in appropriate activity. Development of performance, performance analysis and knowledge as they apply to aquatics, dance, fitness, individual sports, team sports, and outdoor pursuits. Professional preparation courses for HPER majors. F,S

276. Motor Learning. 3 credits. Co-requisite: PEXS 276L. Consideration of various factors which may affect learning and performance in human movement activities. S

309. Water Safety Instruction. 2 credits. Prerequisite: Current Senior Lifesaving Certificate. Scientific movement principles, theories and techniques as they apply to the teaching and conduct of aquatic activities. Laboratory teaching assignments. S

310. First Aid and CPR. 2 credits. Recommended Advanced First Aid and CPR practices for the care of persons who have been injured or suddenly become ill. F,S

323. Introduction to Teaching in Physical Education and Sport Settings. 3 credits. Prerequisites: PEXS 107 & 223. Corequisites: PEXS 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. On Demand.

323L. Introduction to Teaching in Physical Education and Sport Settings Laboratory. 1 credit. Prerequisites: PEXS 107 & 223. Corequisite: PEXS 323L. 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.

328. Biomechanics. 4 credits. Prerequisite: Anat 204, 204L. The study of human movement with special emphasis on those movements related to sport and physical activity. F

337. Cooperative Education in PEXS. 1-4 credits, repeatable to 16. Prerequisite: PEXS 107 or 201. A practical work experience with an employer closely associated with the student’s academic area. Arranged by mutual agreement among student, department, and employer. S/U grading only. F,S,SS

341. Organization and Administration of Athletics. 2 credits. Principles and practices for management of the interscholastic athletic program. F

355. Applied Motor Development. 3 credits. Changes in motor performance which occur with age, physical and mental development as they relate to these changes. On Demand.

358. Practicum. 2 credits. Prerequisites: PEXS 222 and 321. Independent and group study of professional placement and leadership in recreation and leisure settings. Practical experiences in recreation settings within the community. Includes lectures, site visits, and fieldwork hours. F,S

400. Methods and Materials for Teaching Physical Education in the Secondary School. 3 credits. Prerequisites: PEXS 406 and admission to Teacher Education. Corequisite: PEXS 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. Prerequisite: PEXS 400L and admission to Teacher Education. Corequisite: PEXS 4000. 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 110. The critical exploration of the function of sports in American culture, in an interdisciplinary fashion, with a focus on the contemporary scene. F

402. Exercise Physiology. 4 credits. Prerequisite: Phy 301. The acute and chronic effects of exercise, intensity and duration of exercise on physiological function. S

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. S

404. Adapted Activities. 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. S

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: PEXS 406L. The development of skills and knowledge related to teaching physical education to young children. On Demand.

406L. Strategies for Teaching Physical Education in the Elementary School—Laboratory. 1 credit. Prerequisites: PEXS 323L, 205, and admission to Teacher Education. Corequisite: PEXS 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

423. Coaching Methods. 2 credits. Prerequisite: PEXS 223 in same sport. Repeatable with different sports to a maximum of 10 credits. Methods employed in coaching specific sports. F,S

440. Sport Psychology. 3 credits. Prerequisite: Psy 111. Examination of psychological constructs influencing the competitive sport process and physical activity. S

450. Dance Production. 2 credits. Prerequisite: PEXS 350 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 PEXS. 1-4 credits repeatable to 9. Specialized topics related to physical education, health and recreation. On Demand.

480. Field Experience in PEXS. 1-8 credits. Prerequisite: Consent of instructor and upper division status. Placement of student in a practical setting under university faculty supervision. F,S
Physical Therapy (PT)

T. Mohr (Chair), Danks, Decker, Frappier, Flom-Melland, Jeno, Johnson, LaBrecque, Mabey, 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.
MINOR IN PHYSICS
Required 20 credits in Physics. The specific courses should be in consultation with the department.

Courses

110/110L. Introductory Astronomy. (CCN) 3 credits/1 credit. An introductory study of the universe: The solar system, stars, stellar revolution, galaxies, black holes, big bang cosmology, and the expanding universe. The astronomy laboratory 110L is optional for 1 credit.

130/130L. Natural Science—Physics. (CCN) 4 credits. Topics selected to illustrate the nature and development of scientific thought, and may include waves, light, optics, the solar system, stars, and galaxies. The laboratory is a corequisite of this course.

140. Physics for Poets. (CCN) 3 credits. An introduction to the fundamental concepts of physics, especially those developed in the twentieth century. A knowledge of elementary algebra is recommended, but the course is designed for students with a limited mathematical background. No laboratory. On Demand.

150. Physics for Aerospace Sciences. 4 credits. Corequisite: Phys 150L. An introduction to the principles and concepts of physics as they apply to the study of aerospace sciences. Topics: Newtonian mechanics and gravitation, work and energy, solids and fluids, vibrations and waves, electricity and magnetism, light and optics. The laboratory is a corequisite of this course. Physics 161 has no mathematical prerequisite but knowledge of elementary algebra is recommended.

150L. Physics for Aerospace Sciences Laboratory. 1 credit. Corequisite: Phys 150.

161/161L, 162/162L. Introductory College Physics I & II. (CCN) 8 credits. An introduction to the principles and concepts of physics with the application of minimal mathematics, sufficient to show the logical progression from one topic to the next. General physics for those who do not plan to take advanced course in science. Topics: Newtonian mechanics and gravitation, work and energy, solids and fluids, vibrations and waves, electricity and magnetism, light and optics. The laboratory is a corequisite of each course. Physics 161 has no mathematical prerequisite but knowledge of elementary algebra is recommended.

211/211L, 212/212L. College Physics I & II. (CCN) 8 credits. Prerequisites: For Phys 211, Math 103. For Phys 212, Phys 211. The non-calcus general physics course sequence recommended for pre-medical or pre-professional students. Topics: Newtonian mechanics and gravitation, work and energy, solids and fluids, heat and thermodynamics, vibrations and waves, electricity and magnetism, light and optics, and an introduction to modern physics. The laboratory is a corequisite of each course. A student may receive credit for only one beginning level physics sequence. F,S

251/251L, 252/252L, 253/253L, University Physics I, II & III. (CCN) 12 credits. Prerequisites: For Physics 251, 151L, Calculus I. For Physics 252, 252L, Calculus II and Physics 251, 251L. For Physics 253, 253L, Calculus III, and Physics 252, 252L. The general physics course sequence for students majoring in a science, or engineering. Topics: Newtonian mechanics and gravitation, work and energy, solids and fluids, heat and thermodynamics, vibrations and waves, electricity and magnetism, light and optics, and an introduction to modern physics. The laboratory is a corequisite of each course. A student may receive credit for only one beginning level physics sequence.

294. Selected Topics in Physics. 1 credit. Prerequisite: 8 hours of College Physics or consent of instructor. May be repeated to a maximum of 4 hours. Credit may not be applied toward a major in physics. On Demand.

317. Mechanics. 3 credits. Prerequisites: Phys 252 or approval of department. Motion of a single particle, central forces and simple oscillatory systems. F/S

318. Mechanics. 3 credits. Prerequisites: Physics 317 or approval of department. Continuation of Physics 317. Rigid body motion, wave propagation, generalized coordinates and fluid dynamics. S/S

320. Elementary Solid State Physics. 3 credits. Prerequisite: Phys 253 or approval of department. An introduction to solid state physics with emphasis on applications. F,S

324. Thermal Physics. 3 credits. Prerequisites: Phys 253 or approval of department. Thermodynamics with an introduction to statistical physics. S/S

325. Optics. 3 credits. Prerequisites: Phys 253 or approval of department. Geometrical and physical optics with an emphasis on physical optics. S

325L. Optics Laboratory. 1 credit. Corequisite: Phys 325, Laboratory to accompany Physics 325. S

327. Electricity and Magnetism. 3 credits. Prerequisites: Phys 252 or approval of department. A quantitative treatment of electro-magnetic theory with an introduction to Maxwell’s equations. F/S


428. Modern Physics Laboratory. 2 credits. Prerequisite: Phys 253 or approval of department. A repetition of the experiments which led to the current state of physical theory.

431. Introductory Quantum Physics. 3 credits. Prerequisite: Phys 253 or approval of department. An introduction to quantum mechanics with applications to atomic structure. S/S

434. Nuclear Physics. 3 credits. Prerequisite: Phys 253 or approval of department. An introduction to the theory of the atomic nucleus. On Demand.


492. Special Problems. (CCN) 1-3 credits. Prerequisite: approval of the department. F,S

499. Senior Honors. (CCN), 1-15 credits.

Physiology

(Phy)

Samson (Chair), Brown-Borg, Carlson, Haselton, McCleary, Ren, and Vari

Courses

301. Mechanics of Human Physiology. 4 credits. Prerequisites: Introductory courses in two of the following subjects: anatomy, chemistry, or biology. A study of the normal function of the human body with particular consideration given to the necessary background needed by students pursuing a course of study in Allied Health Sciences. There are five hours of formal classroom study including two hours of laboratory and an optional review period each week.

Political Science

(Pols)

D. Ramsett (Division Director), Imperato, Jendrysik, M. Kweit, R. Kweit, Markovich, and Pedeliski

The Faculty 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 Faculty 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 credits (36 of which must be numbered 300 or above, and 60 of which must be from a 4 year institution) including:

I. General Education Requirements, see pages 27-31.

II. The Following Curriculum:

37 major hours, including:

Pols 115 ..........................American Government I ............................................(3)

Pols 116 ..........................State and Local Government ............................................(3)

Pols 220 ..........................International Politics ............................................(3)

Pols 230 ..........................Foreign Policies ............................................(3)

Pols 225 ..........................Comparative Politics ............................................(3)

Pols 232 ..........................Issues in Comparative Politics ............................................(3)

Pols 250 ..........................Politics of Public Administration ............................................(3)
MINOR IN POLITICAL SCIENCE
Required 21 credits, including:
Pols 101 American Government I (3)
Select 6 hours from:
Pols 220 International Politics (3)
Pols 225 Comparative Politics (3)
Pols 250 Politics of Public Administration (3)
Select 6 credits from:
Pols 300 Research Methods (3)
Pols 311 Political Thought I (3)
Pols 312 Political Thought II (3)
Pols 405 Political Behavior (3)
Pols 432 Public Policy Making Process (3)
Pols 495 Senior Colloquium (1)
Pols Electives (6)
Required in other departments:
Level II proficiency in a foreign language.

Economics 210 Introduction to Business and Economic Statistics or equivalent (3 credits)
Economics 202 Introduction to Macroeconomics (3 credits)

Courses

115. American Government I. 3 credits. An introduction to political science through the study of the American political system: The Constitution; the political process; the structure, powers and procedures of the Presidency, Congress, and the Judiciary. F/S

116. State and Local Government. 3 credits. Structure, function and problems of state and local government; executive, legislative, and judicial processes; federalism and metropolitan government. F/S

220. International Politics. 3 credits. An introduction to international politics with emphasis on the international system, the major actors, the struggle for power, and the struggle for order. S

225. Comparative Politics. 3 credits. An introduction to comparative politics with emphasis on the democratic systems of Europe. F

250. Politics of Public Administration. 3 credits. Prerequisite: Pols 115. Introduction to the development of public administration in the United States and to the concepts and methods used in its practice. The political aspects of the public bureaucracy and contemporary issues are also highlighted. F

300. Introduction to Research Methods. 3 credits. 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 protection, due process, First Amendment rights. S

308. Intergovernmental Relations. 3 credits. Analyzes the growing interrelationship of federal, state and local governments with emphasis on financial aspects. F/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 which molded the 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 Pols; course related to cooperative experience; permission of department. Compensated on-the-job experience in areas of political science. S-U grading only. F/S

393. Problems in Political Science. 1-3 credits. Maximum 6 credits. Students study special topics under the direction and supervision of a member of the staff; prior consent of instructor required before enrollment. F/S

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.

404. Urban Politics and Administration. 3 credits. Prerequisite: Pols 115. Analysis of the socio-economic context of urban America and its impact on politics, policy, and administration. Once per year, F/S/S/2

405. Political Behavior. 3 credits. Prerequisite: Pols 115. A review of the role of the public in a democracy focusing on the formation and content of public opinion, the means of communicating that opinion to government, and the impact of that opinion on policy. F

432. Public Policy Making Process. 3 credits. Prerequisite: Pols 115. Two-thirds of the class is devoted to understanding the stages of the policy process: (1) Problem Identification and Agenda Setting; (2) Policy Formulation; (3) Policy Adoption; (4) Policy Implementation; and (5) Policy Evaluation. The last 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/2

437. Administrative Processes. 3 credits. Prerequisite: Pols 250. Explanation of theoretical and practical aspects of personnel and financial management in the public sector. S

480. Administrative Internship. 2-6 credits. Prerequisites: 3.00 GPA; 12 hours in Pols; course related to internship experience; permission of department. On-the-job training in a governmental position with final report and analysis of the agency by the intern. Prior approval of instructor required before enrollment. S/U grading only. F/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: Pols 432. A capstone course in Political Science designed to integrate the subareas of the discipline. The development of the discipline, its great thinkers, and current directions will be examined. This course is designed for majors only. S

497. Senior Tutorial. 2 credits. Prerequisite: Senior or consent of instructor. Corequisite: Pols 432 and Pols 495. A course which requires mentoring introductory students in Political Science. Further, students will undertake supervised independent research culminating in a major paper. This course is designed for majors only. S

Psychology (Psyc)

M. Grabe (Chair), Antes, Ferraro, Foster, Holm, Johnson, King, McDonald, Peters, Petros, Till, Tyler, Vogeltanz, Weatherly, and Zevenbergen

College of Arts and Sciences

B.A. OR B.S. WITH MAJOR IN PSYCHOLOGY

Required 125 credits (36 of which must be numbered 300 or above and 60 of which must be from a 4 year institution) including:

I. General Education Requirements, see pages 27-31.
II. The Following Curriculum:

36 major hours, including:
Psyc 111 Introduction to Psychology (3)
Psyc 241 Introduction to Statistics (4)
Psyc 303 Research Methods in Psychology (4)
Psyc 405 History and Systems of Psychology (3)

**Psyc 496 Senior Seminar (1)

One course from Area A:
Psyc 433 Psychology of Learning (3)
Psyc 434 Motivation and Emotion (3)
Psyc 435 Psychological Physiology (3)
Psyc 436 Perception (4)
Psyc 439 Cognitive Psychology (3)
Courses

Psychology 111 is the prerequisite for all other Psychology courses.

111. Introduction to Psychology, (CCN) 3 credits. A survey of the scientific study of behavior and mental processes, with consideration of the nature and scope of psychology as a science and a profession. F,S

213. Educational Psychology, 3 credits. Human development; perceptual processes; learning; the home, the school and personality; psychology of school subjects; evaluation of pupils. F,S

241. Introduction to Statistics, 4 credits. Prerequisite: Math 103 or 104. Descriptive and inferential statistics as applied to psychological measurement and experimentation. F,S

250. Developmental Psychology, (CCN) 4 credits. A survey of the psychology of human life span development including intellectual, social, and emotional aspects of the normal individual and emphasizing childhood and adolescent development. F,S

270. Abnormal Psychology, (CCN) 3 credits. Prerequisites: Psy 111 and three additional hours of psychology. A survey of the classification, symptoms, and etiology of psychological disorders and behavior pathology. F,S

299. Special Topics in Psychology, 1-3 credits. On Demand.

301. Industrial and Organizational Psychology, 3 credits. Prerequisite: any statistics course. Selection, training, motivation, leadership, job satisfaction, human engineering and working environments as applied to business and industry. F,S

303. Research Methods in Psychology, 4 credits. Prerequisites: Math 103 or 104, Psy 241. Methods of gathering knowledge in psychology with special emphasis on the experimental method. F,S

311. Behavior Modification and Therapy, 3 credits. Theory and practice in the application of operant and classical conditioning procedures to humans in applied settings. F,S

355. Adulthood and Aging, 3 credits. Prerequisite: Psyc 111 plus 3 credits of Psychology. Basic findings and theoretical issues in the study of human aging from biophysical and socio-psychological perspectives with an emphasis on the individual. F,S

360. Introduction to Personality, 3 credits. Examination of basic concepts in the field of personality. F,S

361. Research in Social Psychology, 3 credits. Research on individual behavior in its social context; how the individual acts upon the social environment, and interacts with other individuals. (No longer equivalent to Soc 301). S

405. History and Systems of Psychology, 3 credits. Prerequisite: Psy 303. A consideration of the historical background and development of problems in areas in psychology and a survey of contemporary psychological theories. F,S

421. Individual and Group Differences, 3 credits. Prerequisites: Psy 241 and 250 or consent of instructor. Origins and consequences of psychological differences among individual and groups with special emphasis on sex differences and racial differences. S,S

433. Psychology of Learning, 3 credits. Prerequisite: Psy 303. Principles of animal and human learning, with special emphasis on the acquisition, extinction and retention of learned behavior patterns. F,S

434. Motivation and Emotion, 3 credits. Prerequisite: Psy 303. Survey of theories and experimental work on motivation and emotion. F,S

435. Physiological Psychology, 3 credits. Prerequisites: Biol 150, 151, Psy 303, or consent of instructor. Physiological basis of psychological functions. S,S

436. Perception, 4 credits. Prerequisite: Psy 303. Perceptual basis of behavior. S,S

439. Cognitive Psychology, 3 credits. Prerequisite: Psy 303. An examination of theory and research on attention, memory, language, comprehension, reasoning, problem-solving, and decision-making. F

451. Advanced Developmental Psychology, 3 credits. Prerequisites: Psy 251 and Psy 303. In depth analysis of topics covering the entire lifespan, from genetic and prenatal influences to death and dying. S,S

460. Advanced Social Psychology, 3 credits. Prerequisites: Psy 303, 361 (or Soc 361). In-depth examination of the theoretical and empirical literature in social psychology focusing on attitudes, stereotyping and prejudice, interpersonal relationships, social cognition, personality and the self, and group behavior. F

470. Introduction to Clinical Psychology, 3 credits. Prerequisites: Psyc 241, 270 or consent of instructor. A systematic survey of the field of clinical psychology: basic concepts in diagnosis, psychotherapy, research and professional problems. F

485. Seminar in Psychology, 1-3 credits. Prerequisite: consent of instructor. On Demand.

489. Senior Honors Thesis, 1 to 15 credits; total not to exceed fifteen. Prerequisite: consent of the Department and approval of the Honors Committee. Supervised independent study culminating in a thesis. F,S

491. 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. Senior Seminar is not a requirement for those majors doing a Senior Honors Thesis. F,S

492. Individual Projects in Psychology, 1-4 credits. Repeatable to 8 credits. Prerequisite: consent of instructor. F,S

493. Tutoring in Psychology, 2 credits. Repeatable to 4 credits. Prerequisite: consent of instructor. S-U grading only. F,S

494. Readings in Psychology, 1-3 credits. Repeatable to 8 credits. Prerequisite: consent of instructor. F,S

499. Advanced Special Topics in Psychology, 1-3 credits. Prerequisite: consent of instructor. On Demand.

Public Administration
(Pols)

D. Ramsett (Division Director), Robert Kwee (Advisor)

The Faculty 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 Faculty 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 Faculty 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 credits (36 of which must be numbered 300 or above, and 60 of which must be from a 4 year institution) including:

I. General Education Requirements, see pages 27-31.
II. The applicable College of Business and Public Administration Requirements, see page 42.
III. The Following Curriculum:

Pre-Public Administration Core

420, 201 3 credits. Elements of Accounting I & II. .(6)

427 217 Fundamentals of Management Information Systems. ..........................(4)

201 Principles of Macroeconomics ..........................(3)

202 Principles of Microeconomics ..........................(3)

210 Introduction to Business and Economic Statistics. ..........................(3)
IV. GENERAL PUBLIC ADMINISTRATION

Required:

- Econ 324: Public Finance (3)
- Pols 300: Introduction to Research Methods (3)
- Pols 309: Legislative and Executive Processes (3)
- Pols 404: Urban Politics and Administration (3)
- Pols 432: Public Policy Making Process (3)
- Pols 437: Administrative Processes (3)
- Pols 493: Professional Projects in Public Administration (3)

Additional 6 hours from:

- Econ 324: Public Finance (3)
- Pols 305: Managerial Concepts, or its Equivalent (3)
- Pols 309: Legislative and Executive Processes (3)
- Pols 433: Administrator and Public Affairs (3)
- Pols 480: Administrative Internship (2-6)
- Soc 431: Organizations and Behavior (3)

Other Courses may be elected with the consent of the Department.

MINOR IN PUBLIC ADMINISTRATION

Required 21 credits, including:

- Pols 250: Politics of Public Administration (3)
- Pols 300: Introduction to Research Methods, or its Equivalent (3)
- Pols 404: Urban Politics and Administration (3)
- Pols 432: Public Policy Making Process (3)
- Pols 437: Administrative Processes (3)
- Select 6 hours from:
  - Econ 324: Public Finance (3)
  - Pols 305: Managerial Concepts, or its Equivalent (3)
  - Pols 309: Legislative and Executive Processes (3)
  - Pols 433: Administrator and Public Affairs (3)
  - Pols 480: Administrative Internship (2-6)
  - Soc 431: Organizations and Behavior (3)

Other Courses may be elected with the consent of the Department.

Courses

115. American Government I. (CCN) 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. F S

116. State and Local Government. (CCN) 3 credits. Structure, function and problems of state and local government: executive, legislative, and judicial processes; federalism and metropolitan government. F S

250. Politics of Public Administration. (CCN) 3 credits. Prerequisites: Pols 115. Introduction to the development of public administration in the United States and to the concepts and methods used in its practice. The political aspects of the public bureaucracy and contemporary issues are also highlighted. F S

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

306. Intergovernmental Relations. 3 credits. Analyzes the growing interrelationship of federal, state and local governments with emphasis on financial aspects. F/S

309. Legislative and Executive Processes. 3 credits. A survey of the organizations, functions and interaction of the American legislative and executive branches of government. S

404. Urban Politics and Administration. 3 credits. Prerequisite: Pols 115. Analysis of the socio-economic context of urban American and its impact on politics, policy, and administration. Once per year. F/S, S/S

432. Public Policy Making Processes. 3 credits. Prerequisite: Pols 115. Two-thirds of the class is devoted to understanding the stages of the policy process: (1) Problem Identification and Agenda Setting; (2) Policy Formulation; (3) Policy Adoption; (4) Policy Implementation; and (5) Policy Evaluation. The last 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 administration. S/S

437. Administrative Processes. 3 credits. Prerequisite: Pols 250. Explanation of theoretical and practical aspects of personnel and financial management in the public sector. S

480. Administrative Internship. 2-6 credits. Prerequisite: 12 hours in Political Science. On-the-job training in a government 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

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. The course is designed for Public Administration majors only. S

Electives (consult with advisor for Public Administration): courses in political science, management, economics, history, sociology, anthropology, geography, accounting, and psychology.

Recreation and Leisure Services (RLS)

T. Schroeder (Program Coordinator)

The belief that individuals and society benefit from leisure activity and recreational pursuits underlies the mission of the Recreation and Leisure Services program, which is to promote enhanced quality of life through recreation, leisure, activity, and sport for the people of North Dakota and beyond. The Recreation and Leisure Services Program works toward this mission through the professional preparation of students for careers in recreation, therapeutic recreation, parks and leisure services field; developing students’ theoretical bases of knowledge and analytical skills; and contributing to society and the profession through the development of a program of research and other scholarly activity, providing leadership and technical assistance to local and regional organizations, and being actively involved in professional organizations on the state, regional, and national levels.

Educational Programs

Housed in the Department of Social Work, the Recreation and Leisure Services Program offers a major which leads to a Bachelor of Science degree in Recreation and Leisure Services and a minor in Recreation and Leisure Services.

College of Education and Human Development

B.S. IN RECREATION AND LEISURE SERVICES

Students may apply for admission to the Recreation and Leisure Services program at any time following the completion of 24 semester hours. A cumulative GPA of 2.0 or higher and successful completion of Psy 111, Soc 110 and Comm 110 are required for admission. Students interested in admission should consult the Social Work Department.

Required 125 credits (36 of which must be numbered 300 or above, and 60 of which must be from a 4 year institution) including:

I. General Education Requirements, see pages 27-31.

II. The College of Education and Human Development Requirements, see page 47.

III. Recreation and Leisure Service Prerequisites:

- Comm 110: Fundamentals of Public Speaking (3)
- Psy 111: Introduction to Psychology (3)
- Soc 110: Introduction to Sociology (3)

IV. Recreation and Leisure Services Core Requirements:

- Mgmt 305: Managerial Concepts (3)
- RLS 201: Leisure and Society (3)
- RLS 203: Recreational Games (1)
- RLS 222: Program Planning in Recreation and Leisure (3)
- RLS 272: Recreation and the Natural Environment (3)
- RLS 321: Human Resources for Recreation (3)
- RLS 360: Recreation/Leisure Services and Individuals with Disabilities (3)
- RLS 362: Leisure Education and Counseling (3)
- RLS 385: Practicum in Recreation (2)
- RLS 421: Evaluation and Research for Recreation (3)
- RLS 442: Recreation Administration (3)
- RLS 479: Recreation Areas and Facilities (3)
- RLS 485: Internship in Recreation (12)
- Soc 361: Social Psychology (3)

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, Therapeutic Recreation, Tourism/Commercial Recreation.

PROFESSIONAL CERTIFICATION
The National Council on Therapeutic Recreation Certification (NCTRC) certifies qualified individuals as Certified Therapeutic Recreation Specialists (CTRS). Although graduation with a B.S. in Recreation and Leisure Services and a therapeutic recreation emphasis does not guarantee CTRS certification, it is intended to qualify the graduate to pass the certification exam. It is recommended that students interested in NCTRC certification become familiar with the requirements for that certification.

The North Dakota Recreation and Park Association, in conjunction with the national Recreation and Park Association, certifies 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 credits, including:
RLS 201 ..................Leisure and Society ..................................................(3)
RLS 222 ..................Program Planning in Recreation and Leisure ........(3)
RLS 360 ..................Recreation/Leisure Services and Individuals with Disabilities (3)
RLS 385 ..................Practicum in Recreation .............................................(2)
Elect 9 credits of RLS courses as approved by an RLS advisor.

Courses
201. Leisure and Society. 3 credits. Prerequisite: Soc 110 and Psy 111. Orientation to recreation and leisure, including sociological, psychological, historical, philosophical and professional implications and influences of recreation and leisure society.

203. Recreational Games. 1 credit. Prerequisite: RLS 201. Emphasis on a wide variety of recreational games. F

222. Program Planning in Recreation and Leisure. 3 credits. Development of programming skills for recreation programs in various settings, i.e. public; profit with emphasis on activity selections, scheduling and staffing. 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 interrelationships among people, the environment and leisure. S

321. Human Resources for Recreation. 3 credits. Prerequisites: RLS 201. The supervision of human resources for the leadership of recreation and leisure services. F

337. Cooperative Education in Recreation and Leisure Services. 1-4 credits, repeatable to 16. Prerequisite: RLS 201. A practical work experience with an employer closely associated with the student’s academic area. Arranged by mutual agreement among student, department and employer. S/U grading only. F, S, SS

359. Introduction to Therapeutic Recreation. 3 credits. Prerequisite: RLS 201. An overview of the nature and scope of therapeutic recreation by examination of the history, philosophy, service delivery systems and issues that confront the profession. S

360. 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. F

361. Principles of Therapeutic Recreation. 3 credits. Prerequisite: RLS 359. In-depth examination of the therapeutic recreation process in clinical, residential and community settings.

362. Leisure Education and Counseling. 3 credits. Prerequisites: RLS 201, 222. 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. S

370. Principles of Tourism. 3 credits. Overview of tourism including travel behavior, tourism planning and policy, tourism impacts and promotion of tourism.

371. Outdoor Recreation and Resources Management. 3 credits. The principles of managing outdoor recreation sites and visitor systems where the natural environment provides the dominant attraction. Selected parks, resorts, camps, and preserves will serve as example applications of management strategies. On Demand.

385. Practicum in Recreation. 2 credits. Prerequisites: RLS 222, 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

386. Evaluation and Research for Recreation. 3 credits. Prerequisite: RLS 222. Overview of evaluation and research methods utilized in the delivery of recreation and leisure services. F

442. Recreation Administration. 3 credits. Prerequisite: RLS 321. An examination of the theories and principles of administration of recreation and leisure services. F

455. Special Topics in Recreation and Leisure Services. 1-4 credits repeatable to 9. Specialized topics related to recreation and leisure. On Demand.

460. Design and Administration of Therapeutic Recreation. 3 credits. Prerequisite: RLS 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. S

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: RLS 321 or consent of instructor. Design and maintenance of recreation areas and facilities. Includes on-site visits. F/S

480. Field Experience in Recreation and Leisure Services. 1-8 credits. Prerequisite: consent of instructor and upper division status. Placement of student in a professional setting under university faculty supervision. F/S

485. Internship in Recreation and Leisure Services. 4-12 credits. Prerequisite: Recreation and Leisure Services majors only. Development of professional skills by working directly with established leisure, recreation and human services organizations under the supervision of professionals and faculty. S/U grading only. F, S, SS

495. Directed Studies in Recreation and Leisure Services. 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

Reserve Officer Training Corps
Air Force (AFROTC)

UND students may participate in the Air Force Reserve Officer Training Corps program through an agreement between UND, North Dakota State University and the Air Force. The purpose of this program is to enable qualified students (undergraduate and graduate) to become commissioned officers in the United States Air Force. Upon completion of the program and graduation from UND, students are commissioned as second lieutenants in the United States Air Force.

The program is conducted by North Dakota State University faculty on the UND campus. Students interested in participating in the program should contact: Air Force ROTC Detachment 610, 261 Cliford Hall, University of North Dakota, Grand Forks ND 58202, (701) 777-4957.

The program is conducted in two phases — the General Military Course for first year students and sophomores, and the Professional Officer Course for juniors and seniors. Each student must register for the appropriate leadership laboratory course (AS 210 for first year and sophomore or AS 410 for juniors and seniors) during each term. Students must complete a field training course before entry into the Professional Officer Course.

General Military Course (GMC)
The four-year program begins with the General Military Course (AS 111, 112, 211, 212). The GMC covers the mission and structure of the Air Force, examines life in the Air Force, and includes the study of strategy, doctrine, and missions of aerospace power from balloons to the space age. Instruction is provided in Air Force career opportunities, educational benefits, and life and work as an Air Force officer.

Field Training
Air Force ROTC Field Training is offered during the summer months at selected Air Force bases throughout the United States. Students in the four year program participate in four weeks of field training during the summer after their sophomore year. Students applying for entry into the two year program must successfully complete five weeks of field training prior to enrollment in AFROTC.

The major areas of study in the four week field training program include junior officer training, aircraft and aircrew indoctrination, survival training, base functions, the Air Force environment, and physical training.
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 adviser 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 credits (36 of which must be numbered 300 or above, and 60 of which must be from a 4 year institution) including:

I. General Education Requirements, see pages 27-31.

II. The Following Curriculum:

60 credits
Select courses in the pattern listed below from Anthropology, Economics, Geography, History, Political Science, and Sociology. At least 24 credits must be in Upper Level work.
21 credits in one department.
12 credits in another department.
9 credits in each of three of the remaining departments.
*For Geography courses carrying Social Science GER Credit, see pages 27-31.

Social Work

M. Jacobsen (Chair), Bailey, Decker, Furman, Haagenstad, Haga, Heitkamp, B. Jacobsen, Kraft, Perry, Reese, Remboldt, Stevens 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 their intent 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:

- ability to communicate in such a manner as to facilitate a helping relationship in the delivery of services.
- mobility sufficient to perform essential work-related activities.
- 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 base courses 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 are encouraged to complete the field practicum experience during the last semester in which they are enrolled prior to graduation.

College of Education and Human Development

B.S. IN SOCIAL WORK

Required 125 credits (36 of which must be numbered 300 or above and 60 of which must be from a 4 year institution) including:

I.   General Education Requirements, see pages 27-31.

II.  College of Education and Human Development, see page 47.

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 and 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)

   Biol 111/111L........  Concepts of Biology and Laboratory ..........(4)
   Comm 110................. Fundamentals of Public Speaking ..........(3)
   Econ 101................. Economics ..................................(3)
   History (three credit hour course only) ..............................(3)
   Literature (English Department) .......................................(4)
   Pols 115................. American Government I .....................(3)
   Psychology (upper division) ............................................(6)

Sociology (upper division) ............................................(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 265................. Native American Literature ......................(3)
   Engl 357................. Women Writers & Readers ........................(2-4)
   Engl 365................. Black American Writers .............................(3)
   IS 121................. Intro to Indian Studies ..................................(3)
   IS 203................. 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................. Education of Exceptional Students ..........(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 concert with their advisor, 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 credits including:

1) Twelve hours from the following:

   SWK 309................. Medical & Psychosocial Aspects of Disability ......(3)
   or OF 309, PT 309 or Nursing 286 for respective majors
   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)
   T&L 416................. Functional Curricula for Students with Moderate Mental Handicaps ......(2)
   CDIs 343................. Language Development & Disorders ...............(3)
   RLS 360................. Recreation/Leisure Services for Individuals with Disabilities .........(3)
   RLS 361................. Principles of Therapeutic Recreation ...................(3)
   PT 493................. 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 credits including:

1) The following eleven hours:

   Nurs 418................. Physical Changes of Aging .........................(3)
   Psy 355................. Adulthood and Aging ....................................(3)
   SWK 354................. Orientation to Gerontology .........................(2)
   Soc 352................. 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)
   IS 121................. Introduction to Indian Studies ..........................(3)
   IT 300................. Technology and Society ................................(2)
   Nut 240................. Fundamentals of Nutrition ..............................(3)
   Psy 421................. Individual and Group Differences .......................(3)
   RLS 360................. Recreation/Leisure Services for Individuals with Disabilities ......(3)
   RLS 362................. Leisure Education and Counseling ......................(3)
   Soc 353................. Sociology of Death and Dying ..........................(3)
   Soc 354................. Medical Sociology .........................................(3)
   SWK 246................. Human Behavior in the Social Environment ......(4)
   SWK 306................. Social Welfare .............................................(2)

With current approval of the student advisor and the committee chairperson up to three credit hours of departmental tutorial readings, special topics and/or research studies may be included.
Indian Studies.

Counseling.

must meet the required graduate program of study, the required addiction to the minor requirements and the addiction practicum requirement. This Students must meet all requirements for a social work major in addition includes social work majors who also complete the minor in Chemical Dakota. are eligible for licensing as addiction counselors in the State of North Forma admission to the BSSW Program. This course provides the students with an evaluate social welfare policies. F, S
disadvantaged, is included. The course will also provide a basic analytic model to instructor. This course offers students individually supervised field practicum in the human service agency. Students will be expected to integrate social work theory with practice. Students need to contact the Cooperative Education Office. F, S, S

32. 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.

354. Orientation to Gerontology. 2 credits. A general introduction to gerontology including the study of the aging process, the relationship between the theoretical and practice aspects of aging, and the interdisciplinarity of nature of practice. F

358. Contemporary Issues 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.

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. Students will study the problem solving model as presented in Swk 322 and the skills acquired in Swk 300. 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. Corequisite: 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 approaches 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 follow- ing: 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 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. F

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 structural assessment. F

487. Field Instruction, 4-10 (repeatable to 10 credits). Prerequisites: Swk 454 and 460. Corequisite: Swk 488. S/U grading only. This course consists of a one-semester 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,S,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

II. THE FOLLOWING CURRICULUM

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 125 credits (36 of which must be numbered 300 or above, and 60 of which must be from a 4 year institution) including:

I. General Education Requirements, see pages 27-31.

II. The following Curriculum:

33 credits, including:

- Soc 301. Basic Sociology Theory (3)
- Soc 323. Sociological Research Methods (3)
- Soc 326. Sociological Statistics (3)
- Soc 361. Social Psychology (4)
- 9 credits 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. Deviant Behavior (3)
- Electives in Sociology (3-11)

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.

MINOR IN SOCIOLOGY

Required 22 credits, 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.

110. Introduction to Sociology. (CCN) 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 Soc 110 by means of independent study should obtain information from the University counseling center on the CLEP examinations administered there. F,S

115. Social Problems. (CCN) 3 credits. A sociological analysis of major social problems in America. F

250. Diversity in American Society. 3 credits. Prerequisite: Soc 110. An introductory survey of the racial, ethnic and cultural mosaic of American Society. Basic theories of intergroup relations, prejudice and discrimination are covered. S

252. Criminology. 3 credits. The extent and character of crime in the United States. A critical examination of the meaning and attempted explanation of crime and juvenile delinquency, with an analysis of the social processes leading to criminal behavior. F,S

253. Juvenile Delinquency. 3 credits. The nature, extent, causes and treatment of delinquency. Delinquency prevention programs are explored. F

301. Basic Sociological Theory. 3 credits. Prerequisite: Soc 110. A survey of the main trends in the history of sociological thought. Basic concepts and frames of reference useful to sociological theory and analysis are emphasized. F

306. Social Change. 3 credits. Theoretical models of socio-cultural change and stability; examination of changes occurring in American institutions and international relations; technology and social change; procedures and problems of planned change. F

307. Selected Topics. 1-4 credits. Prerequisites to be determined when offered. Selected topics in sociology taught at the junior level. On Demand.

322. Sociological Research Methods. 3 credits. Prerequisite: Soc 301 or CJ 301. A general consideration of methods involved in survey research in the social sciences. F,S

324. 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 family. F,S

337. Cooperative Education. 1-6 credits repeatable to 12. A practical work experience with an employer closely associated with student’s academic area. F,S,SS

340. Sociology of Gender and Sex Roles. 3 credits. Prerequisite: Soc 110 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 CJ 201. A course describing the correctional system as a part of the criminal justice system. A survey and discussion of topics dealing with offender behavior, institutional programs and community response to ex-offenders. F

352. Aging. 3 credits. Socialization theory and its implication for the aging process. 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 110 or 115. Sociological analysis of health care definitions and roles, and the organization, availability and control of health care. F

355. Drugs and Society. 3 credits. Social factors affecting use and control of self-administered psychoactive drugs, including alcohol, cigarettes, marijuana and more illicit substances. Topics include social definitions, causes, controls and consequences of drug problems. S

361. Social Psychology. 4 credits. Prerequisite: Soc 110. The study of individual behavior in its social context: how the individual acts upon the social environment, is acted upon by the environment, and acts with other individuals. F,S

407. Political Sociology. 3 credits. Sociological analysis of political and para-political groups; voting behavior; political socialization process; power elites, societies and systems of government; power structures. On Demand.

409. Selected Topics in Sociology. 1-4 credits. Topics in sociology taught at the senior level. On demand.

431. Organizations and Behavior. 3 credits. Prerequisite: 6 hours of Soc or consent of instructor. A look at the different ways in which organizations can be conceptualized and studied. The relationships between organizational structure and individual behavior are examined. The study of the effects of environments, including other organizations, on organizational goals. The kinds of organizations studied include industrial, medical, educational and other types. F

435. Racial and Ethnic Relations. 3 credits. Prerequisite: Soc 301 or CJ 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

489. Senior Honors Thesis. (CCN) 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
John D. Odegard School of 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 credits, including:

- SpSt 200 Introduction to Space Studies
- SpSt 491 Independent Study
- 12 credits from:
  - SpSt 405 Advanced Space Mission Design
  - SpSt 410 Life Support Systems
  - SpSt 420 Space Science & Exploration
  - SpSt 425 Observational Astronomy
  - SpSt 430 Earth System Science
  - SpSt 440 Global Change
  - SpSt 445 Commercialization of Space
  - SpSt 450 Soviet/Russian Space Program
  - SpSt 470 Special Topics in Space Studies
- Space Studies electives

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 comet 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 subsidized or government-sponsored entities 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. 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

Teaching and Learning (T&L)

The University of North Dakota has offered teacher education programs since its founding in 1883. The Department of Teaching and Learning is a comprehensive, accredited, undergraduate and graduate department of education. It supports a broad view of education and seeks to serve preservice and inservice teachers and other education personnel with intensive, intellectually challenging, integrated study.

The Department strives to model the kind of educational environment it is promoting in early childhood settings, elementary schools, middle/junior high schools and secondary schools. Students are encouraged to assume initiative and independence in their learning while developing personal and professional commitments and competence. To help meet this expectation, programs in the Department provide for personalized learning. The Department is particularly committed to active community participation in the formation of goals and policy at all levels of education, to Native American communities in their efforts to improve education, and to classroom teachers committed to continue their personal and professional learning.

Teacher education programs at the University of North Dakota are approved by the State 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 also able to pursue specialized study resulting 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
- Geology/Earth Science
- Science

- Business Education
- German
- Social Studies

- Chemistry
- Industrial Technology
- Spanish

- English
- Marketing Education
- Speech/Communication

- French
- Mathematics
- Visual Arts

- Geography
- Physics

The appropriate sequences of courses and experiences for these majors are outlined under the specific departments offering the majors. Kindergarten through grade 12 majors are also available in music and physical education.

See page 47 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

Required 125 credits (36 of which must be numbered 300 or above, and 60 which must be from a 4 year institution) including:

I. General University Graduation Requirements, see pages 27-31.

II. B.ED General Graduation Requirements, see page 47.

III. The following Early Childhood Education curriculum:

- Engl 260 .................................................. Child Development ..............................................(3)
- or
- T&L 252 .................................................. Child Development ..............................................(3)
- or
- Psyc 250 .................................................. Developmental Psychology ..............................(4)

- T&L 310 .................................................. Introduction to Early Childhood Education ..........(3)
- or
- T&L 486 .................................................. Field Experience in Early Childhood Education ...........(1)
- T&L 311 .................................................. Observation & Description of Young Children ..........(3)
- SWK 311 .................................................. Child Welfare .....................................................(3)
- T&L 313 .................................................. Young Children’s Language & Thought .................(3)
- T&L 314 .................................................. Social & Emotional Lives of Young Children ..........(3)
- T&L 352 .................................................. Family Relationships .............................................(3)
- or
- T&L 355 .................................................. The Family .........................................................(3)

- T&L 315 .................................................. Education of the Exceptional Student .................(3)
- or
- T&L 510 .................................................. Early Intervention for Children with Special Needs ..............................................(3)

- T&L 433 .................................................. Human Relations: Multicultural Education ..........(3)
- or
- IS 121 .................................................. Introduction to Indian Studies ..............................(3)

- T&L 455 .................................................. Comparative Approaches to the Education of Young Children ..............................................(3)
- T&L 451 .................................................. Methods & Materials: Pre-Kindergarten ..............(3)
- T&L 453 .................................................. Methods & Materials: Kindergarten ......................(2)
- T&L 456 .................................................. Pre-Kindergarten Seminar ...................................(2)
- T&L 454 .................................................. Organization, Administration & Supervision in Early Childhood Education ..............................................(2)
- T&L 452 .................................................. Developing Personal Teaching Styles .................(1)

- T&L 498 .................................................. Home-School Relations .....................................(3)
- T&L 487 .................................................. Student Teaching: Pre-kindergarten ..................(9)

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 454 .................................................. 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 credits (36 of which must be numbered 300 or above, and 60 which must be from a 4 year institution) including:

I. General University Graduation Requirements, see pages 27-31.

II. General Education Requirements.

Communication — 9 credits

(English 110, 120, or 125)

Social Sciences — 9 credits

From 3 departments including Psyc 250 or T&L 252 (but not both); 9 additional credits of University General Education courses from Anthropology, Economics, Geography, Political Science, Psychology (except 250), Sociology, or Indian Studies.

Arts and Humanities — 12 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 (Art 100, 120, 130, 151, 173, 260) and/or performance classes from music (Music 105, 260, 261, 262, 263, 264, 265, 269), Theater (Thea 200, 225, 227, 229), and 3 credits of electives from University General Education courses on pages 27-31.

Math, Science, Technology — 12 credits

Must be taken in 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 165.

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 adviser.

IV. Introductory Courses:

T&L 330 .................................................. Introduction to Teaching and Learning ...............(3)

Math 277 .................................................. Mathematics for Elementary School Teachers ....(3)

T&L 430 .................................................. Social Studies in the Elementary School .............(3)

Math 440 .................................................. Math in the Elementary School .........................(3)

T&L 470 .................................................. Science in the Elementary School ....................(3)

T&L 486 .................................................. Field Experience .............................................(2)

Additional Required Courses:

One of the following three courses:

PEXS 310 .................................................. First Aid and CPR ...........................................(2)

PEXS 327 .................................................. Fitness for Life .............................................(3)

PEXS 403 .................................................. Health Education .................................(Early Ed. Combined majors may substitute) (2)

T&L 411 .................................................. Primary Reading and Language Arts ...................(2)

T&L 412 .................................................. Intermediate Language Arts .........................(2)

T&L 413 .................................................. Assessing and Correcting Reading Difficulties ......(2)

T&L 414 .................................................. Corrective Reading Practice ..............................(1)

T&L 432 .................................................. Classroom Management ...................................(3)

T&L 433 .................................................. Multicultural Education (TEAM prerequisite) ........(3)

For Elementary Education Electives. .............................................(4)

For those courses that have prerequisites. 

T&L 487 .................................................. Student Teaching: Elementary ..........................(10-16)

SAMPLE PROGRAM OF STUDY

First Semester Second Semester

<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
<th>Course</th>
<th>Credits</th>
</tr>
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<tbody>
<tr>
<td>Engl 110</td>
<td>3</td>
<td>College Composition I .........</td>
<td>3</td>
</tr>
<tr>
<td>or</td>
<td></td>
<td>College Composition II .......</td>
<td>3</td>
</tr>
<tr>
<td>Engl 120</td>
<td>3</td>
<td>Technical &amp; Business ..........</td>
<td>3</td>
</tr>
<tr>
<td>or</td>
<td></td>
<td>Writing ..........................</td>
<td></td>
</tr>
<tr>
<td>Engl 125</td>
<td></td>
<td>Fundamentals of Public Speaking</td>
<td>3</td>
</tr>
</tbody>
</table>
Teaching and Learning

Kindergarten Endorsement

Undergraduate students who wish a Kindergarten Endorsement but do not wish to complete the combined major in elementary and early childhood education must take the following courses as part of 17 hours of required kindergarten coursework. In addition, they are required to take a minimum of 8 credits of kindergarten student teaching.

T&L 310 Introduction to Early Childhood Education .......... (3)
T&L 325 Field Experience: Early Childhood Education .......... (1)
T&L 312 Young Children’s Language and Thought .......... (3)
T&L 352 Language Development in Children .......... (3)
T&L 314 Social and Emotional Lives of Young Children .......... (3)
T&L 453 Methods and Materials: Kindergarten .......... (2)

The remaining 5 credits of kindergarten coursework may be selected from the following courses:

T&L 311 Observation and Description of Young Children .......... (3)
T&L 455 Comparative Approaches to the Education of Young Children .......... (3)
T&L 451 Methods and Materials: Pre-K .......... (3)
T&L 411 Primary Reading/Language Arts .......... (2)
T&L 498 Home School Relations .......... (3)
T&L 511 Identification and Assessment of the Young Child with Special Needs .......... (3)
T&L 526 Play in Development and Early Childhood Education .......... (2)

B.S. ED. WITH COMBINED MAJOR IN ELEMENTARY EDUCATION AND MATHEMATICS

Required 125 credits (36 of which must be numbered 300 or above, and 60 of which must be from a 4 year institution) including:

I. General Education Requirements, see pages 27-31.
II. EHD General Graduation Requirements, see page 47.
III. Elementary Education Curriculum as listed above.

IV. The Following Mathematics Curriculum:

Math 103 College Algebra or equivalent .......... (3)
Math 377 Geometry for Elementary Teachers .......... (2)
T&L 498 Special Projects: Math Practicum .......... (3)
BASIC Computer Programming .......... (2)
Math Electives (T&L math courses or math dept.) .......... (10)

B.S.ED WITH COMBINED MAJOR IN ELEMENTARY EDUCATION AND MUSIC

Required 125 credits (36 of which must be numbered 300 or above, and 60 of which must be from a 4 year institution) including:

I. General Education Requirements, see pages 27-31.
II. EHD General Graduation Requirements, see page 47.
III. Elementary Education Curriculum as listed above.

IV. The Following Music Curriculum:

Core Courses

MUS 100 Introduction to Music .......... (3)
MUS 111, 112, 211, 212 Theory I, II, III, IV .......... (12)
MUS 113, 114, 213, 214 ET/SS I, II, III, IV .......... (4)
MUS 224 Popular and Classical Music of the World .......... (3)
MUS 230 Music History Survey, I .......... (3)
MUS 331, 332 Music History Survey, II, III .......... (6)
MUS 340 Basic Conducting .......... (2)

Performance

Major Instrument .......... (6)
Ensembles .......... (4)
Voice Lessons or Voice Class — Piano and Instrumental Principles Only .......... (1-3)
Piano Lessons or Piano Class — Voice and Instrumental Principles Only .......... (4)
MUS 400 Choral Conducting .......... (2)
MUS 450 Applied Music Pedagogy (vocal) .......... (2)

Music Education .......... (10)
T&L 425 Methods & Materials in Elementary Music .......... (3)
T&L 486 Field Experience .......... (1)

BILINGUAL EDUCATION/ENGLISH AS A SECOND LANGUAGE ENDORSEMENT

Students who complete the courses listed below will be eligible for endorsement in Bilingual Education/English as a Second Language. Students must be certified to teach in Elementary, Middle Level or Secondary classrooms.

I. General Education Requirements, see pages 27-31.
II. EHD General Graduation Requirements, see page 47.
III. Elementary Education Curriculum as listed above.

IV. The Following Bilingual Courses:

Core Courses

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)
T&L 486 Field Experience: Bilingual & ESL .......... (1)
T&L 526 Play in Development and Early Childhood Education .......... (2)

6 elective hours in a modern language. (Teachers planning to work with American Indian students should take appropriate American Indian languages.) Three elective credits in English is chosen in consultation with advisor.

B.S.E.D. WITH COMBINED MAJOR IN ELEMENTARY EDUCATION AND EARLY CHILDHOOD

Required 125 credits (36 of which must be numbered 300 or above, and 60 of which must be from a 4 year institution) including:

I. General Education Requirements, see pages 27-31.
II. EHD General Graduation Requirements, see page 47.
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 312 Young Children’s Language and Thought .......... (3)
T&L 314 Social and Emotional Lives of Young Children .......... (3)
T&L 315 Exceptional Student .......... (3)
T&L 432 Classroom Management .......... (3)
T&L 433 Multicultural Education .......... (3)
T&L 486 Field Experience: Early Childhood Education .......... (1)
T&L 487 Student Teaching: Pre-Kindergarten .......... (9)

One elective course which deals with communication with adults, to be selected with advisor approval.

Total credits 37-39.

or

Pyc 111 Intro to Psychology .......... (3)
Social Science .......... (3)
English .......... (3)
History .......... (3)
Math/science .......... (4)
Fine Arts .......... (2-3)

Sophomore Year

Math/science .......... (3)
Social Science .......... (3)
Math/Science .......... (3)
Concentration courses .......... (6)
Math 277 Math for Elementary School Teachers .......... (3)
PEXS 205 Physical Educ for Elem. School Teachers .......... (3)
T&L 328 Children’s Literature .......... (3)
T&L 330 Introduction to Teaching and Learning .......... (3)
T&L 335 Understanding Readers and Writers .......... (3)

Junior Year

T&L 315 Education of the Exceptional Student .......... (3)
T&L 432 Classroom Management .......... (3)
T&L 433 Multicultural Education .......... (3)

Senior Year

T&L 487 Student Teaching .......... (16)
Electives or concentration .......... (12-17)
**B.S. ED. WITH COMBINED MAJOR IN ELEMENTARY EDUCATION AND PHYSICAL EDUCATION**

Required 125 credits (36 of which must be numbered 300 or above, and 60 of which must be from a 4 year institution) including:

I. General Education Requirements, see pages 27-31.

II. EHD General Graduation Requirements, see page 47.

III. Elementary Education Curriculum as listed above.

IV. The Following Physical Education Curriculum:

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>PEXS 103</td>
<td>First Aid and CPR</td>
<td>2</td>
</tr>
<tr>
<td>PEXS 223</td>
<td>Movement Performance Analysis Labs</td>
<td>6</td>
</tr>
<tr>
<td>PEXS 310</td>
<td>Introduction to Teaching in Physical Education and Sport and Sport Settings/Lab</td>
<td>4</td>
</tr>
<tr>
<td>PEXS 355</td>
<td>Applied Motor Development</td>
<td>3</td>
</tr>
<tr>
<td>PEXS 403</td>
<td>School Health Education</td>
<td>2</td>
</tr>
<tr>
<td>PEXS 404</td>
<td>Adapted Activities Program</td>
<td>2</td>
</tr>
<tr>
<td>PEXS 406/406L</td>
<td>Strategies for Teaching Physical Education in the Elementary School/ Lab</td>
<td>4</td>
</tr>
</tbody>
</table>

PEXS 487 Senior Teaching Seminar 2

Total: 31 credit hours

**B.S. ED. WITH COMBINED MAJOR IN ELEMENTARY EDUCATION AND VISUAL ARTS**

Required 125 credits (36 of which must be numbered 300 or above, and 60 of which must be from a 4 year institution) including:

I. General Education Requirements, see pages 27-31.

II. EHD General Graduation Requirements, see page 47.

III. Elementary Education Curriculum as listed above.

IV. The Following Visual Arts Curriculum:

Core Requirements:

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Art 108</td>
<td>Hand and Power Tool Safety</td>
<td>1</td>
</tr>
<tr>
<td>Art 130, 230</td>
<td>Drawing I, II</td>
<td>6</td>
</tr>
<tr>
<td>Art 133, 124</td>
<td>Two-Dimensional Design, and Three-Dimensional Design</td>
<td>6</td>
</tr>
<tr>
<td>Art 210</td>
<td>History of Art</td>
<td>3</td>
</tr>
<tr>
<td>Art 211</td>
<td>History of Art</td>
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Plus at least 9 credits in the following:

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
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<tbody>
<tr>
<td>Art 200, 201</td>
<td>Sculpture I, II</td>
<td>3, 3</td>
</tr>
<tr>
<td>Art 204, 205</td>
<td>Jewellerymaking I, II</td>
<td>3, 3</td>
</tr>
<tr>
<td>Art 220, 221</td>
<td>Painting I, II</td>
<td>3, 3</td>
</tr>
<tr>
<td>Art 231, 232</td>
<td>Figure Drawing I, II</td>
<td>3, 3</td>
</tr>
<tr>
<td>Art 240</td>
<td>Printmaking I: Intaglio</td>
<td>3</td>
</tr>
<tr>
<td>Art 241</td>
<td>Printmaking I: Relief and Serigraphy</td>
<td>3</td>
</tr>
<tr>
<td>Art 250</td>
<td>Ceramics I</td>
<td>3</td>
</tr>
<tr>
<td>Art 253</td>
<td>Ceramics II: Throwing</td>
<td>3</td>
</tr>
<tr>
<td>Art 260</td>
<td>Slide Photography</td>
<td>3</td>
</tr>
<tr>
<td>Art 261</td>
<td>Color Printing</td>
<td>3</td>
</tr>
<tr>
<td>Art 274</td>
<td>Calligraphy</td>
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<td>Art 276</td>
<td>Surface Design on Fabric</td>
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<td>Art 277</td>
<td>Fibers I</td>
<td>3</td>
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<tr>
<td>Art 300, 303</td>
<td>Sculpture III, IV</td>
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<td>Art 304, 305</td>
<td>Jewelry &amp; Small</td>
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<td>Art 322, 323</td>
<td>Painting III, IV</td>
<td>3</td>
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<tr>
<td>Art 332, 333</td>
<td>Figure Drawing III</td>
<td>3</td>
</tr>
<tr>
<td>Art 340</td>
<td>Printmaking II: Lithography</td>
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<tr>
<td>Art 341</td>
<td>Printmaking III: Plate &amp; Color Lithography</td>
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<tr>
<td>Art 342, 343</td>
<td>Printmaking II, III</td>
<td>3, 3</td>
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<tr>
<td>Art 344, 345</td>
<td>Printmaking II, III</td>
<td>3, 3</td>
</tr>
<tr>
<td>Art 351</td>
<td>Ceramics II: Sculpture</td>
<td>3</td>
</tr>
<tr>
<td>Art 353</td>
<td>Ceramics III: Throwing</td>
<td>3</td>
</tr>
<tr>
<td>Art 355</td>
<td>Clay &amp; Glasses</td>
<td>3</td>
</tr>
<tr>
<td>Art 361</td>
<td>Concepts in Visual Arts Education</td>
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</tr>
<tr>
<td>Art 365, 366</td>
<td>Photography Studio I, II</td>
<td>3, 3</td>
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<tr>
<td>Art 371, 372, 373</td>
<td>Fibers II, III, IV</td>
<td>3, 3, 3</td>
</tr>
<tr>
<td>Art 375</td>
<td>Brush Lettering &amp; Sign Painting</td>
<td>3</td>
</tr>
<tr>
<td>Art 379</td>
<td>Color Theory</td>
<td>3</td>
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<tr>
<td>Art 391a, 391b</td>
<td>Special Topics</td>
<td>1-4</td>
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<tr>
<td>Art 410</td>
<td>Art History: Selected Topics</td>
<td>1-4</td>
</tr>
<tr>
<td>Art 412</td>
<td>Art History: 20th Century (to 1930s)</td>
<td>3</td>
</tr>
<tr>
<td>Art 490</td>
<td>Special Projects/Independent Research</td>
<td>1-12</td>
</tr>
</tbody>
</table>

The following visual requirements in Elementary Education. It is recommended that students complete eight weeks of student teaching in an elementary school and eight in a middle school setting.

**B.S. ED. WITH MAJOR IN MIDDLE LEVEL EDUCATION**

Required 125 credits (36 of which must be numbered 300 or above, and 60 of which must be from a 4 year institution) including:

I. General Education Requirements, see pages 27-31.

The Integrated Studies Program is recommended.

II. EHD General Graduation Requirements, see page 47.

III. The Following Middle Level Education (Grades 5-8) Curriculum:

T&L 200 Exploring Teaching (2)

And

T&L 286 Field Experience (co-require) (1)

Or

T&L 330 Introduction to Teaching and Learning (3)

T&L 315 Education of the Exceptional Student (3)

T&L 341 Foundations of Middle Level Education (2)

T&L 350 Development and Education of Young Adolescents (3)

T&L 390 Technology for Teachers (2)

T&L 409 Reading in the Content Areas (2)

T&L 465 Middle Level Curriculum and Methods (5)

T&L 451 Field Experience (1)

A minimum of two methods courses in each area of concentration (see below) from the secondary education program and co-require field experience.

T&L 487 Student Teaching (16)

IV. Subject Matter Areas of Concentration:

Students must select a minimum of 40 credits of work in two subject areas that are normally included in the Middle Level curriculum (e.g. science, mathematics, physical education). The 40 hours must include at least 18 in each area of concentration. One-half of the credits in each area must be numbered at or above the 200 level except in science, where exceptions may be made. Middle level advisors have lists of courses that may be recommended or required in certain areas.

**MINOR IN MIDDLE LEVEL EDUCATION**

The Middle Level minor is open to students majoring in a field which leads to teacher certification at the elementary or secondary level.

The following Middle Level Education (Grades 5-8) Curriculum is required:

T&L 315 Education of the Exceptional Student (3)

T&L 341 Foundations of Middle Level Education (2)

T&L 350 Development and Education of Young Adolescents (3)

T&L 390 Technology for Teachers (2)

T&L 409 Reading in the Content Areas (2)

T&L 433 Multicultural Education (3)

T&L 465 Middle Level Curriculum and Methods (5)

T&L 486 Field Experience (1)

The Integrated Studies Program is recommended for students intending to teach at the Middle School Level.
Students completing the minor are encouraged to seek eight weeks of student teaching placement at the middle level. Students completing the minor with a major in Elementary Education must complete an area of concentration of at least eight hours to be eligible for employment in North Dakota middle schools. Students completing the minor with a program in Secondary Education are encouraged to take T&L 432 Classroom Management and to consider an area of concentration in addition to the academic major.

**Secondary Education**

Secondary Education Certification Preparation Sequence

**Course Sequence (29 credits minimum):**

Pre-admission:

- T&L 200. Exploring Teaching
- T&L 286. Field Experience

Admission to Teacher Education is required for enrollment in all of the following courses:

- T&L 300. Curriculum Development and Instruction
- T&L 390. Special Topics
- T&L 350. Development and Education of the Adolescent
- T&L 386. Field Experience, elective
- T&L 400. Methods and Materials
- T&L 433. Multicultural Education
- (OR IS 121). Introduction to Indian Studies
- T&L 460. Microteaching
- T&L 486. Field Experience
- T&L 495. Independent Study/Secondary Education
- T&L 487. Student Teaching
- T&L 488. Senior Seminar

*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. Majors that require varied professional experiences complete 10 credits of student teaching. Students may enroll in several student teaching experiences to total 16 credits.

**B.S.Ed. WITH MAJOR IN SCIENCE**

Required 125 credits (36 of which must be numbered 300 or above and 60 of which must be from a 4 year institution) including:

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

II. EHD General Graduation Requirements, see page 44.

III. The Following Science Curriculum:

- Biol 150, 151. General Biology I & II
- Biol 150L, 151L. General Biology Laboratory
- Chem 121/121L. General Chemistry I and II laboratories
- Chem 333. Introduction to Environmental, Clinical & Forensic Analysis
- Math 165, 166. Calculus I and II
- Biol 251, 251L. General Chemistry I and II laboratories
- Hist 286. Field Experience

3-4 hours from the following:

- Biol 341. Cell Biology
- Biol 357. Genetics
- Biol 442. Physiology of Organs & Systems
- Biol 336. Systematic Botany
- Biol 373. Vertebrate Zoology
- Biol 375. Invertebrate Zoology

16 hours from the following:

- Hist 101. Western Civilization I
- Hist 102. Western Civilization II
- Hist 103. United States to 1877
- Hist 104. United States since 1877
- Pols 101. American Government I
- Pols 102. American Government II
- Pols 105. Electives
- Soc 110. Introduction to Sociology
- An area of concentration from below
- (12-18)

All courses to be selected with approval of faculty advisors.

- 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.

**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:

- T&L 315. Education of the Exceptional Student
- T&L 316. Introduction to the Emotionally Disturbed Child
- T&L 317. Introduction to Mentally Retarded
- T&L 318. Introduction to Learning Disabilities

For the Area of Concentration, select a minimum of 6 credits from the following courses.

For the Minor, select a minimum of 11 credits from the following courses:

- T&L 421. Transition to Adult Life
- T&L 422. Education of the Gifted and Talented
- T&L 423. Assessment and Program Planning

* For T&L 486. Field Experience in Special Education

* For T&L 498. ST: Assistive Technology

* For T&L 499. ST: Sign Language

* For T&L 529. Special Education Law

* For T&L 552. Inclusive Methods

* For T&L 553. Collaborative Relationships

* For T&L 578. Behavior Management for Special Needs Students

* 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 strategy, learning disabilities, emotional disturbance, or mental retardation, students will need to complete additional coursework. See the graduate program on pg. 196 for further information.

**Courses**

- T&L 200. 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. F,S

- T&L 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. F,S


- T&L 300. Curriculum 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 acquainting, the undergraduate with (1) an operating philosophy and its effects on teaching, (2) curriculum, (3) curriculum development, (4) instruction, and (5) instructional planning. The functions of thoughtful planning and evaluation in effective teaching will be emphasized. F,S

- T&L 310. Introduction to Early Childhood Education. 3 credits. Corequisite: T&L 486. 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

- T&L 311. Observation and Description 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. This course examines both typical and atypical development of language and thought in children 0-8, as a basis for understanding and working with young children in educational settings. F

314. Social and Emotional Lives of Young Children. 3 credits. This course examines both typical and atypical social and emotional development in children ages 0-8, and seeks students to understand and work with young children in educational settings. F

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 etiology of conditions and the characteristics affecting individuals with learning disabilities. The various instructional approaches and service delivery models will also be explored. F,S

328. Survey of Children’s Literature. 3 credits. Students survey the broad range of literature written for children. Emphasis is placed on gaining familiarity with multicultural literature, understanding the distinguishing characteristics of genre, developing visual literacy with respect to picture books, evaluating the quality of literature for children, and how an individual’s development affects interest and use of literature. Investigating internet and traditional library resources support student learning. Corequisite: F

329. Young Adult Literature. 3 credits. Discussion and critical evaluation of contemporary literature, both adolescent and adult, which is of interest to young adults, with an emphasis on fiction, drama, poetry, essays, and biographies. On demand.

330. Introduction to Teaching and Learning. 3 credits. An 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

335. Understanding Readers and Writers. 3 credits. This foundational course explores the developmental nature of literacy learning, the reading and writing processes, and the conditions for successful literacy learning. Holistic methods for assessing language development are studied to understand individual language learners. F

341. Foundations of Middle Level Education. 2 credits. Prerequisite: Admission to Teacher Education. This course promotes understanding the needs of early adolescent students and of the interdisciplinary, collaborative teacher approach associated with the middle school philosophy. The course addresses the components of organization. F

350. Development and Education of the Adolescent. 3 credits. Prerequisites: T&L 200, 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 schools. Topics covered will be transition from childhood to adolescence, including cognitive development, self-concept, physiological changes, social needs and values, and attitudes of adolescents. This course will provide an understanding of the wide range of differences in developmental patterns of children and the influence of economic, social, and psychological factors on development. F,S

386. Field Experience. 1 credit. Prerequisites: T&L 200, 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

390. Special Topics. 1-3 credits. May be repeated. Other approved courses may meet this requirement. Prerequisites: T&L 200, T&L 286.

400. Methods and Materials. 3 credits. Prerequisite: Admission to the profession. Corequisite: T&L 486. Various teaching methods and strategies and the materials used in teaching in a subject area. Some offered F, some S. 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.)

409. Reading in the Content Areas. 2 credits. This course addresses issues of using language with content areas (i.e., science, social studies). Writing and integration within and across the curriculum of the elementary classroom are investigated. F,S

410. Teaching Reading and Writing in the Elementary School (TEAM). 3 credits. Prerequisites: Admission to Teacher Education, T&L 335, 328 or 329. Corequisite: T&L 430, 440, 470, 486. In this course students learn how to teach and assess reading and writing in the elementary school classroom. They learn program approaches, assessment, and instructional practices that are child centered, process oriented, literacy based.

411. Primary Reading and Language Arts. 2 credits. Prerequisites: Admission to Teacher Education, T&L 335. This course explores a wide variety of instructional practices for involving primary level children (grades P-3) in experiencing their language. The course emphasizes integrating reading, writing, speaking and listening with content areas and as form of creative, personal expression. F,S

412. Intermediate Language Arts. 2 credits. Prerequisites: Admission to Teacher Education, T&L 335 and T&L 328 or T&L 329. This course explores a wide variety of instructional practices of involving intermediate level children (grades 3-6) in experiencing their language. The course emphasizes integrating listening and literacy with content areas and as forms of creative, personal expression. F,S

413. Assessing and Correcting Reading Difficulties. 2 credits. Prerequisite: Admission to Teacher Education, T&L 335. The Corrective Reading Practicum (T&L 414) is required as corequisite with T&L 413. The focus of this course and practicum is to learn about current approaches to assessment and methods to assist students who are having difficulty with reading and writing. Observation, measure analysis, interviews, and other strategies 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 to T&L 413. Prerequisite: Admission to Teacher Education, T&L 335. This is the practicum for Corrective Reading. The student in this practicum evaluates, plan for and teach children who are having difficulty with reading and/or writing. F,S,SS

415. Reading and Writing Development of Bilingual Second Language Learners. 2 credits. This course addresses the foundations of teaching individuals who are learning to read and write in English as a second language. Culturally appropriate approaches to assessment and methods of increasing the comprehensibility of instruction are examined. S

421. Transition to Adult Life. 2 credits. Systematic methods and curriculum which encourage successful adult life in persons with disabilities. Subject matter includes interagency cooperation transition program development, career awareness, career development, and the operation of cooperatives and programs. Special assessment and teaching methods from the vocational domain are covered. S

422. 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. S

423. 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

431. Special Needs in the Elementary School (TEAM). 3 credits. Prerequisites: Admission to Teacher Education, grade of C or better in the following courses: T&L 330, 315, 328 or 329, 335 and Math 277; and GPA of 2.75 or better in the Elementary Education major. To understand and analyze the different modes of teaching social studies, to gain the competencies necessary for organizing a unit in the social studies, to gain an understanding of the values and multiple perspectives inherent within the various teaching strategies, to develop a preferred perspective on the ideal nature of Social Studies education. F,S

431. Teaching Hispanic Children. 2 credits. Hispanics generally, and Mexican Americans in particular, are the fastest growing segment of our population. Unfortunately, many people have limited knowledge of the rich history, culture(s), and educational needs of Hispanics. The purpose of this class is to introduce future teachers to this exciting group. S

432. Classroom Management. 3 credits. Prerequisite: Admission to Teacher Education. The purpose of this class is to study factors that influence classroom behavior and examine 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. Prerequisite: Admission to Teacher Education. 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 investigate the dynamics of learning. The course will focus on ideas, research findings, issues and theories, as well as examining the effects of motivation, self-concept, social-economic concerns, group dynamics, teacher expectations, and other relevant issues. The focus is on understanding, meaning, and experiences involved in growth, teaching, and learning. F

440. Math in the Elementary School (TEAM). 3 credits. Prerequisites: Admission to Teacher Education, Math 277, Math 103 or equivalent, or higher level math course, or score high enough on the CLEP subject exam, or a score on the PTE indicating placement in Trigonometry or higher math. Corequisites: T&L 410, 430, 470, and 486. 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 a process that focusses on the student as a learner. The course emphasizes investigating and learning in the content areas and as forms of creative, personal expression. F,S

University of North Dakota
451. Methods and Materials: Pre-Kindergarten. 3 credits. Prerequisite: T&L 310. Exploration of curriculum, methods and materials for use in pre-kindergarten educational settings. Includes selection of materials, creative environments, and planning for the individual needs of children within a group setting. F

452. Developing Personal Teaching Styles. 1 credit. Prerequisite: Departmental permission and T&L 451. Corequisite: T&L 487 and 456. 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

455. Comparative Approaches to the Education of Young Children. 3 credits. Prerequisite: T&L 310 or permission of instructor. A theoretical comparative study of various approaches to the education of young children. An examination of how theory influences practice in a variety of early childhood education models, including the Bankstreet model, Headstart, open education, Montessori schools, behavioral analysis, Distar, Piagetian, Vygotskian, and Reggio Emilia approaches. S

454. Organization and Leadership in Early Childhood Education. 2 credits. Prerequisite: Senior standing, graduate, or permission of the instructor. An investigation of personnel, administrative, curriculum organizational, 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 state, region, and nation. S/2

456. Pre-Kindergarten Seminar. 2 credits. Prerequisite: T&L 451, departmental permission. Corequisite: CTL 487, 452. 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,S

460. Microteaching. 2 credits. Prerequisites: T&L 200, 286, 300. The focus of this course is to apply the educational theories learned in the foundational courses to pedagogy 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

461. Middle Level Curriculum and Methods. 5 credits. Prerequisite: T&L 341. Corequisite: T&L 486. This methods course takes a hands-on approach to increasing understanding and application of the various methods and strategies for teaching early adolescent students. This course addresses techniques, strategies, materials, and a content area knowledge base necessary for promoting student learning and success in a middle school setting. S


471. Physical Science in the Elementary School. 2 credits. Hands-on approach to learning basic physical science topics such as electricity, sound, light, and force. Effective teaching strategies are also emphasized. F,S

472. Teaching Life Sciences in the Elementary School. 2 credits. Hands-on approach to learning basic biology 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 area also emphasized. SS

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. S/U grading. F,S

487. Student Teaching. 4-16 credits. If repeated, Student Teaching would be taken in a different program area. Prerequisite: Permission of program. 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. S/U grading. F,S

488. Senior Seminar. 1 credit. S-U grading only. A discussion of problems, professional obligations, and careers in teaching. To be taken concurrently with or the semester prior to student teaching.

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. 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. 3 credits. Course number reserved for committee approved proposals, independently, special colloquia, or experimental areas.

496. Special Projects. 1-8 credits. Course number reserved for committee approved proposals, independently, special colloquia, or experimental areas.
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.A. WITH A MAJOR IN THEATRE ARTS**

Required 125 credits (36 of which must be numbered 300 or above, and 60 of which must be from a 4 year institution) including:

I. General Education Requirements, see pages 27-31.

II. The Following Curriculum:

A. Core I (courses normally taken during the first two years of study)
- Thea 122. Makeup for Theatre and Television (3)
- Thea 130. The Art and Craft of Theatre (3)
- Thea 161. Acting I (3)
- Thea 201. Theatre Practicum (3)
- Thea 226. Intro to Design (3)
- Thea 250. Readings in Dramatic Literature (3)
- Thea 270. Stagecraft (3)

*At least one credit of Thea 201 must be for technical theatre involvement.

B. Core II (courses normally taken during the last two years of study)
- Thea 300. Play Direction I (3)
- Thea 315 or 316. Shakespeare (3)
- Thea 423. History of the Theatre: Classical, Medieval, Renaissance (3)
- Thea 424. History of the Theatre: 17th Century to the Present (3)
- Music Courses in History/Theory (3)
- Art Courses in History/Theory (3)
- Music or Art Courses in Applied Art (3)

Thea/Engl Additional courses in Dramatic Literature (may include Thea 330) (6)

C. From one of the following tracks:

1. Performance
   a. Required
      - Thea 140/140L. Stage Movement and Laboratory (2)
      - Thea 180, 280. Studio (8)
      - Thea 261. Acting II (3)
      - Thea 314. Vocal Performance Techniques (3)
      - Thea 402. Acting III (3)
      - Thea 481. Theatre Practicum (3)

   b. Electives*
      - Thea 222. Advanced Makeup (1)
      - Thea 229. Creative Dramatics (3)
      - Thea 329. Children's Theatre (3)
      - Thea 339. Production Design (3)
      - Thea 404. Acting for the Music Theatre (3)
      - Thea 411. Audition Techniques (1)
      - Thea 425. Play Direction II (3)
      - Thea 481. Approved Practicums (up to 3 additional)
      - Thea 494. Senior Project (4)

   Relevant special topics courses in Theatre Arts
   May also include two additional hours of studio study (180, 280, 380, 480)

   Up to 3 additional credits of relevant applied arts courses
   (such as PEXS, Communications, Music)

   *Courses to be approved by advisor

2. Design and Technical Theatre
   a. Required
      - Thea 326. Lighting for Stage I (2)
      - Thea 339. Production Design (3)
      - Thea 426. Scene Design for the Stage (3)
      - Thea 427. Costume Design (3)
      - Thea 481. Theatre Practicum (7)
      - Thea 494. Senior Project (4)

   b. Electives*
      - Thea 222. Advanced Makeup (1)
      - Thea 325. Scene Craft (3)
      - Thea 336. Lighting for Stage II (2)
      - Thea 426. Scene Design for the Stage (additional 3 credits)
      - Thea 427. Costume Design (additional 3 credits)
      - Additional Art, IT, or Comm courses (in applied areas)
      - Relevant Special Topics Courses

   *Courses to be approved by advisor

**B.A. WITH A MAJOR IN THEATRE ARTS**

Required 125 credits (36 of which must be numbered 300 or above, and 60 of which must be from a 4 year institution) including:

I. General Education Requirements, see pages 27-31.

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:
33 credits, including:
- Thea 130. The Art and Craft of Theatre (3)
- Thea 161. Acting I (3)
- Thea 201. Theatre Practicum (3)
- Thea 226. Intro to Design (3)
- Thea 250. Readings in Dramatic Literature (3)
- Thea 270. Stagecraft (3)
- Thea 300. Play Direction I (3)
- Thea 330. Contemporary Theatre (3)
- Thea 423. History of Theatre: Classical Medieval & Renaissance (3)
- Thea 424. History of Theatre: 17th Century to the Present (3)

4 hours from the following:
- Thea 122. Makeup for Theatre and Television (1)
- Thea 222. Advanced Makeup (1)
- Thea 223. Beginning Oral Interpretation (3)
- Thea 229. Creative Dramatics (3)
- Thea 261. Acting II (3)
- Thea 325. Scenecraft (3)
- Thea 326. Lighting for Stage I (2)
- Thea 329. Children’s Theatre (3)
- Thea 425. Play Direction II (3)
- Thea 426. Scene Design for Stage (3)
- Thea 427. Costume Design (3)
- Thea 481. Theatre Practicum (3)
- Thea 488. Playwriting (3)

**MINOR IN THEATRE ARTS**

Required 23 credits, including:
- Thea 130. The Art and Craft of Theatre (3)
- Thea 161. Acting I (3)
- Thea 201. Theatre Practicum (1)
- Thea 270. Stagecraft (3)
- Thea 300. Play Direction I (3)

3 hours from the following:
- Thea 423. History of Theatre (3)
- Thea 424. History of Theatre (3)

3 hours from the following:
- Thea 250. Readings in Dramatic Literature (3)
- Thea 330. Contemporary Theatre (3)

Courses from the following to total 23 hours:
- Thea 122. Makeup of Theatre & Television (1)
- Thea 229. Creative Dramatics (3)
- Thea 326. Lighting for Stage I (2)
- Thea 328. Acting II (3)
- Thea 329. Children’s Theatre (3)
- Thea 325. Play Direction II (3)
- Thea 426. Scene Design for Stage (3)
- Thea 481. Theatre Practicum (1)
- Thea 488. Playwriting (3)
Courses

110. Introduction to Theatre Arts. (CCN) 3 credits. Basic orientation and historical perspective to theatre arts. Study of the roles of playwright, director, actor, designer, composer, and audience members in current theatre practice. Course will include attendance at area performances. 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 exercises that foster actors’ abilities to work collaboratively. F

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. F

161. Acting I. (CCN) 3 credits. Basic principles of acting with emphasis on movement; basic character development through improvisation and script. F,S

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

201. Theatre Practicum. (CCN) 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.

226. Intro to Design. 3 credits. Introduces the student to the principles and elements of design, the design process, and the methods of presentation of design ideas. F

229. Creative Dramatics. 3 credits. The study of theatre games, improvisations and techniques as they relate to the education and development of creativity in children. S

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

261. Acting II. (CCN) 3 credits. Prerequisite: TA 227 or consent of instructor. Application of the skills from Acting I to contemporary and modern realist scripts that make advanced demands of the actor. F

270. Stagecraft. (CCN) 3 credits. Designed to familiarize the student with crafts and technologies of production; scenery construction, costume construction, painting, lighting equipment, sound techniques. Practical experience, shop procedures and safety practices applied to lab experience in University productions. 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

314. Vocal Performance Techniques. 3 credits. Training in vocal and articulation techniques with emphasis on vocal exercises and performance techniques.

325. Scene Craft. 3 credits. Specialized construction and rigging of scenery, advanced technology applications to the stage, drafting projects and practical problem solving. Prerequisites: TA 225 and TA 226. On Demand.

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; plus laboratory participation in University productions. 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

339. Production Design. 3 credits. Prerequisites: TA 130, 225 and 226, 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, craftsmen, and technicians. F

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

380. Theatre Performance Studio. 1 credit, repeatable to 2. Prerequisite TA 280. Continuation of TA 280. F,S

397. Cooperative Education. (CCN) 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.

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

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 ancient, 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. S

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 credits. Elements, principles, and styles of design applied to the visual creation of a dramatic character. S

480. Theatre Performance Studio. 1 credit, repeatable to 4. Prerequisite: TA 380. Continuation of TA 380. F,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

488. Playwriting. (CCN) 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

494. Senior Project. (CCN) 4 credits. Individual work in an approved area. F,S

Visual Arts (Art)

Fundingsland, Luber, McCleery, Meyers, Miller, Monsebroten, and Paulsen

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 award-winning structure of the Edmund Hughes Fine Arts Center provides more than 35,000 square feet for specialized studios and opportunities for work in the various visual arts media.

The Department of Visual Arts 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 M.F.A., or both. Candidates accepted for the program will be expected to maintain a high standard of excellence, demonstrate significant artistic growth, and a 3.00 grade point average in all 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 credits (36 of which must be numbered 300 or above, and 60 of which must be from a 4 year institution) including:

I. General Education Requirements, see pages 27-31.

II. College of Arts and Sciences Requirements, see page 39 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:

Art 108 ....... Hand & Power Tool Safety .................. (1)
Art 130, 131 .... Drawing I, II ...................................... (6)
Art 173, 174 ... Two-dimensional Design and Space .......... (6)
Art 210 .......... History of Art I ........................................ (3)
Art 211 .......... History of Art II ........................................ (3)
Art 230 .......... Figure Drawing I ...................................... (3)

and 18 credits from:

Art 200, 201 .... Sculpture I, II ........................................ (3, 3)
Art 204, 205 .... Jewelry I, II .......................................... (3, 3)
Art 220, 221 .... Painting I, II ........................................ (3, 3)
Art 232 .......... Figure Drawing II .................................. (3)
Art 240 .......... Printmaking I: Intaglio ............................... (3)
Art 241 .......... Printmaking I: Relief and Serigraphy .............. (3)
Art 250 .......... Ceramics I .................................................. (3)
Art 253 .......... Ceramics II: Throwing ................................ (3)
Art 260 .......... Slide Photography ..................................... (3)
Art 261 .......... Color Printing .......................................... (3)
Art 274 .......... Calligraphy ............................................. (3)
Art 276 .......... Surface Design on Fabric .......................... (3)
Art 277 .......... Fibers I .................................................... (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 areas:

Ceramics  Fibers  Drawing  Photograph  Printmaking  Sculpture

Photography  Printmaking  Small Sculpture

Upper-level students are required to complete a MINIMUM of 38 credits in courses selected from the following list:

Art 302, 303 .... Sculpture III, IV ...................................... (3, 3)
Art 304, 305 .... Jewelry & Small Sculpture I, II, III, IV ............ (3, 3, 3, 3)
Art 306, 307 .... (3, 3)
Art 322, 323 .... Painting III, IV ........................................ (3, 3)
Art 332, 333 .... Figure Drawing III, IV ................................ (3, 3)
Art 340 .......... Printmaking II: Lithography ....................... (3)
Art 341 .......... Printmaking III: Plate & Color Lithography ....... (3)
Art 342, 343 .... Printmaking II, III: Intaglio ........................ (3, 3)
Art 344, 345 .... Printmaking II, III: Intaglio ........................ (3, 3)
Art 351 .......... Ceramics II: Sculpture .............................. (3)
Art 353 .......... Ceramics III: Throwing ............................. (3)
Art 355 .......... Clay & Glazes ............................................. (3)
Art 361 .......... Concepts in Visual Arts Education ................. (2)
Art 365, 366 .... Photography Studio I, II ............................ (3, 3)
Art 371, 372, 373 .... Fibers II, III, IV .................................. (3, 3, 3)

Art 375 .......... Brush Lettering & Sign Painting .................. (3)
Art 379 .......... Color Theory ............................................ (3)
Art 391a, 391b .... Special Topics ...................................... (1-4)
Art 410 .......... History of Art: Selected Topics ..................... (1-4)
Art 411 .......... History of Art: Study of Eastern Art from Proto-literate Periods to the Present (3)
Art 412 .......... History of Art — 20th Century ...................... (3)
Art 414 .......... History of Art: Contemporary ....................... (3)
Art 415 .......... History of Art: Museum Internship ................ (3)
Art 416 .......... History of Art: Renaissance, Baroque, Rococo .......... (3)
Art 419 .......... History of Art: 19th Century Art and Architecture ............................... (3)
Art 420 .......... History of Art: Greek and Roman Art and Architecture ............................... (3)
Art 421 .......... History of Art: Computer Applications in the History of Art ...................... (1)
Art 422 .......... History of Art: Computer Internship ............... (3)
Art 490 .......... Special Projects/Independent Research .......... (1-12)

(variable credit dependent upon scope of project)

All B.F.A. candidates are required to be represented in the BFA Group Exhibition with the approval of their faculty adviser.

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................................. (11)

TEACHER CERTIFICATION:

Students who wish to become secondary art teachers must fulfill all the requirements for the B.F.A. with Major in Visual Arts program as well as the Department of Teaching and Learning requirements on page 155. This must include T&L 400, Methods and materials in secondary Art Education. Admission to the Teacher Education program is normally sought while enrolled in T&L 200 (see p. 47).

B.A. WITH MAJOR IN VISUAL ARTS

Required 125 credits (36 of which must be numbered 300 or above, and 60 of which must be from a 4 year institution) including:

I. General Education Requirements, see pages 27-31.

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:

Art 108 .......... Hand & Power Tool Safety ........................ (1)
Art 130, 230 .... Drawing I, II ........................................ (6)
Art 122, 124 .... Two-dimensional Design and Space .......... (6)
Art 210 .......... History of Art I ........................................ (3)
Art 211 .......... History of Art II ........................................ (3)

Plus at least 9 credits in the following:

Art 200, 201 .... Sculpture I, II ........................................ (3, 3)
Art 204, 205 .... Jewelry I, II .......................................... (3, 3)
Art 220, 221 .... Painting I, II ........................................ (3, 3)
Art 231, 232 .... Figure Drawing I, II ................................ (3, 3)
Art 240 .......... Printmaking I: Intaglio ................................ (3)
Art 241 .......... Printmaking I: Relief and Serigraphy .............. (3)
Art 250 .......... Ceramics I .................................................. (3)
Art 253 .......... Ceramics II: Throwing ................................ (3)
Art 260 .......... Slide Photography ..................................... (3)
Art 261 .......... Color Printing .......................................... (3)
Art 274 .......... Calligraphy ............................................. (3)
Art 276 .......... Surface Design on Fabric .......................... (3)
Art 277 .......... Fibers I .................................................... (3)

Before advancement to upper-division status, all B.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  Fibers  Drawing  Photography  Printmaking  Sculpture

Photography  Printmaking  Small Sculpture

Upper-level students are required to complete a MINIMUM of 20 credits in courses selected from the following list:

Art 302, 303 .... Sculpture III, IV ...................................... (3, 3)
Art 322, 323 .... Painting III, IV ........................................ (3, 3)
Art 332, 333 .... Figure Drawing III, IV ................................ (3, 3)
Art 340 .......... Printmaking II: Lithography ....................... (3)
Art 341 .......... Printmaking III: Plate & Color Lithography ....... (3)
Art 342, 343 .... Printmaking II, III: Intaglio ........................ (3, 3)
Art 344, 345 .... Printmaking II, III: Intaglio ........................ (3, 3)
Art 351 .......... Ceramics II: Sculpture .............................. (3)
Art 353 .......... Ceramics III: Throwing ............................. (3)
Art 355 .......... Clay & Glazes ............................................. (3)
Art 361 .......... Concepts in Visual Arts Education ................. (2)
Art 365, 366 .... Photography Studio I, II ............................ (3, 3)
Art 371, 372, 373 .... Fibers II, III, IV .................................. (3, 3, 3)
Art 375 .......... Brush Lettering & Sign Painting .................. (3)
Art 379 .......... Color Theory ............................................ (3)
Art 391a, 391b .... Special Topics ...................................... (1-4)
<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
<th>Prerequisites</th>
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<tbody>
<tr>
<td>Art 110</td>
<td>Introduction to the Visual Arts</td>
<td>3</td>
<td>Art 100, 105, 120, 122, 124, 125</td>
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<tr>
<td>Art 120</td>
<td>Introduction to Drawing and Color Materials</td>
<td>3</td>
<td>Art 100, 105, 120, 122, 125</td>
</tr>
<tr>
<td>Art 121</td>
<td>History of Art II: Study of Art from Paleolithic to Renaissance</td>
<td>3</td>
<td>Art 100, 105, 120, 122, 125</td>
</tr>
<tr>
<td>Art 122</td>
<td>Two-Dimensional Design and Three Dimensional Design</td>
<td>3</td>
<td>Art 100, 105, 120, 122, 125</td>
</tr>
<tr>
<td>Art 161</td>
<td>History of Art: Contemporary</td>
<td>3</td>
<td>Art 100, 105, 120, 122, 125</td>
</tr>
<tr>
<td>Art 200</td>
<td>History of Art: Study of Eastern Art from Paleolithic to Renaissance</td>
<td>3</td>
<td>Art 100, 105, 120, 122, 125</td>
</tr>
<tr>
<td>Art 205</td>
<td>History of Art: Museum Internment</td>
<td>3</td>
<td>Art 100, 105, 120, 122, 125</td>
</tr>
<tr>
<td>Art 210</td>
<td>History of Art: Renaissance, Baroque, Rococo</td>
<td>3</td>
<td>Art 100, 105, 120, 122, 125</td>
</tr>
<tr>
<td>Art 220</td>
<td>History of Art: Greek and Roman Art and Architecture</td>
<td>3</td>
<td>Art 100, 105, 120, 122, 125</td>
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<td>Art 240</td>
<td>Special Projects/Independent Research</td>
<td>1</td>
<td>Art 100, 105, 120, 122, 125</td>
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**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.

200. Sculpture I. 3 credits. Prerequisites: Art 108, 124. Introduction to philosophy, aesthetics, history and processes of sculpture. Demonstrations in the use of metals, stone, clay, plaster, wood, etc. F.S.

201. Sculpture II. 3 credits. Prerequisite: Art 200. Continuation of Sculpture I. F.S.

230. Drawing II. (CCN) 3 credits. Prerequisite: Art 205. Advanced study and application of drawing media, methods, and techniques. A continuation of the skills and concepts developed in Drawing I. F.S.

231. Figure Drawing I. (CCN) 3 credits. Prerequisite: Art 230. Study and application of different drawing media, methods, and techniques. 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.

232. Figure Drawing II. (CCN) 3 credits. Prerequisite: Art 230. Advanced study and application to different media, methods, and techniques. Continuation of problems introduced in Figure Drawing I. F.S.

240. Printmaking I: Intaglio. 3 credits. Survey of intaglio processes, including etching, engraving, aquatint, etc. on zinc and plastic. F.S.

241. Printmaking II: Relief and Serigraphy. 3 credits. Survey of relief and serigraphic print processes. S.

250. Ceramics I. (CCN) 3 credits. Introduction to ceramics techniques. A beginning course for majors. Proficiency in the basic hand forming processes and glazing techniques and an understanding of the clay and firing processes are achieved through lectures, discussions, demonstrations, and readings. F.S.

253. Ceramics II: Throwing. 3 credits. Prerequisite: Art 151 or 250 or permission of instructor. Throwing is the process by which a form is made by working with the hands and on the potter’s wheel. During the first semester emphasis is placed on centering the clay on the wheel and mastering the basic bowl and bottle forms. F.S.

260. 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: Art 260 or instructor approval. This beginning course in color printing is designed as a complementary follow up course to Slide Photography. Art 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 illustrations. F.S.

277. Surface Design on Fabric. 3 credits. Prerequisite: Art 122. Exploration of technical and design possibilities of various surface embellishments on fabric (printed, dyed). Demonstration/slides/studio work. F.

278. Fibers I. 3 credits. Prerequisite: Art 122. Samples and finished art projects of student’s design carried out exploring technical and design possibilities of various textile techniques. Demonstrations/slides/studio work. S.

302. Sculpture III. 3 credits. Prerequisite: Art 201. Continued involvement in advanced sculpture processes and emphasis on personal style development. S.

303. Sculpture IV. 3 credits. Prerequisite: Art 302. Continuation of Sculpture III. F.S.

304. Jewelry I. (CCN) 3 credits. Introduction to the materials, design, and techniques in the art of making jewelry. 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.

320. Painting II. (CCN) 3 credits. Prerequisite: Art 204. A continuation of comprehensiveatory understanding of non-ferrous metals & their manipulation is presented. Leading to proficiency for the making of body ornaments and simple containers from sheet. S.

321. History of Art II. (CCN) 3 credits. Study of western art from Renaissance to present. F.

322. Painting III. 3 credits. Prerequisite: Art 131. Experimentation with oil painting and associated media with emphasis upon creative compositions, using models, still-life subjects and imaginative contemporary expressions. F.S.

323. Painting IV. 3 credits. Prerequisite: Art 220. Continuation of concepts and techniques explored in Painting I. F.S.

324. Printmaking III: Relief and Serigraphy. 3 credits. Survey of relief and serigraphic print processes. S.

333. Figure Drawing IV. 3 credits. Prerequisite: Art 232. Continuation of Figure Drawing III. F.S.
Women Studies

Women Studies at the University of North Dakota is an interdisciplinary academic program which includes courses from the traditional disciplines, as well as an introductory course 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 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,SSS

MINOR IN WOMEN STUDIES

Twenty credits of courses in Women Studies completed with a GPA of at least 2.0 are required for the minor.

I. Required courses (total hours 4 to 7):
   A&S 225 Introduction to the Study of Women ..........(3) A&S 480 Feminist Theory ........................................(3)
   Eng 357 Women Writers & Readers (may be repeated once upon approval) .......(3) Hist 332 American History to 1865 .........................(3) Hist 333 American History since 1865 .....................(3) Rel 116 Women and Religion ..................................(3) Soc 340 Sociology of Gender & Sex Roles .................(3)
   Isl 419 Women in Islam ........................................(3) Soc 335 The Family ...............................................(3) Others: Courses in various departments cross-listed each semester in the Time Schedule for the College of Arts and Sciences

   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

Women Studies

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: Art 240 or 241. Basic black and white stone lithographic processes. F

341. Printmaking III: Plate and Color Lithography. 3 credits. Prerequisite: Art 340. Advanced work in stone lithography to include color processes. Introduction to plate lithography and related photographic procedures. S

342. Printmaking II: Intaglio. 3 credits. Prerequisite: Art 240. Intaglio work to include metal and plexiglas plates. Elaboration on the use of techniques, including soft ground, sugar lift, and the double print process. Introduction to multiplate color printing and other experimental processes. A slide survey of contemporary printmakers. F, S

343. Printmaking III: Intaglio. 3 credits. Prerequisite: Art 342. Continuation of Printmaking II: Intaglio. F, S

344. Printmaking II: Serigraphy. 3 credits. Prerequisite: Art 241. Investigation of screen printing techniques with professional quality, non-toxic materials and a full range of stencil systems including experimental approaches. F, S

345. Printmaking III: Serigraphy. 3 credits. Prerequisite: Art 344. Continuation of Printmaking II: Serigraphy. F, S

351. Ceramics II: Sculpture. 3 credits. Prerequisite: Art 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

355. Ceramics III: Throwing. 3 credits. Prerequisite: Art 253. Devoted to more complex problems such as throwing larger pieces, multiple-sectioned forms, sets of forms, folded pieces, etc. F, S

356. Ceramics IV. 3 credits. Prerequisite: Art 354 or permission of instructor. 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. Prerequisite: Art 261. Refinement and conceptual and formal qualities in silver or non-silver 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, SS

366. Photography Studio II. 3 credits (repeatable to 6 credits). Prerequisite: Art 365 or consent of instructor. Further development of conceptual and formal qualities in silver or non-silver process photographic projects in 35mm, medium or large camera formats. The scope of work and media will be determined by contractual arrangement between student and instructor. F, S, SS

371. Fibers II. 3 credits. Prerequisites: Art 173 or 174 and 277. Course work will consist of sample making and sustained projects woven on the loom. Techniques taught include yarn dyeing. F, S

372. Fibers III. 3 credits. Prerequisite: Art 371. A continuation of skills acquired in Fibers II. This course will deal with double-weave loom construction processes and other multiple layer possibilities. S

373. Fibers IV. 3 credits. Prerequisites: Art 173 or 174 and 372. This course will deal with structure and pattern in weaving. Work will consist of samples and finished visual statements. F, S On Demand.

375. Brush Lettering and Sign Painting. 3 credits. Prerequisite: Art 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: Art 173. Advanced experimentation with color phenomena, light & pigment theory through historical, theoretical and practical approaches. S

391. Special Topics. 1-4 credits. Repeatable to 8 between a & b. Prerequisite: upper division status. Experience in specialized techniques and processes as they apply to various media both new and traditional. Offered on request. May be conducted either on laboratory or tutorial basis as subject matter permits. Letter grade only. F, S

392. Special Topics. 1-4 credits. Repeatable to 8 between a & b. Prerequisite: upper division status. Experience in specialized techniques and processes as they apply to various media both new and traditional. Offered on request. May be conducted either on laboratory or tutorial basis as subject matter permits. S-U grade only. F

410. History of Art: Selected Topics. 1-4 credits. Study of varied topics in the history of art and architecture. May be repeated as title changes. F, S, SS

411. History of Art: Study of Eastern Art from Proto-literate Periods to the Present. 3 credits. Prerequisites: Art 210 and 211. Study of the arts of Asia with emphasis on China, Japan, and Indian sub-continent in terms of the morphology and symbolism. S, SS

412. History of Art — 20th Century. 3 credits. Prerequisites: Art 210 and 211. Study of major artists and artistic expressions since 1873 and their relation to the "art of making art" within the theoretical and cultural contexts of the 20th Century. F

414. History of Art: Contemporary. 2 credits. Study of contemporary artists and emerging artistic trends, beginning with Post-Modernism, with an emphasis on social, cultural and economic contexts that determine artistic production-theory and practice, art criticism, pluralism, and politics. F, S

415. History of Art: Museum Internship. 1-3 credits. The Museum Intern will work with the history of art faculty to select an exhibition to research, to prepare a written paper and to present publicly. F, S

416. History of Art: Renaissance, Baroque, Rococo. 3 credits. Prerequisites: Art 210 and 211. Study of the architecture, sculpture, and painting of the Renaissance through the late seventeenth and eighteenth century Baroque, and Rococo stylistic interpretations. S, F, S

419. History of Art: 19th Century Art and Architecture. 3 credits. Prerequisites: Art 210 and 211. Study of the major artists and artistic movements embedded in Neo-Classical, Romantic, Realist traditions from 1770 to 1873. F, S

420. History of Art: Greek and Roman Art and Architecture. 3 credits. Prerequisites: for majors — Art 210 and 211, At least 90-year-old — no prerequisites. Study of ancient Greek work from Geometric to Hellenistic and Rome and its empire from Republican to later Hellenistic to Constantinian times. F, S

421. History of Art: Computer Applications in the History of Art. 1 credit repeatable to 4 credits. Prerequisites: Art 210 and 211. This course is intended as an introductory course on computer software applications in the history of art. Students are able to study visual concepts in any media to explore paint, programs, animation, image manipulation and enhancement, CAD, 3-D modeling in the computer studio. F, S, SS

422. History of Art: Computer Internship. 1-3 credits. Prerequisites: Art 210, 211, and 421. The Computer Intern will work with the history of art faculty to work on a MacroMedia Director project, CAD project, or design project and prepare a written paper and CD-ROM/Disc for public presentation. F, S, SS

460. Methods, Materials and Philosophy: Art in the Elementary Classroom. 3 credits. Prerequisites: Sophomore standing in B.Ed or Art. The study of art materials, methods, philosophy and projects applicable for special education, kindergarten through sixth grade students. Emphasis is on inter-curricular creativity using both 2-dimensional and 3-dimensional projects, featuring multi-cultural and disciplined-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

IS 346 Contemporary Indian Women. (3)

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(Also see the Index beginning on page 250 of this Catalog to find the location of more specific subject matter than is listed in this contents.)
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 1997–98, 411 master’s degrees, 5 specialist diplomas, and 40 doctorates were awarded. More than 13,000 master’s degrees, 80 specialist’s diplomas, and 1650 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

Sharon Carson, Ph.D., Member-at-Large, 1998-2001
Jacob Chacko, Ph.D., Business, 1996-99
Mary Cutler, Ph.D., Fine Arts, 1997-2000
Graeme Dwar, Ph.D., Member-at-Large, 1997-2000
Mohammad Hemmasi, Ph.D., Social Sciences, 1997-2000
Susan Henly, Ph.D., Health Sciences, 1996-99
John Hoover, Ph.D., Education, 1997-2000
Cindy Juntunen, Ph.D., Human Resources, 1996-99
Richard Millspaugh, Ph.D., Sciences/Mathematics, 1998-2001
Jim Mochoruk, Ph.D., Humanities, 1998-2001
Tom Owens, Ph.D., Member-at-Large, 1996-99
Richard Schultz, Ph.D., Engineering, 1998-2001
Harvey Knull, Ph.D., Dean (ex officio)

RESEARCH AND SCHOLARSHIP AT UND

The faculty at the University of North Dakota are committed to the development of new knowledge and technology through research, scholarships, and creative activities. Large numbers of high quality creative efforts include publications, presentations, books, exhibitions, and contracts and peer reviewed grants and contracts.

The Graduate School supports research with Summer Research Professorships, which allow faculty to work with their students on research, and Summer Doctoral Fellowships, which allow Ph.D. candidates to spend full time on their research during the summer.

The University operates a variety of research centers such as the Energy and Environmental Research Center (EERC), the Bureau of Business and Economic Research, the Bureau of Governmental Affairs, the Bureau of Educational Services, the Center for Innovation, the 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 $14 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

APPLICATION

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) 777-2947
FAX (701) 777-3619
E-mail: undgrad@mail.und.nodak.edu
Worldwide Web: http://www.und.nodak.edu

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:

- Biology / February 15
- Counseling / February 1
- Counseling Psychology / January 1
- English / March 1
- Nursing Anesthesia Specialization / December 15
- Nursing Family Nurse Practitioner / January 15
- Psychology (all specialties) / February 1
- Social Work / February 1
- Speech-Language Pathology / February 15

NOTE: It is strongly recommended that you submit and complete your application at least two weeks prior to the departmental deadlines.

INTERNATIONAL STUDENTS

It is strongly recommended that the application be completed three months prior to the term in which the applicant wishes to matriculate.

All applicants whose native language is not English are required to demonstrate English language proficiency by taking the TOEFL (Test of English as a Foreign Language) and achieving a minimum score of 550 on the paper based test or 213 on the computer based test.

Graduate assistantships are generally unavailable to international students during their first year of study. However, an applicant with an outstanding record may be considered only if he or she has first taken the Test of Spoken English and achieved a minimum score of 50.

International students are required to submit a certification of finances to the Graduate School after an offer of admission has been made. Approximately $19,000 annually is required for educational and living expenses.

Applicants admitted to a graduate program will be issued an I-20 Form after all required documentation has been submitted.

MINIMUM GENERAL ADMISSION REQUIREMENTS

1. A four-year bachelor’s degree from a recognized college or university (for U.S. degrees, accreditation by one of the six regional accrediting associations: MSA, NASC, NCA, NEASC-CIHE, SACS-CC, or WACS-Sr.).
2. A minimum of 20 semester credits of appropriate undergraduate work in the chosen field.
3. A cumulative Grade Point Average (GPA) of at least 2.75 for all undergraduate work or a GPA of at least 3.00 for the junior and senior years of undergraduate work (based on A = 4.00).*

   (For applicants having the equivalent of one or more years of baccalaureate work reported on a non-graded system, submission of (a) an evaluation of the work and (b) Graduate Record Examination scores on the General Test and the Subject Test, if offered in the discipline.)
4. A minimum TOEFL (Test of English as a Foreign Language) score of 550 on the paper based test or 213 on the computer based test for all applicants whose native language is not English.
5. Completion of all departmental admission requirements (see the section entitled, “Departmental Programs,” pages 182-237).

*Exception—Master of Engineering Program requires an overall GPA of 2.50.

APPLICATION PROCEDURE

Those who wish to be considered for graduate study are required to submit an application and supporting materials to the Graduate School. All applicants are required to submit the following: 1) Application Form; 2) Application Fee; 3) Three letters of recommendation; 4) Two official copies of all academic transcripts; and 5) Statement of Purpose.

Certain graduate programs require additional materials as part of their application process (i.e., writing samples, test scores, portfolios, etc.). You should contact the department or the Graduate School for more specifics.

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.

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 USD Student Health Service, University of North Dakota, P. O. Box 9038, Grand Forks, ND 58203-9038, phone (701) 777-3963.

Any student who holds a baccalaureate degree and has established status as a Degree, Non-Degree, Deferred Admission, Post-Baccalaureate, or Transient student is eligible to enroll in a graduate course (i.e., a course numbered 500 or higher). Enrollment in certain courses may be limited to Degree students, however. Registration and fee payment procedures are outlined by the 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 page 169.

The number of credits for which a student may register is subject to certain limits as defined on page 169. Registrations not in compliance with University, Graduate School, and departmental policies are subject to cancellation by the dean’s office.

Common Course Numbers

Course numbers for certain activities are uniform throughout the Graduate School and are not listed separately for each department:

<table>
<thead>
<tr>
<th>Course Description</th>
<th>Course Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Continuing Enrollment, 1-12 credits</td>
<td>996</td>
</tr>
<tr>
<td>Independent Study Report, 2 credits</td>
<td>997</td>
</tr>
<tr>
<td>Thesis, 4-9 credits</td>
<td>998</td>
</tr>
<tr>
<td>Dissertation, typically 6-18 credits</td>
<td>999</td>
</tr>
</tbody>
</table>

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, advisement, etc.). The number of credits should be determined by the advisor to reflect the proportion of time devoted by the student to academic study that term, with a full time student registering for 12 credits. Advisor verification of the appropriateness of the number of 996 credits may be required.
After two separate semesters of 6 to 12 hours in 996 for master’s students and after four separate semesters for doctoral students, a student wishing to enroll in additional 996 hours will be required to petition the Graduate School dean.

Continuing enrollment (996) credits will not count toward the requirements for the degree. All students must be enrolled for either 996 credits or other credits the semester of graduation. Students may register for both regular credits and 996 credits in a given term if all other conditions have been met.

Minors and Cognates

Some degree programs require or permit academic work outside of the area of concentration (major) in a supporting area which may be called a minor area or a cognate area and must consist of at least 9 credit hours.

A minor is a concentrated study in a specific supporting field at the graduate level. A minor must be titled and identified on the student’s program of study and be approved by a Graduate Faculty member of the minor department/program. The minor will be listed on the student’s transcript. Only the courses approved for graduate credit may be included in a minor.

A cognate is a selection of courses providing broad support to the major. All courses number 300 or above listed in this catalog, including those offered by departments or fields that do not offer graduate courses or graduate degrees, may be included in the cognate. Courses should be taken in two or three departments of fields. A cognate area will not be titled and will not be listed on a student’s manuscript.

Note: When a graduate student elects to use a 300- or 400-level course for graduate credit, it is understood that the student will be required to do additional work over and above that required of undergraduates. Usually, such work is of an independent nature.

Graduate Cooperative Education

Some departments offer Graduate Cooperative Education. The course must meet the following minimum requirements set by the Graduate Committee:

- The student must be in Approved status and in good academic standing (minimum 3.00 GPA).
- The student must have completed a minimum of 9 credits of the Program of Study.
- The student must have the approval of the department (i.e., department chair or graduate director) and of his/her advisor before the co-op begins.
- Proper work experience on campus may be acceptable, but not employment in the department granting the co-op credit.
- Credit will not be allowed for current career track positions.
- Typically, no more than 20% of the Program of Study will be allowed for co-op credit.
- The student will be required to present a seminar and submit a written report.
- The co-op experience must be compensated.

The Department’s requirements for registration in Graduate Cooperative Education may be more stringent than the minimums set by the Graduate Committee.

Certificate Programs

Some graduate programs offer certificate programs in addition to the degree programs. Certificate programs generally require a minimum of 9 credit hours of course work in approved graduate courses which are transferable to a graduate program. A minimum grade of C in each course is required to earn credit and the certificate.

Admission to the certificate program may be different from admission to a degree program. Please consult the department for specific requirements.

Graduate Credit

- Graduate credit may be earned only by students enrolled in the Graduate School and in courses listed in the Graduate section of the catalog.
- UND seniors who have obtained special permission as described in page 169 may also receive graduate credit for graduate courses.
- All courses listed in the “Departmental Program” section carry graduate credit and are eligible for use in the major or minor of any Program of Study for a graduate degree, subject to the approval of an advisor or Faculty Advisory Committee and the dean.
- All UND courses numbered 300 and above may be applied to the cognate part of a Program of Study. (When a graduate student elects to use a 300- or 400-level course for graduate credit, it is understood that the student will be required to do additional work over and above that required of undergraduates. Usually, such work is of an independent nature.)
- At least one-half of the credits for all degrees must be in courses numbered 500 or higher.
- Graduate courses used for credit for one degree at UND may not be used for credit toward a second UND graduate degree.

Eligibility to Work for an Advanced Degree

Only those who have been officially admitted to the Graduate School as Degree Students on the basis of a letter from the dean may work for an advanced degree.

Eligibility of Faculty to Pursue Graduate Degree

A UND faculty member above the rank of instructor may be admitted to and enrolled in a graduate degree program at this University two years after the date of termination as a faculty member. In those instances where there is clearly no potential for serious conflict of roles or interests, the two-year interval may be waived by the University Graduate Committee upon the recommendation of the department to which admission is sought. This policy does not apply to members of the Department of Military Science.

Petitions and Appeals

Students who wish to be excused from Graduate School requirements must petition the dean of the Graduate School on a form available from the Graduate School. 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.

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 Office of the Registrar 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 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 9 credits in a summer session. Graduate research assistants whose research is part of their degree requirement must carry at least 12 credits each semester or 6 credits in a summer session. Graduate teaching or service assistants and some graduate research assistants must enroll in the following number of credits:

<table>
<thead>
<tr>
<th>Graduate</th>
<th>½ Time</th>
<th>½ Time</th>
</tr>
</thead>
<tbody>
<tr>
<td>Appointment</td>
<td>(minimum-maximum)</td>
<td>(minimum-maximum)</td>
</tr>
<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>4 Honor Points</td>
</tr>
<tr>
<td>B</td>
<td>3 Honor Points</td>
</tr>
<tr>
<td>C</td>
<td>2 Honor Points</td>
</tr>
<tr>
<td>D</td>
<td>1 Honor Point</td>
</tr>
<tr>
<td>F</td>
<td>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>

Graduate Grade Point Average

A graduate 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- Unsatisfactory basis are not counted in determining the GPA. Courses with grades of Incomplete are neither counted as partial fulfillment of degree requirements nor calculated in the GPA.

Satisfactory-Unsatisfactory Grading

Some seminars, research, thesis, dissertation, and field work may be graded on a Satisfactory-Unsatisfactory basis. Those courses usually are marked in the Timetable of classes, and the entire registration for the course will be graded on the S-U basis. The student does not have the option of receiving a grade. Graduate students do not have the option of electing S-U grading in either graduate or undergraduate courses.

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. The 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 595), 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. Students may be placed on probation with conditions or dismissed as a result of unsatisfactory academic performance or progress. Dismissal will be noted on the student’s transcript.

The conditions regarding Grade Point Average are as follows:

1. No decision on dismissal will be reached until a minimum of 12 graduate credits has been accumulated.
2. The academic standing of all graduate students whose cumulative GPA falls below 3.00 (2.75 for Master of Engineering program) will be reviewed at the end of each academic term by the graduate dean. Students having accumulated 12 or more credit hours will be placed on academic probation for one semester; students having accumulated fewer than 12 credit hours will be placed on academic probation until either (a) the GPA is raised to at least 3.00 (2.75 for M.Engr.) or (b) 12 graduate credit hours are accumulated, whichever occurs first. If, at the end of the probationary period, the GPA is still less than 3.00 (2.75 for M.Engr.), the student will be dismissed.

**TRANSFER OF GRADUATE CREDITS**

A limited amount of graduate work completed at a regionally accredited North American institution prior to, or after matriculation in the Graduate School at UND, may be applied toward a graduate degree at the University of North Dakota. Graduate work is considered for transfer only on an individual basis and only after the student has completed satisfactory work in residence at UND. Those transfer credits approved by the student’s advisory committee and the dean of the Graduate School are included in the program of study for the UND graduate degree and only those transfer credits will be recorded on the UND transcript.

The basic purpose of the transfer policies is to ensure that transferred work is of comparable content, level, timeliness, and quality to that which would be taken at UND and included on the program of study for the degree. The following policies are generally applicable to the acceptance of the graduate work for transfer to UND:

- The work must have been taken at an accredited North American institution.
- The student must have been enrolled as a Graduate Student.
- The work must have received graduate credit at the institution where it was earned.
- The student must have earned a grade of B or better.
- The work must be less than 7 years old at the time the UND degree is awarded with the exception of work that was part of a completed prerequisite degree.
- The amount of transfer credit that will be accepted toward the master’s degree is one-fourth (usually 8 semester credits) of the credit hours required for the degree.
- The work credited toward a completed master’s degree may be accepted for a specialist’s diploma or doctoral degree.
- Work beyond the master’s degree must be post-master’s level and from an institution that offers post-master’s degrees in the discipline.
- Work beyond the master’s degree from an institution offering only master’s level work in the discipline may be applied to the minor or cognate areas.
- For the Ph.D., only 30 credits may be transferred beyond the credits allowed for the master’s degree, i.e., a total of 60 credits.
- For the Specialist Diploma, only 15 credit hours will be transferred beyond the credits allowed for the master’s degree, i.e., a total of 45 credit hours.

**RESIDENCE REQUIREMENTS**

Some graduate degree programs, especially those with a significant research/creative component, require that students spend a minimum period of time in residence during their course of study. The purpose of residence is to provide an opportunity for sustained and concentrated intellectual effort, to provide for immersion in a research environment, and to permit extensive interaction with fellow students and faculty of the major department.

In order to meet a residence requirement, a student (a) must devote full time to academic study and (b) must be registered for at least twelve credits in a semester or six credits in a summer session, or be a graduate teaching or research assistant.

The Residence Requirements are stipulated for each graduate degree program in this catalog. A year of residence requires 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 Interactive Video Network (IVN) utilizing two way compressed video and audio. Other degree programs are offered on site at distance locations, and some are offered using delayed video and the Internet.

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 offered by Internet and delayed videotape to students throughout the United States and Internationally.
- Master’s Degree in Nursing (Rural Health specialization) delivered from Grand Forks to Valley City, 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.
- Master’s Degree in Social Work delivered from Grand Forks to Bismarck via IVN.
- Master’s Degree in General Studies/Education offered on-site in Bismarck.
- Master’s Degree in Education/Elementary offered on-site in Bismarck and Belcourt.

**Workshops**

Graduate level workshops are short-term organized learning experiences which provide for active, hands-on participation or for concentrated study on a specialized topic. Registration is limited to persons holding a minimum of a baccalaureate degree, and grading is on the Satisfactory/Unsatisfactory system. Students register as Continuing Education students and do not have to be formally admitted to the Graduate School.

Graduate level workshops are offered by the graduate departments under the course number “900-Graduate Workshop.” For each workshop registration, a transcript entry will be made showing the title, credit, and grade for the workshop.

Since graduate level workshops are not designed for the purpose of being a part of a graduate degree program, their credit normally may not be applied toward graduate degree requirements. The Graduate dean may approve the inclusion if the workshop involves critical review, analyses, discussion, theory, or content similar to graduate courses. No more than four workshop credits will be considered for a Master’s degree or Specialist’s diploma, and no more than eight credits for a Doctor’s degree.

**Correspondence Courses**

Correspondence study work is not accepted for graduate credit. With the consent of the student’s major department, the advisor, and the graduate dean, a student may take work by correspondence to remove deficiencies in the undergraduate background.

**CANDIDACY FOR DEGREES**

Admission to the Graduate School does not imply admission to candidacy for an advanced degree. The rights to candidacy can be earned only by demonstrating the preparation for and ability to pursue graduate work and by fulfilling requirements prerequisite to candidacy. Those requirements are described in detail for each degree.

Advancement to candidacy does imply that the student has been judged by the advisory committee and the dean to have satisfactorily completed much of the formal 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. 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. 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 nor hold an appointment or award until they have received the bachelor’s degree and fulfilled all requirements for admission to the Graduate School as a degree student.
2. Only Degree students in Approved Status may hold awards or appointments.
3. Assistantship appointments will not exceed one-half time in all combinations.
4. Students must maintain the credit load requirements defined in the appointment letter to retain appointments or awards.
5. Students must maintain a 3.00 GPA (2.75 Master of Engineering) to retain awards or appointments.
6. A student may be removed from an appointment due to unsatisfactory performance.
7. Students in good academic standing (i.e., a GPA of 3.00 or higher) are eligible for reappointment.
8. Students who withdraw from or are dismissed from the Graduate School become immediately ineligible for and may not continue to hold an appointment or award.

In accordance with the provisions of federal statutes, it is the policy of the University of North Dakota that no person in the United States shall be discriminated against because of race, creed, handicap, color, sex, age, or national origin in the selection for an award or appointment provided only that the applicant meets the eligibility conditions for an award. Policies and procedures affecting graduate assistantships are described more fully in the Graduate Assistant Handbook.

Graduate assistantship stipends are subject to income tax and will not be withheld. Tax will not be withheld from scholarships, traineeships, and fellowships, but the stipend may be taxable. Rulings as to the actual taxability of any specific stipend are in the hands of the Internal Revenue Service.

Acceptance of an offer of a graduate scholarship, fellowship, traineeship, or graduate assistantship for the next academic year completes an agreement which both the student and the Graduate School expect to honor. In those instances in which the student indicates acceptance and subsequently desires to change plans, a written resignation of the appointment may be submitted at any time through April 15 in order to accept another scholarship, fellowship, traineeship, or graduate assistantship. However, an acceptance given or left in force after April 15 commits the student to the appointment.

Awards

Chester Fritz Scholarships of $1,000 each are awarded to North Dakota students with an outstanding academic record who are continuing graduate work.

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 have not previously held the scholarship. Scholarships for the Summer Session are available to those who held Graduate Teaching Assistantships during the preceding year. Students should contact their department chair/director to be nominated.

Cultural Diversity Tuition Waivers may be available. Applications are available in the Graduate School.

An Alumni Price of $1,000 is awarded each year to a graduate student who has completed at least one year of graduate work. This prize, which may be granted in addition to other major awards, is in recognition of outstanding academic performance.

Summer Doctoral Fellowships of $3,000 plus a waiver of tuition for the summer session are available to doctoral students who have an approved Dissertation Proposal on file in the Graduate School and plan to work on their dissertation/research full time during the summer.

Applications are due early in the second semester and will be evaluated on the basis of an application and recommendations from the advisor and the chairperson.

Assistantships

Graduate Teaching Assistantships are university appointments that provide financial assistance to students qualified for teaching service in the department in which they take the major part of their graduate work. The purpose of these assistantships is to facilitate students working toward their degree while gaining teaching experience in the field of the degree. 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. Students are responsible for all other fees. Assistantships are available in most departments offering a graduate degree.

International teaching assistants who are non-native speakers of English are required to take the TSE (Test of Spoken English) and achieve a score of 50 before an assistantship may be offered.

Graduate Research Assistantships are offered in many of the departments of the University (e.g., sciences, engineering, and education). These appointments usually carry a monthly stipend.

The 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 182-237).

MASTERS OF ARTS, MASTER OF SCIENCE

These degrees are available with a thesis option in most fields. A non-thesis option also is available in selected fields.

Thesis Option

Course Requirements. A minimum of 30 semester credits is required in a program of study for the M.A. or M.S. degree in a major field. This includes the credits granted for the thesis and the research leading to the thesis. At least one-half of the credits must be at or above the 500-level. Fifteen semester credits must be taken on campus. A maximum of eight semester credits may be transferred from another institution. Workshop credits are normally not accepted on the program of study, but may be considered with the approval of the advisory committee and the dean of the Graduate School. A maximum of four semester credit hours may be considered for inclusion.

The program may include just the major, the major and a minor, or the major and a cognate area (see page 181 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 170 for a definition of Residence). Students should expect to spend about the equivalent of two years as a full-time student to complete the M.A. or M.S. program with 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, 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 Proposal of Thesis, available with instructions from the Graduate School, then submitting the proposal to the Advisory Committee for its approval. The approved proposal (original and three copies) is then filed in the Graduate School to become part of the record. The proposal must be approved before the beginning of the semester in which the student expects to graduate, and must be filed in the Graduate School before a student is advanced to candidacy for a master’s degree.

A preliminary draft of the thesis must be presented to the Advisory Committee sufficiently in advance of the preliminary approval deadline that the Advisory Committee may thoroughly evaluate and correct the thesis. After the necessary corrections and changes have been made, the student should secure the committee members’ signatures on a form entitled Preliminary Approval of Theses and Dissertations and file this form in the Graduate School. The Preliminary Approval, which indicates to the student that no major changes will be required in the final copy of the thesis, must be in the Graduate School no later than the deadline specified in the Academic Calendar, or the student will not be permitted to graduate that semester.

Copies of the thesis in its final form must be prepared and presented to the student’s Faculty Advisory Committee in time that they may thoroughly read the thesis prior to the final examination. When the final version of the thesis has been approved by the Committee, a copy must be deposited in the Graduate School and receive the signed approval of the dean by the deadline announced in the Academic Calendar (usually two weeks prior to commencement).

The Graduate School will have the final copy of the thesis bound and cataloged in the University Library. The student must submit one copy to the major department and one to the advisor.

Candidacy for the Degree. Admission of a student to the Graduate School as a Degree Student in Approved Status implies only that the student has met the minimal entrance requirements and will be permitted to take graduate courses which normally will lead to a degree. The student has not been admitted as a candidate for a degree. Advancement to candidacy is a formal procedure and can be granted only after the student has met certain academic requirements. To become a candidate for the Master of Arts or Master of Science (thesis options), the following requirements must be met in approximately the following sequence:

1. Completion of the equivalent of one full-time semester (12 semester credits).
2. A GPA of at least 3.00 for all work attempted.
3. The appointment of a Faculty Advisory Committee. This Committee is appointed by the dean upon the written recommendation of the chairperson, or designee, 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. The Committee is responsible for program advisement, thesis advisement, and examination of the student.
4. Approval of a Program of Study. Until such time as a student selects a thesis advisor, the department chairperson, or designee, 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 a Proposal of Thesis on a form available from the Graduate School. This proposal, when approved by the Faculty Advisory Committee and deposited in the Graduate School, indicates acceptance of a topic for study and incorporation into a thesis. The proposal 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 numbered 997.

The program may include just the major, the major and a minor, or the major and a cognate area (see page 181 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 the written recommendation of the chairperson, or designee, 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 designee). 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, and are in satisfactory academic standing.

MASTER OF BUSINESS ADMINISTRATION

See Business Administration under Departmental Programs.

MASTER OF EDUCATION

The Master of Education degree (M.Ed.) is designed for those who wish to prepare for careers as teachers, specialists, administrators, or supervisors in elementary or secondary schools. To be eligible for the degree, a student must meet the undergraduate requirements in Education (i.e., eighteen semester credits in Education, including student teaching) and must be offered admission to the degree program by the dean of the Graduate School.

The Master of Education degree is available for those doing major work either within or outside of the College of Education and Human Development. The areas of concentration available are: Educational Administration, Elementary Education, Special Education, and Reading Education. The degree also is available in departments offering a secondary teaching major.

Course Requirements. A minimum of 32 semester credits is required for the M.Ed. degree, of which at least one-half must be at or above the 500-level. No less than 12 credits, including 2 for the Independent Study Report (997), must be in a single field or an area of concentration (major). At least 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 171 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 proposal, which must be approved no later than the semester or session prior to the one in which the student expects to graduate, must be filed in the Graduate School before a student is advanced to candidacy for a master’s degree.

The student must prepare and secure the advisor’s approval of an independent study report. Three copies of the report (one each for the student, the advisor, and the department) must be accepted by the advisor who will certify completion of the report to the Graduate School by the deadline specified in the Academic Calendar and submit a grade for 997-Independent study to the 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 Proposal of Independent Study form and submitting the Proposal and three copies to the Graduate School.

The student and the advisor will be notified in writing of the advancement to candidacy. Students must complete all requirements for advancement to candidacy prior to the semester in which they plan to graduate.

Final Examinations. Candidates for the Master of Education degree must pass written final comprehensive examinations which must cover the major field but may, at the advisor’s discretion, draw upon or cover the supporting areas. Such examinations generally will be given and evaluated by the major department, but the results will be certified to the Graduate School by the advisor and the department chairperson on the form, Final Report on Candidate, by the deadline specified in the Academic Calendar. The appropriate comprehensive examination(s) will be arranged for by the advisor and given by the department no earlier than the semester preceding the semester in which the candidate intends to graduate. Comprehensive examinations which are failed may be repeated only with the prior approval of the advisor, the department, and the dean, but in no event earlier than at the next regularly scheduled offering.

Candidates may not take the final comprehensive examination(s) unless they have been advanced to candidacy for the degree, and are in satisfactory academic standing.

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 52) and the M. Engr. degree (see page 176 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 requires the signed approval of the advisor, the department chairperson, and the dean of the School of Engineering and Mines, prior to submission 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 proposal, 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).
2. Attainment of a GPA of at least 2.75 for all work attempted.
3. The appointment of an advisor from the major department. The advisor, who must be a member of the Graduate Faculty, will be appointed by the dean upon the 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 Proposal of Design Project and submitting the Proposal and three copies to the Graduate School.

The student and the advisor will be notified in writing of the advancement to candidacy. Students must complete all requirements for advancement to candidacy prior to the semester in which they plan to graduate.

Final 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 Leadership, and one or two cognate areas totaling 12-24 credits.

Students are referred to the section of this Catalog entitled “Department Programs” for additional departmental requirements.

Residence Requirements. Following the awarding of the master’s degree, all students must spend either one semester or one summer session in residence (see page 170 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 Proposal for Independent Study, available with instructions from the Graduate School, then submitting the proposal to the Committee for approval. The proposal, which must be approved no later than the beginning of the semester or session in which the student expects to graduate, must be filed in the Graduate School before a student is advanced to candidacy.

A report of an independent study must be prepared and submitted to the Faculty Advisory Committee for approval. Three copies of the report (one each for the student, the advisor, and the department) must be accepted by the Faculty Advisory Committee who will certify completion of the report to the Graduate School by the deadline specified in the Academic Calendar. The advisor will submit a grade for 997-Independent Study to the 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 designate, will act as the student’s temporary advisor.
3. Approval of a Program of Study for the diploma. The program is developed by the student and the Committee on a form available from the Graduate School. The program, which must carry the signatures of the student and the committee, is submitted to the dean of the Graduate School for approval.
4. Approval of a Proposal for Independent Study on a form available from the Graduate School. This proposal, when approved by the Committee and filed 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 department of History. Only those persons holding a master’s degree in history or a closely related field are eligible for admission to a program leading to the D.A. degree.

Students should refer to the section of this catalog titled Departmental Programs for additional admission, degree, examination, and course requirements unique to each department.

Admission Requirements

1. An overall GPA of at least 3.50 for all graduate work.
2. A master’s degree.
3. Scores on the general and advanced tests of the Graduate Record Examination if appropriate.
4. Recommendation for doctoral work by the department.

In History, a master’s degree with thesis is preferred, and the master’s program must have a minimum of fifteen semester hours of history at the graduate level. Acceptance of a student for doctoral work, on the basis of the above criteria, does not imply or guarantee advancement of the student to candidacy for the degree.

Program Requirements. The D.A. degree requires the completion of a program of 90 semester credits beyond the baccalaureate degree, including acceptable master’s work. The program of study for the degree, prepared with the assistance of the Faculty Advisory Committee, and approved by the dean, will include:

1. A minimum of 60 credits of work in the discipline (the major) of which no more than 20 credits will be designated as an area of concentration. Included in the area of concentration will be a minimum of 5 credits of independent research.
2. A minimum of 10 credits in areas cognate to the major.
3. A minimum of 15 credits in college teaching. The majority of this work will be in a supervised teaching internship in the discipline and in work in the major department preparatory to the internship (seminars in college teaching, etc.).

With the approval of the student’s Committee and the dean, up to one-half of the work beyond the master’s degree may be transferred from another institution.

Residence Requirement. At least two regular consecutive semesters of residence are required on the University of North Dakota campus (see page 170 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 (1999 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 at the next regularly scheduled offering.

Candidacy for the Degree. Candidates for the D.A. degree will not be allowed to graduate in the same semester or summer session in which they become candidates.

Students in Approved Status may be advanced to candidacy when the following requirements have been fulfilled:

1. A three- or five-member Faculty Advisory Committee has been appointed. Committee members are appointed by the dean upon the written recommendation of the chairperson of the student’s major department. On five-member committees, the fifth member is appointed by the dean. Until the appointment of the committee, the department chairperson, or designate, acts as the student’s temporary advisor. The chairperson of the committee, who serves as the student’s major advisor, must be a Full member of the Graduate Faculty. The director of the student’s research project normally will be the chairperson of the committee.

2. A Program of Study, outlining the requirements for the degree as developed by the student and the committee, has been approved by the student, the committee, and the dean of the Graduate School. The program, executed on a form available from the Graduate School, should be developed no later than the beginning of the second semester of work.

3. Departmental examination requirements have been completed.

4. A substantial portion of the 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 Proposal on a form available from the department.

7. The Advancement to Candidacy has been recommended by the student’s Faculty Advisory Committee.

The student and the advisor will be notified in writing of advancement to candidacy.

Final Examination. The final examination for the D.A. degree is conducted by the candidate’s full Faculty Advisory Committee. The examination will be oral and will be based on the area of concentration and the research project. Final examinations which are failed may be repeated only with the prior approval of the Advisory Committee and the dean.

Examinations are to be scheduled in advance by the Committee through the Graduate School. The results must be certified by the Committee on the Final Report form by the deadline specified in the Academic Calendar.

D.A. candidates will be required to complete a National Research Council demographic survey form and an agreement with University Microfilms, International, prior to graduation.

DOCTOR OF EDUCATION

The Doctor of Education degree is the highest University award given in recognition of the completion of academic preparation for professional practice in school teaching fields and in fields preparing school service personnel.

Admission Requirements

1. An overall GPA of at least 3.50 for all graduate work completed.

2. A master’s degree or the equivalent.

3. The necessary undergraduate preparation in the field.

4. Completion of any departmental examination requirements (i.e., qualifying or diagnostic examinations).

5. Scores on special tests required by the department.

6. Recommendation for doctoral work by the department concerned. Acceptance of a student for doctoral work, on the basis of the above criteria, does not imply or guarantee advancement of the student to candidacy for the degree.

Students should refer to the section of this catalog titled Departmental Programs for additional admission, degree, examination, and course requirements unique to each department.

Program Requirements. The 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 field (normally 6 semester credits of statistics).

3. The preparation of a dissertation based on the investigation of a topic related to theory and practice in the professional field. The dissertation must demonstrate critical analysis, knowledge of the professional literature, and a familiarity with methods of research, all presented in a scholarly style. A maximum of 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 170 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* (1999 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 Proposal of Dissertation, available from the Graduate School, then submitting the proposal to the committee for approval. The approved proposal must be filed in the Graduate School. The proposal 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* (1999 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 Proposal 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 program must be devoted to independent research, the results of which are to be incorporated in the dissertation. It is expected that all or part of a
Ph.D. dissertation will be publishable in the literature of the discipline and normally will be published. The program will include enrollment in courses and/or seminars which are designed to (a) advance the student’s knowledge in the discipline, (b) provide competence in the scholarly tools (languages, mathematics, etc.) required for study and research in the discipline, and (c) provide competence in the research methods of the discipline (e.g., courses in bibliography or historiography, a research minor in education, courses dealing with current research topics, etc.).

Admission Requirements. Generally, students may undertake work that will lead to a Doctor of Philosophy degree only after they have received a master’s degree, usually in the same academic discipline, from this or another accredited institution; however, in some disciplines it is possible to be admitted directly to the Ph.D. program. In certain disciplines students who have completed the equivalent of the bachelor’s degree, including acceptable master’s degree work, and the submission of an acceptable dissertation. With the approval of the student’s Faculty Advisory Committee, up to one-half of the work beyond the master’s degree may be transferred from another institution. The program will include work in one major department and should include any departmental examination(s) or other requirements, (4) present scores on tests required by the department, and (5) been recommended for doctoral work by the department. Acceptance of a student for doctoral work on the basis of the above criteria does not imply or guarantee advancement of the student to candidacy for the degree.

Program Requirements. The Ph.D. degree requires the completion of a program of 90 semester credits of graduate work beyond the bachelor’s degree, including acceptable master’s degree work, and the submission of an acceptable dissertation. With the approval of the student’s Faculty Advisory Committee, up to one-half of the work beyond the master’s degree may be transferred from another institution. The program will include work in one major department and should include any departmental examination(s) or other requirements, (4) present 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.

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 170 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 is given for the dissertation and for the research on which it is based, the amount being determined in advance by the student’s Faculty Advisory Committee in accord with the limits established by the major department.

A dissertation is prepared with the guidance and advice of the student’s faculty advisor and the Committee. However, all dissertations must be prepared in accord with the Style and Policy Manual for Theses and Dissertations (1999 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 Proposal of Dissertation, available with instructions from the Graduate School, then submitting the proposal to the committee for approval. The approved proposal is then filed in the Graduate School. The proposal 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 tool requirements have been completed. Comprehensive examinations which are failed may be repeated only with

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the prior approval of the Faculty Advisory Committee, the department, and the dean, but in no event earlier than at the next regularly scheduled offering.

Students must apply for permission to take the comprehensive examination on a form available at the Graduate School. After checking the record to ensure that the student is eligible for the examination (most of the work completed, Approved Status attained, Program of Study approved, scholarly tool requirements completed), the Graduate School will certify eligibility and will forward an examination report form to the chairperson of the student’s Faculty Advisory Committee. The student may not take the examination until such certification has been provided.

In lieu of the comprehensive examination, students in Chemistry will take cumulative examinations which begin in the second semester of graduate school. Chemistry students will not be required to apply for permission to take the comprehensive.

Candidacy for the Degree. Advancement to candidacy is granted only after the completion of specified academic requirements and upon the recommendation of the Faculty Advisory Committee. Candidates for a doctor’s degree will not be allowed to graduate in the same semester or summer session in which they become a candidate for the degree.

Students in Approved Status may be advanced to candidacy when the following requirements have been fulfilled:

1. A five-member Faculty Advisory Committee has been appointed. Four committee members are appointed by the dean upon the written recommendation of the chairperson of the student’s major department to represent the major and any minor areas of study. The fifth member is appointed by the dean and represents the Graduate Faculty. Until the appointment of the committee, the department chairperson, or 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 completed.

6. The comprehensive examination has been successfully completed.

7. A dissertation topic has been approved as evidenced by filing an approved Proposal of Dissertation on a form available from the Graduate School (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 for the doctoral degree is conducted by the candidate’s full Faculty Advisory Committee in the presence of the dean of the Graduate School and such other members of the Graduate Faculty as elect to attend. The final examination must include an oral examination but also may include written portions. The examination must cover the dissertation but need not be limited thereto. Committee members must have had adequate opportunity to examine the final copy prior to the examination and will indicate their approval by signing the “Approval Page” of the dissertation and the Final Report on Candidate. Final examinations which are failed may be repeated only with the prior approval of the Advisory Committee and the dean.

A student may pass the Doctoral Comprehensive and/or Final Examination with one dissenting vote. The dissenter must submit a written report on his/her decision to the Graduate School. Four signatures will be accepted on the final copy of the dissertation.

Ph.D. candidates will be required to complete a National Research Council demographic survey form and an agreement with University Microfilms 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 catalog. If granted admission, the student should then apply to the Medical School Student Performance and Recognition Committee for a “modification 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.

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 and which must consist of at least 9 credit hours.

A minor is a concentrated study in a specific supporting field at the graduate level. A minor must be titled and identified on the student’s program of study and be approved by a Graduate Faculty member of the minor department/program. The minor will be listed on the student’s transcript. Only the courses approved for graduate credit may be included in a minor.

A cognate is a selection of courses providing broad support to the major. All courses numbered 300 or above listed in this catalog, including those offered by departments or fields that do not offer graduate courses or graduate degrees, may be included in the cognate. Courses should be taken in two or three departments or fields. A cognate area will not be titled and will not be listed on a student’s transcript.

**NOTE:** When a graduate student elects to use a 300- or 400-level course for graduate credit, it is understood that the student will be required to do additional work, over and above that typically required of undergraduates. Usually, such work is of an independent nature.
Graduate Departmental Courses, Programs

Course Work

Only the courses listed in the Graduate section of this catalog may be used as part of the major or minor for a degree program. Classes numbered 500 or higher are graduate classes; those listed with 300 and 400 numbers are upper division undergraduate classes which have been approved for graduate credit by the University Graduate Committee on the basis that additional work will be required of all graduate students in such courses.

Classes numbered 300 and higher listed only in the Undergraduate section of this catalog may be applied to a cognate area.

Common Course Numbers

<table>
<thead>
<tr>
<th>Continuing Enrollment</th>
<th>1 to 12 credits</th>
<th>996</th>
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</thead>
<tbody>
<tr>
<td>Independent Study</td>
<td>2 credits</td>
<td>997</td>
</tr>
<tr>
<td>Thesis</td>
<td>4-9 credits</td>
<td>998</td>
</tr>
<tr>
<td>Dissertation</td>
<td>Typically 6-18</td>
<td>999</td>
</tr>
</tbody>
</table>

Graduate Faculty

The faculty listed in the departments are members of the Graduate Faculty. Only a Full Member may serve as the chairperson of the Advisory Committee 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 Advisory Committee.

NOTE: THE ADMISSION AND DEGREE REQUIREMENTS LISTED IN THIS SECTION ARE IN ADDITION TO THE GENERAL GRADUATE SCHOOL REQUIREMENTS.

Anatomy and Cell Biology

Professors Atkinson, Carlson (Chair), Hunt, McCormack (Graduate Director), 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 careers in a variety of organizations that carry on research and development in biologically or medically related areas. Research facilities and expertise are available in the department in transmission and scanning electron microscopy, developmental biology, reproductive biology, neurosciences, tissue culture, immunohistochemistry, and molecular biology.

Admissions Requirements

1. An overall undergraduate GPA of at least 3.00.
3. A year-long sequence of General Chemistry.
4. A course in Organic Chemistry, a course in College Algebra or the equivalent, and a course in Morphology (e.g., Human Anatomy, Comparative Anatomy, Embryology, Histology); courses in Cell Biology, Biochemistry, and Genetics are also recommended.
5. Graduate Record Examination—Placement in the 40th percentile on GRE General Test (scores from the Advanced Biology test are also recommended).
6. Admission to the Anatomy and Cell Biology graduate program can be made either through the M.S. degree program or by application directly to the Ph.D. degree program.

Students who elect to begin the M.S. degree program and later decide they wish to pursue the Ph.D. degree may choose to attempt to by-pass the M.S. degree by taking a Diagnostic/Qualifying examination. Such an examination is administered by a departmental committee and consists in part of the preparation of a written research proposal by the student, with an oral defense of that proposal. By passing it and by meeting other requirements, such as a GPA of 3.5 or higher in graduate level 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 include an overall GPA of 3.50 in previous graduate work and appropriate letters of reference.

Degree Requirements

Master of Science

1. An average of 36-50 semester hours of graduate credit (can be completed in four full semesters and one summer session).
2. Completion of the following core graduate level courses: Bimd 500 (Cellular and Molecular Foundations of Biomedical Science), Bimd 510 (Basic Biomedical Statistics), Bimd 512/513 (Seminars in Biomedical Science), Anat 515 (Histology), Anat 518 (Developmental Biology and Human Embryology), and Anat 505 (Seminar in Anatomy and Cell Biology), one semester for each year in the program, excluding year one.
3. A thesis written on an independent research problem.

Doctor of Philosophy

1. An average of 90-120 semester hours of graduate credit (can be completed in eight full semesters and four summer sessions).
2. Completion of the following core graduate level courses: Bimd 500 (Cellular and Molecular Foundations of Biomedical Science), Bimd 510 (Basic Biomedical Statistics), Bimd 512/513 (Seminars in Biomedical Science), Anat 515 (Histology), Anat 518 (Developmental Biology and Human Embryology), Anat 513 (Gross Anatomy) or Anatomy 522 (Neuroscience), and Anat 505 (Seminar in Anatomy and Cell Biology), one semester for each year in the program, including year one.
3. A scholarly tool, the requirement for which is usually fulfilled by completing Computer Science 101/101L or Anatomy 591 (or their equivalents).
4. Teaching experience in one of the following:
   a. Gross Anatomy for Medical Students, for Graduate Students or for Physical/Occupational Therapy Students.
   b. Histology for Medical Students or for Graduate Students.
   c. Neuroscience for Graduate Students.
5. A dissertation written on an independent research problem.

The department accepts USMLE, Step 1 as the Diagnostic/Qualifying Examination for medical students entering the M.D./Ph.D. program. Students must pass USMLE, Step 1 of the examination.

Courses

Bimd 500. Cellular and Molecular Foundations of Biomedical Science. 7 credits. A series of lectures, discussion groups, and laboratory periods with emphasis on interrelated themes in basic biochemistry, cell biology and molecular biology. Lectures will include current and emerging areas of research while lab/discussion will center on methods, techniques and expansion of lecture topics. Fall semester. Prerequisites: (a) a year of organic chemistry or (b) one semester of organic chemistry plus a course in either biochemistry or cell biology, or (c) permission of the course director.
Admission Requirements

1. A Bachelor’s degree from a recognized college or university.
2. Completion of a minimum of 20 semester credits of appropriate undergraduate work (e.g., physics, mathematics, chemistry, engineering, and/or atmospheric science).
3. A cumulative GPA of at least 2.75 for all undergraduate work or a GPA of at least 3.00 for the last two years.
4. Scores on the general portion of the Graduate Record Examination.
5. An undergraduate or graduate course covering statistical techniques.

Degree Requirements

The program requires that students complete 30 credits of courses from the Department of Atmospheric Sciences. A thesis is required of all students. While the actual courses required for each student will be determined on an individual basis, each student is expected to complete AtSc 500, 505, and to have had the equivalent of AtSc 350.

Courses

Bimd 510. Basic Biomedical Statistics. 2 credits. A series of lectures, demonstrations and exercises to provide students with the basic rationale for the use of statistics in the assessment of biomedical data and a selected set of the most common and useful statistical tests. Spring Semester.

Bimd 512. Seminars in Biomedical Science. 1 credit. A series of presentations on original research conducted by UND faculty members. Students will participate through assigned reading and writing exercises related to the presentations. Fall Semester. Co-requisite: Bimd 500 or permission of course director.

Bimd 513. Seminars in Biomedical Science. 1 credit. A series of presentations on original research conducted by UND faculty members as well as extramural leaders in academic and industrial research in the biomedical sciences. Students will participate through assigned reading and writing exercises related to the presentations. Spring Semester. Prerequisite: Bimd 412 or permission of course director.

Bimd 501. Biomedical Information Retrieval. 1 credit. SUV grading only. Offered every session either in a group setting or on an individual basis. This course integrates electron 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.

Anat 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 subsiences of Anatomy not offered as organized courses, and to present current developments in various subsiences of Anatomy and Cell Biology. Assigned readings and reports by students and lectures by staff and guests comprise the course.

Anat 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.

Anat 515. Histology. 3 credits. A series of laboratory sessions providing a comprehensive study of normal light and electron microscopic structure of cells, tissues, and organs of the body. An introduction to cell and tissue pathology will also be included. Laboratory sessions will include utilization of microscopic tissue slides, video and digital images, student presentations and discussion with faculty.

Anat 518. Developmental Biology and Human Embryology. 3 credits. Prerequisite: Bimd 500 or equivalent. A problem-based course in principles of development and human embryology. Topics to include cellular and molecular mechanisms of fertilization, early development, gastrulation and organogenesis. Course will involve student presentations, discussion and laboratory exercises.

Anat 522. Neuroscience. 6 credits. A multidisciplinary course designed as a research-oriented approach to introducing students to the fundamentals of neuroscience and their clinical applications. Integrated lectures, laboratories and group discussions address historical as well as current advances in cellular, molecular, developmental, sensorimotor, regulatory and cognitive neurobiology. Hands-on work in the research laboratory provides exposure to techniques commonly used to address experimental problems, reinforcing basic concepts of neuroscience.

Anat 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.

Anat 591. Special Topics in Anatomy and Cell Biology. 1 to 3 credits. Prerequisite: Permission of the instructor. A series of lectures, discussions and/or laboratory experiences developed around a specific topic in the anatomical or cell biological sciences.

Anat 593. Research in Anatomy and Cell Biology. Credits arranged. Research is offered in the specialty fields of the faculty of the department, and involves a variety of problems and research tools in morphology and cell biology.

Anat 595. Advanced Gross Anatomy. Credits arranged, with a maximum of six credits. Prerequisite: Anatomy 513 or equivalent. The work of the course consists of the preparation of regional dissections, made under the direction of an instructor.

Available to students registering in graduate degree programs in the biomedical sciences or by permission of the instructor.

Atmospheric Sciences

Professors Grainger, Osborne, Poellot, Rinehart (Graduate Director), Stith (Chair)

Program Description

The Department of Atmospheric Sciences offers a graduate program leading to the degree of Master of Science. The program is intended to serve those who are interested in continuing graduate studies at the doctoral level as well as those seeking advanced knowledge for professional work in the atmospheric sciences in general.
Biochemistry and Molecular Biology

Professors Detke, Johnson, Knell, Lambeth, Milavetz, Nielsen, Nordlie (Chair), Reeves, Shabb (Graduate Director), Sukalski, Vaughan

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, membrane transporter regulation, 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 minimum of 30 credit hours including research and thesis.
2. A grade of at least C in BIMD 500.
3. Completion of BIMD 510, 512, and 513.
4. Completion of either Biochemistry and Molecular Biology 531 or 532.
5. Completion of 1 credit each of Biochemistry and Molecular Biology 514 and 521.
6. An overall GPA of at least 3.0.

Doctor of Philosophy
1. Performance of original research of a quality suitable for publication in a refereed, professional journal and the preparation of a dissertation based thereon.
2. A minimum of 90 credit hours, including research and dissertation.
3. A scholarly tool (normally met by taking BIMD 510 or its equivalent).
4. A grade of at least B in BIMD 500.
5. Completion of BIMD 510, 512 and 513.
6. Completion of Biochemistry and Molecular Biology 531 and 532.
7. Completion of two credits each of Biochemistry 514 and 521.
8. An overall GPA of at least 3.0.
9. At least 6 credits of formal course work outside of the department.
10. Passing performance on oral and written comprehensive examinations covering the course work in the major and related areas.

Work prepared for the master’s degree program may be incorporated into the doctoral program if approved by the student’s Advisory Committee and the dean of the Graduate School. Students who wish to proceed toward the Ph.D. degree without obtaining a M.S. in the department must meet the following requirements:
1. Accumulation of a minimum of 26 graduate credits with a GPA of 3.5 or greater.
2. Minimum cumulative GPA of 3.0 in BIMD 500, 510, 512 and 513 and either Biochemistry and Molecular Biology 531 or 532.
3. A minimum of 8 credits of Biochemistry and Molecular Biology 590.
4. Approval of change in program status by two-thirds of the faculty members in the department after review of the student’s academic accomplishments, research performance and professional conduct.

M.D./Ph.D.

The Department offers the M.D./Ph.D. degree. For further information consult the Department.

Courses

BIMD 500. Cellular and Molecular Foundations of Biomedical Science. 7 credits. Prerequisite: a) one year of organic chemistry or b) one semester of organic chemistry and one course in either biochemistry or cell biology or c) permission of course director. The focus of this interdepartmental team-taught course will be in areas that are fundamental to all biomedical science graduate programs. Emphasis will be on developing a solid grounding in biochemistry, cell biology and molecular biology with themes covering proteins, metabolism, information flow, vectors, membranes, cell signaling, cell shape and movement, cell growth and division, and immunology.

BIMD 510. Basic Biomedical Statistics. 2 credits. Prerequisites: BIMD 500 or permission of course director. A series of lectures and demonstrations to provide students with the basic rationale for the use of statistics in the assessment of biomedical data and a selected set of the most common and useful statistical tests.

BIMD 512. Seminars in Biomedical Sciences. 1 credit. Corequisite: BIMD 500 or permission of course director. Students will attend a weekly school-wide seminar series. Students will further explore aspects of scientific literature and fundamentals of scientific writing, and have opportunities to interact with intramural seminar speakers.

BIMD 513. Seminars in Biomedical Sciences. 1 credit. Prerequisites: BIMD 512 or permission of course director. A series of presentations on original research conducted by UND faculty members as well as extramural leaders in the fields of academic and industrial research in the biomedical sciences. Students will participate through assigned reading and writing exercises related to the presentation.

514. Current Literature. 1 credit. Second semester. Prerequisite: BIMD 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: BIMD 500 or consent of instructor. Students present topics in biochemistry and molecular biology based on reviews of the current literature. Each presentation is followed by a discussion of the topic by the faculty and students of the department. S/U grading only.

531. Advanced Biochemistry and Molecular Biology I. 3 credits. Second semester, alternating years with Biochemistry 532. Prerequisites: BIMD 500; alternatively, Biochemistry 301 or equivalent and permission of instructor. The purpose of this course is to provide an in-depth exploration of selected areas of protein structure and function, metabolism and regulation with the intent of complementing and extending the knowledge base gained in Biochemistry 500. The course is team-taught. Extensive independent learning is expected.

532. Advanced Biochemistry and Molecular Biology II. 3 credits. Second semester, alternating years with Biochemistry 531. Prerequisite: BIMD 500; alternatively Biochemistry 301 or equivalent and permission of instructor. The purpose of this course is to provide an in-depth exploration of selected areas of recombinant DNA technology and eukaryotic nucleic acid metabolism and gene expression with the intent of complementing and extending the knowledge base gained in BIMD 500. The course is team-taught. Extensive independent learning is expected.
540. Special Topics. 1 to 3 credits. Prerequisite: BIMD 500 or consent of instructor. Discussion of a topic in biochemistry and/or molecular biology of current interest to faculty and students.

590. Research. 1 to 2 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: BIMD 500 or consent of instructor. Selected readings and library research in an area of mutual interest to the student and a faculty member of the department. Conferences and/or written reports are required.

Biology

Professors Carmichael, Crawford, Cronin, Fivizzani, Gerber, Kelsch, La Duke (Chair), Lang (Graduate Director), Meberg, Newman, Pyle, Schlosser, Sheridan, Switezer, Wrenn

Program Description

The Department of Biology offers graduate studies leading to the Master of Science (thesis and non-thesis options) and Doctor of Philosophy degrees. We encourage you to look at the departmental web page for information on faculty and their research interests. (www.und.nodak.edu/dept/biology/biology.html) 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 200 acres of virgin lowland prairie 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 February 15. Master’s degree applicants should specify interest in either the thesis or non-thesis option. Inquiries should be directed to the Director of Graduate Studies, Biology Department.

Financial Assistance

Financial aid in the form of teaching assistantships, research assistantships, fellowships and internships are available on a competitive basis. Students seeking teaching assistantships should complete their applications by February 1, since most offers for appointments are made beginning in early March. Teaching assistantships are renewable if progress toward the degree and instructional service are satisfactory. 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 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-level 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 332 or equivalent. Physiography, environmental influences, and community dynamics of grassland ecosystems with emphasis on herbage production, ecosystem modeling, and ecological characteristics of major grass species.

534. Quantitative Ecology. 2 credits.

539. Animal Societies. 2 credits. Prerequisite: Biology 338 or equivalent. Social organization in animals, emphasizing division of labor, communication, reproductive behavior, and adaptations to the environment.

540. Waterfowl Biology and Management. 2 credits. Classification, biology, and management of waterfowl.

542. Comparative Endocrinology. 3 credits. A comparative study of the hormonal regulation of physiological processes and mechanisms of hormone action in vertebrates and invertebrates.

551. Biochemical Genetics. 3 credits. Prerequisite: Biology 341 and 357 or equivalent. Topics include gene structure, gene protein relationships, transcription and translation, mutation, extra-chromosomal elements, and the regulation of gene expression. There is a substantial emphasis on the genetics of higher organisms.

554. Cytogenetics. 2 credits. 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.

590. Special Topics. 1 to 4 credits. Prerequisites: Graduate status or upper division status with consent of instructor. Important and current topics in biology not covered by other courses. Repeatable when topics vary. Examples include: Aquaculture, Big Game Biology, Biorehythms, Conservation Biology, Fire Ecology, Molecular Techniques, Plant-Animal Interactions, Sex Determination and Speciation.

592. Directed Studies. 1 to 4 credits. Designed to meet the needs of individual and small groups of students in areas of faculty specialization. May be repeated to a total of 12 credits.

599. Research. Credits arranged. Maximum of 15 credits per semester. Intended for students conducting original research in consultation with staff. S/U grading only.

612. Evolution. 3 credits.

615. Genetics. 3 credits.

332. General Ecology. 3 credits.

332L. General Ecology Lab. 1 credit.

333. Population Biology. 3 credits.

356. Systematic Botany. 4 credits.

358. Animal Behavior. 2 credits.

358L. Animal Behavior Lab. 2 credits.

341. Cell Biology. 3 credits.

341L. Cell Biology Lab. 1 credit.

363. Entomology. 4 credits.

364. Parasitology. 2 credits.

364L. Parasitology Lab. 2 credits.

365. Histology. 2 credits.

369L. Histology Lab. 2 credits.

370. Vertebrate Zoology. 3 credits.

371. Anatomy and Adaptations Laboratory. 2 credits.

373. Vertebrate Natural History. 3 credits.

375. Invertebrate Zoology. 4 credits.

378. Developmental Biology. 3 credits.

425. Ichthyology. 3 credits.

427. Ornithology. 3 credits.

428. Mammalology. 3 credits.

431. Wildlife Management. 4 credits.

432. Fish and Wildlife Disease. 3 credits.

433. Aquatic Ecology. 3 credits.

433L. Aquatic Ecology Lab. 1 credit.

Business Administration

Professors Bateman, Beard, Bronson, Carlson, Chacko, Chong, Dougan, Eberhardt, Elbert, Ellingson, Faircloth, Hansen, Hiltner, Lee, Loyland, D. Markovich, Moser, S. Nelson, T. Nelson, Ness, Park, Potter, Vitton, Wambgsanass (Graduate Director), Wilde, Zahrly; also Graduate Faculty from Economics: Professors Bagheri, Biederman, Blackwell, O’Neill, Ramset, 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 International Association for Management Education (AACSB). 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).

Applicants who meet the first three requirements listed above, but have not met the course work requirements in the MBA Core Curriculum may be admitted to Provisional Status.

Applicants who fail to meet the minimum grade point or GMAT requirements, but who otherwise show high potential for success may be considered for admission to Provisional Status, provided they meet one of the following indices:

1. a composite index score of at least 950 determined by the formula: 
   \( (GMAT) + \frac{200 \times \text{overall undergraduate gpa}}{} \)

2. a composite index score of at least 1000 determined by the formula: 
   \( (GMAT) + \frac{200 \times \text{last 2 years or equivalent undergraduate gpa}}{} \)

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 1995-96 academic year was 525.

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 or by competency examinations.
Degree Requirements

The M.B.A. degree program is an interdisciplinary one, taught by the faculty in several divisions within the College of Business and Public Administration. The M.B.A. Program Director is responsible for coordinating all aspects of the program. Business courses carrying graduate credit status from the Divisions of Accounting & Finance, Economics & Public Affairs, and Organizational Systems & Technology 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:

<table>
<thead>
<tr>
<th>Management 501</th>
<th>Quantitative Analysis for Management Decisions</th>
<th>3 credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Management 505</td>
<td>Policy Formulation and Administration</td>
<td>3 credits</td>
</tr>
<tr>
<td>Management 515</td>
<td>Advanced Managerial Theory</td>
<td>3 credits</td>
</tr>
<tr>
<td>Marketing 510</td>
<td>Strategic Market Planning</td>
<td>3 credits</td>
</tr>
<tr>
<td>Economics 509</td>
<td>Macroeconomic Decision-Making</td>
<td>3 credits</td>
</tr>
<tr>
<td>Accounting 509</td>
<td>Accounting Information for Decision and Control</td>
<td>3 credits</td>
</tr>
<tr>
<td>Finance 501</td>
<td>Managerial Finance</td>
<td>3 credits</td>
</tr>
<tr>
<td>Bus. Admin. 502</td>
<td>Business Research Methods</td>
<td>3 credits</td>
</tr>
</tbody>
</table>

TOTAL 24 credits

2. Cognate elective courses may be chosen from those offered at the 300-, 400- and 500-level in the Divisions of Accounting & Finance, Economics & Public Affairs, Organizational Systems & Technology, 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 Director prior to enrollment.

Students who already have completed courses similar to those in the MBA Curriculum may be required to choose substitutes from the graduate credit offerings listed in this catalog. Substitutions require the prior approval of the MBA Director and the Graduate Dean.

Final Examinations. The requirement of the final examinations for the M.B.A. degree is satisfied by the successful completion of Management 505, Policy Formulation and Administration. Students must complete 12 credits of M.B.A. curriculum courses before enrolling in Management 505.

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.
596. Continuing Enrollment. Variable credit.
597. Independent Study. 2 credits. (See page 167 for details on 996 and page 174 for 997.)

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.
509. Macroeconomic Decision-Making. 3 credits. Prerequisite: Economics 310. Advanced study of macroeconomic theoretical models with particular attention to the analyses of business cycles, income growth, and evaluation of public policies concerned with inflation and unemployment.
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.
506. 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. Seminar on the Economics of Regulation. 3 credits. Prerequisites: Economics 514 or Econ 504 or permission of the instructor. Journals, books, and articles on the topics of 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.

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 of analysis, planning, control, asset management, financial instruments, markets, capital structure, dividend policy, cost of capital, etc.

520. 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.

410. Cases in Managerial Finance. 3 credits.
420. Investment Analysis and Portfolio Management. 3 credits.

MANAGEMENT

501. Quantitative Analysis for Management Decisions. 3 credits. Course consists of an application of quantitative techniques for management decisions. Both mathematical techniques and computer analysis of decisions will be stressed. Topics will include deterministic and probabilistic models in areas such as linear and quadratic programming, inventory systems, queuing models, game theory, and simulation.

505. Policy Formulation and Administration. 3 credits. Prerequisite: 12 credits of MBA. A three-course core course 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 relationship of production departments 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 microeconomic 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.
400. Organizational Theory and Analysis. 3 credits.
407. Wage and Salary Administration. 3 credits.
408. Issues in Human Resource Management. 3 credits.
409. Union-Management Relations. 3 credits.
420. Multinational Management. 3 credits.

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.
595. Graduate Readings in Marketing. 1 to 3 credits. Repeatable to 6. Prerequisite: Consent of instructor.

425. Current Perspectives in Global Marketing. 3 credits.

Chemical Engineering

Professors Benson, Erjavac, Hasan, Hurley, Muggli, Olson, Owens (Chair)

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 in 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 energy processes and technology, multiphase fluid flow and heat transfer in pipes and wellbores, surface science, environmental catalysis, 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.
Chemistry

Professors Abrahamson (Chair), Ballintine, Borerding, Hoffmann, Kozliak, Lakshman, Pierce, Shay, Smoliakova, Stahl, Thomasson, Tilotta

Program Description

The Department of Chemistry offers graduate programs leading to the degrees of Master of Science and Doctor of Philosophy with majors in inorganic chemistry, organic chemistry, physical chemistry, and analytical chemistry. The department offers a B.S./M.S. program (using the non-thesis M.S. option) for students who meet the admission criteria listed below.


All students beginning graduate work in chemistry must take orientation-diagnostic examinations over the fields of inorganic, organic, physical, and analytical chemistry during the week preceding their first registration. These examinations are used to determine the course level at which students begin their work 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

Master of Science

(Non-thesis option)

Admission Requirements

1. An ACS approved baccalaureate degree in chemistry.
2. Satisfactory performance on an eligibility examination given by the Department. Normally, this examination is taken prior to registration for final undergraduate year.
3. Chemistry 388 (Introduction to Research) or equivalent.
4. Chemistry 455 (Spectroscopy and Structure) or equivalent.
5. Chemistry 492 (Senior Research) or equivalent.
6. Nine credits of Graduate-level Chemistry courses. Note that the subject matter of these courses will restrict the range of possibilities of specialization (i.e., Analytical, Inorganic, Organic, Physical) for the graduate degree.

Master of Science

(Thesis option)

Doctor of Philosophy

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. Students with a bachelor’s degree may be directly admitted into the Ph.D. program.

Degree Requirements

Master of Science

(Non-thesis option)

Degree Requirements (32 credits total)

1. 12 credits from Chem 510, 511, 512, 520, 521, 522, 530, 531, 532, 534, 540, 541, 542, and 543. At least 3 credits must be from student’s division (i.e., Analytic, Inorganic, Organic, Physical).
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 sequence (Analytical: 540, and one of: 541, 542, 543; Inorganic: 510, and one of: 511, 512; Organic: 520, 521, 522; Physical: 530, 531, 532).
3. Six (6) 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 equivalent course has not been taken previously).
7. Chemistry 599 (Research).

Master of Science

(Thesis option)

1. Chemistry 509.
2. Six (6) credit hours from major sequence (Analytical: 540, and one of: 541, 542, 543; Inorganic: 510, and one of: 511, 512; Organic: 520, 521, 522; Physical: 530, 531, 532).
3. Six (6) 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 equivalent course has not been taken previously).
7. Chemistry 599 (Research).

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.
519. 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.
529. 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. Three 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 52 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. Two 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 range from the fundamentals of electrochemistry (including thermodynamics, kinetics, and mass transfer) to applications of contemporary electroanalytical techniques such as cyclic voltammetry, digital simulation, and spectroelectrochemistry 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 credit if topic is different.
599. Research. Credits arranged. Maximum of 15 credits each semester. May be repeated for credit.

Civil Engineering

Professors Apanian (Chair), Gullicks, Jerath, Mason, Moretti, Phillips

Program Description

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 and
directed emphasis toward the practice of engineering. The focus of the
program is on the development of competency in the area of en-
gineering design. The goal of the program is development of the
student as a practitioner capable of systematically solving complex
problems of society within his or her field.

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. Total of thirty (30) credit hours.
2. a) Soils-Structures option requires CE 501, CE 502 and ME 529.
b) Environmental-Water Resources option requires CE 531, CE 532,
and CE 533.
c) General Civil option requires CE 501, CE 532 and CE 531.
d) Each option requires six (6) credit hours of Engr 595.
3. The remaining fifteen (15) credit hours of electives are chosen from
engineering, physical sciences, life sciences, computer science, and
mathematics.

Courses
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.

502. Structural Stability 3 credits. Prerequisite: Engineering 203. Stability of
columns, beam-columns and frames, inelastic buckling, critical loads by the energy
method, torsional buckling, buckling of rings and curved bars.

523. Applied Hydraulics 3 credits. Study of advanced topics in hydraulics.
Computer applications. Content will vary.

524. Open Channel Hydraulics 3 credits. Prerequisite: Civil Engineering 306.
Study of advanced topics in open channel hydraulics. Computer applications.

531. 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.

532. 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.

533. 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.

535. Hazardous Waste Management 3 credits. Prerequisites: CE 306 and
Chem 121. Regulations, generation, storage, transportation, disposal, classification,
fate and transport of contaminants, environmental audits, pollution prevention and
management facilities, remediation alternatives, physical-chemical treatment,
bioremediation, stabilization/solidification, thermal processes.

551. Plate and Slab Structures 3 credits. Prerequisites: Engineering 203 and
CE 351. Classical plate bending theory, rectangular and circular plates, slab analysis by
energy and numerical methods, anisotropic plates, large deflection theory, buckling
of thin plates.

552. Thin Shell Structures 3 credits. Prerequisites: Engineering 203 and CE
351. Differential geometry of shell theory, membrane and bending theories of shells,
shells of revolution, stress analysis of domes, pressure vessels, and storage tanks,
numerical methods, buckling of shells.

555. Prestressed Concrete—Analysis and Design 3 credits. Prerequisites: Civil
Engineering 453. Methods of prestressing, design of simple and continuous beams,
creep considerations, buckling, effect of time and load, and permissible stresses.

556. Numerical and Matrix Methods of Structural Analysis 3 credits.
Prerequisite: Civil Engineering 351. Methods of successive approximations and
numerical procedures for solution of complex structural problems, matrix formulation
of structural problems, flexibility and stiffness methods of analysis.

590. Special Topics 3 credits. Credit arranged. Prerequisite: Department approval.
Investigation of special topics dictated by student and faculty interests. May be
repeated up to a total of 6 credits.

591. Civil Engineering Research. Credit arranged. May be repeated to a
maximum of 12 credits.

595. Design Project 3 to 6 credits. Prerequisite: Restricted to the Master of
Engineering student 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.

Clinical Laboratory Science

Professors Bruce (Graduate Director),
Larson, Paur, 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 telecon-
ferencing. 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 recom-
ended.

Degree Requirements
1. A minimum of 32 semester credits.
2. Major area is 22 credits in the clinical laboratory sciences.
3. A cognate area of study or minor (minimum of 9 credits) is optional.
4. A one credit capstone course to be offered in the summer session.
5. The required core is as follows:

**PATH 501 Quality Assurance in the Clinical Laboratory 2 cr
**PATH 502 Erythrocytes in Health and Disease 2 cr
**PATH 503 Leukocytes in Health and Disease 2 cr
**PATH 504 Medical Microbiology for Laboratory Professionals 2 cr
**PATH 505 Financial Management of the Clinical Lab. 2 cr
**PATH 506 Clinical Chemistry 2 cr
**PATH 507 Clinical Immunohematology 2 cr
**PATH 510 Erythrocytes in Health and Disease (Laboratory) 1 cr
**PATH 511 Leukocytes in Health and Disease (Laboratory) 1 cr
**PATH 512 Immunohematology (Laboratory) 1 cr
**PATH 513 Adv. Clinical Immunology for Lab. Professionals 2 cr
PATH 521 Seminar 1 cr
PATH 591 Directed Studies 2 cr
PATH 997 Independent Study 2 cr
§MGMT 305 Managerial Concepts 3 cr

Total 22-25 cr

* Classes with an asterisk (*) will be offered over the Education Tele-
  phone Network (ETN).
§ The requirement for the major is PATH 505 and/or a management
course such as MGMT 305.

Courses
501. Quality Assurance in the Clinical Laboratory 2 credits. Prerequisite: Path
480, 481 and 482 or equivalent courses. The course will consist of lectures,
readings and case studies of quality assurance for the clinical laboratory.

502. Erythrocytes in Health and Disease 2 credits. Prerequisite: Path 325,
481, 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.

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 leukocytes. Emphasis is on the molecular
level, light and electron microscopic evaluation and the role of the laboratory in
diagnosis of each condition.

504. Medical Microbiology for Laboratory Professionals 2 credits. This
course will cover the study of human pathogenic microbes including bacteriology,
parasitology, virology, mycology and antimicrobial agents. The information presented
will include beginning through advanced knowledge and include both traditional and molecular identification.

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 supplies, wages and capital investments in order to maintain maximum cost efficiency. 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.

508. Leadership and Conflict Resolution in the Health Sciences. 2 credits. The leadership portion will be discussion focused on developing personal and interpersonal leadership skills and on directing at the managerial and organization level through principle centered leadership. Some specific areas to be covered will be presentations and discussion on principle centered leadership, the PS Paradigm, improving listening skills, leading in healthcare organizations, missioning and commissioning with organizations, and how to help organizations to become more embracive and adaptive to change. The conflict resolution portion will be an introduction to diagnosing and mediating conflict with discussions and examples of the traditional mediation process as well as transformative mediation.

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.

513. Advanced Clinical Immunology for Laboratory Professionals. 2 credits. Prerequisites. Consent of instructor. Broad array of topics which will stretch from introductory level immunology to the current research and applications of that research in the modern clinical laboratory.

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 Courtright, Fioro (Chair), Ganje, Holden, Kraidy, Rakow, Rendahl (Graduate Director), 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 minimum of 30 credits in communication for the thesis option or 32 credits for the non-thesis option if a minor or cognate is not chosen.
3. If a minor or cognate is approved by the committee, 30 credits is necessary for the thesis option or 32 credits for a non-thesis option which will include a major with a minimum of 20 credits in communication and a minimum of 9 credits in a minor or cognate.
4. Written and oral final examinations. The 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.

502. Research Methods in Communication. 3 credits. Study of the methodologies of historical, descriptive, survey and experimental research in communication.

504. Semiotics and Visuals Communication. 3 credits. Application of visual communication theories to the analysis, interpretation, and critical assessment of media images.

507. Communication, Technology, and Media. 3 credits. An examination of the role of media technologies in shaping communication processes and of the ways societies respond to technological change. Covers issues such as emerging digital technologies, technological determinism, technology transfer, access, and cost.

512. Law and Ethics in Communication. 3 credits. Application of principles of law and ethics to diverse communication and mediated contexts. Covers issues such as right, wrong, goodness, and evil as well as copyright, confidentiality, privacy, and trial level remedies.

520. Criticism and Communication. 3 credits. A study of various methods of criticism applied to several types of communication including: public communication, film, electronic media, and print media.

521. Perspectives on Media Writing. 3 credits. An analysis of historical and technological developments in contemporary media writing styles and content and a critical analysis of the cultural content of media writing with regard to serving diverse audiences with targeted messages. Examines the intended and real effects of persuasive forms of writing on intended audiences, including speech writing and
writing for print and broadcast. Students write in a variety of media styles to improve their own media writing skills.

525. Interpersonal Relations and Communication. 3 credits. Face-to-face and mediated communications between two people or people in small groups in diverse settings. Deals with inquiry, conflict management, interpersonal sensitivity, individuality, and conformity.

530. Gender, Culture, and Communication. 3 credits. An examination of how males and females from different cultural, ethnic and national backgrounds use, and are portrayed by, communication institutions and processes. Covers issues of representation, identity and difference.

540. Seminar: 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. Advocacy and Communication. 3 credits. Focuses on various communication strategies designed to influence audiences across contexts (e.g., advertising, journalism, public relations, social movements, grass root activities). Theories of public relations, rhetoric, mass communication, and persuasion are applied to specific cases of mediated and face-to-face advocacy.

550. International and Global Communication. An analysis of international media, comparative telecommunications systems and globalization. Covers issues such as transnational communication, global journalism, satellite broadcasting and communication in diplomacy and international affairs.

555. Film/Video as Communication. 3 credits. A view of film from analytical, promotional, and critical perspectives. Cinematography is addressed in historical, creative, semiotic, rhetorical, and technical contexts. Cinema, directors, genres, and problems from diverse nations are examined. Students write commentaries and promotions for oral and print media sources.

570. Seminar in Communication. 1 to 3 credits. Discussion of selected topics in speech communication and mass communication topics and issues. May be repeated to a total of 6 credits.

310. Communication and Diversity. 3 credits.
401. Organizational Communication. 3 credits.
403. Community Relations. 3 credits.
404. Advertising and Society. 3 credits.
412. Communication Law. 3 credits.
428. History of American Journalism. 3 credits.
461. Political Communication. 3 credits.

Communication Disorders
(See Speech-Language Pathology)

Computer Science

Professors Anderson, Hexmoor, Jo, O’Neil (Chair), Panda (Graduate Director), Valeroso, Wiggen

Program Description

The Department of Computer Science offers graduate study leading to the Master of Science degree. Both the thesis option and the non-thesis option are available. The department is a part of the Odegard School of 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, networks, operating systems, robotics, simulation, software engineering, and theoretical computer science.

Admission Requirements

1. Bachelor’s degree, normally in Computer Science.
2. Overall undergraduate GPA of at least 2.85.
3. Graduate Record Examination General Test or an undergraduate degree from a CSAB/CSAC accredited degree program in Computer Science.
4. Nine prerequisites:
   1. Expertise in two high-level languages (CSci 161, 260)
   2. Expertise in one assembly language (CSci 250)
   3. Basic knowledge of data structures (CSci 242)
4. Basic knowledge of computer architecture (CSci 370)
5. Basic knowledge of operating systems (CSci 451)
6. Basic knowledge of formal languages, automata, and computability (CSci 435)
7. Basic knowledge of discrete mathematics (Math 208)
8. Completion of one year of calculus (Math 165 and 166)
9. Completion of an additional course in statistics, probability, or linear algebra (Math 321, 327, 403, 421 or 442).

The department recognizes that the expertise identified above may be acquired in several ways, but the appropriate UND courses are listed as a guideline for prospective students. Students who do not meet all of these prerequisites may be admitted to Qualified status with the obligation of meeting the remaining requirements early in their graduate study but without graduate credit.

Degree Requirements

All students must complete the twelve-credit core of required courses, defined as follows:

1. Two courses from the list below:
   - CSci 522 Theoretical Foundations
   - CSci 532 Programming Languages and Paradigms
   - CSci 536 Compiler Design
   - CSci 575 Analysis of Algorithms

2. Two courses from the list below:
   - CSci 513 Advanced Database Systems
   - CSci 543 Advanced Artificial Intelligence
   - CSci 551 Distributed Operating Systems
   - CSci 555 Computer Networks

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). CSci 500 may not be used as an elective.
3. The core and elective courses must include a 3-course specialization approved by the student’s Independent Study Advisor.
4. CSci 566 Applied Computing Project (3-6 credits), defined in consultation with the student’s Independent Study Advisor.
5. CSci 997 Independent Study (2 credits), a complete write-up of the Applied Computing Project.
6. Successful completion of a written comprehensive examination on the areas covered in the core courses selected by the student.

Computer Science Track
(thesis option, 30 credit hours)

1. The core of required courses (12 credits).
2. Four elective courses (12 credits). CSci 500 and CSci 566 may not be used as electives.
4. Successful completion of a written comprehensive examination on the areas covered in the core courses selected by the student, required only if the student receives a grade lower than “B” in core courses.
5. A final oral examination, which includes a defense of the thesis.

Courses

500. Graduate Orientation. 1 credit. A discussion of various research and applied computing projects. Continued enrollment required of all graduate students until a research/project topic and an advisor are selected.

501. Topics in Computer Science. 1 to 3 credits. Prerequisite: Consent of instructor. Selected topics from current developments in Computer Science.

513. Advanced Database Systems. 3 credits. Prerequisite: CSci 455. A study of concurrency control, recovery, query processing and optimization, security, and new advancements including research issues in database systems.

522. Theoretical Foundations of Computer Science. 3 credits. Prerequisite: CSci 435. A selection of topics from theoretical computer science, possibly including formal languages, automata, other models of computation, and the theory of computability, decidability, and complexity.

532. Programming Languages and Paradigms. 3 credits. A study of current topics in programming languages and paradigms. Course content may vary with current issues and student interests.

536. Compiler Design. 3 credits. Prerequisite: CSci 465. Formal specification of programming languages, syntactic and semantic analysis, code generation and error handling.
Counseling

Professors Juntunen (Chair), Henly, Daughtery, Jacobs (Graduate Director), Twohey, Whitcomb

Department Description

The Department of Counseling offers graduate programs leading to the Master of Arts in Counseling and Doctor of Philosophy in Counseling Psychology. The Doctor of Philosophy in Counseling Psychology is accredited by the American Psychological Association (APA). Graduates of the M.A. program are eligible to apply for licensure as a Counselor in North Dakota as well as other states. Completion of the M.A. program partially fulfills requirements for certification as a School Counselor or 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 in Counseling

The Master of Arts is appropriate for those who wish to become counselors in community agencies, such as addiction treatment clinics, mental health centers, rehabilitation centers, and family service organizations. The Master of Arts is also appropriate for those planning careers in college counseling and student development services and for those who wish to become counselors in elementary, 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 and advancing to candidacy, 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:

- COUN 501: Ethics and Professional Issues in Counseling* 3
- COUN 510: Counseling Methods 2
- COUN 512: Counseling Lab 2
- COUN 515: Methods of Research 3
- COUN 516: Research Lab 1
- COUN 517: Psychological Testing 3
- COUN 518: Group Dynamics 3
- COUN 519: Career Counseling 3
- COUN 530: Theories of Counseling, Personality and Development 3
- COUN 531: Psychology of Women, Gender and Development 3
- COUN 532: Multicultural Counseling 3
- COUN 533: Couples and Family Counseling 3
- COUN 580: Practicum 6
- COUN 584: Internship (2 semesters, 4 credits each) 8
- COUN 997: Independent Study 2

TOTAL SEMESTER CREDIT HOURS: 48

*Students in School Counseling will take COUN 505 instead of COUN 501.
Doctor of Philosophy—Counseling Psychology

Program Description
The program provides preparation at the Ph.D. Level for employment in a variety of human service settings. These settings include: community mental health agencies, private practice, college and university counseling centers, hospitals and medical centers, or college and university departments of counseling and psychology. The program provides preparation for licensure as a psychologist in North Dakota and is accredited by the American Psychological Association. The curriculum adheres to recommendations of the American Psychological Association for the preparation of counseling psychologists and reflects a model which equally emphasizes science and practice.

The 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 3.28, master’s GPA 3.74, GRE-V 526, GRE-Q 564, GRE-A 610, and GRE Psych 546. A balance between numbers of male and female students is preferred in the program. Students from minority ethnic groups are encouraged to apply.

Degree Requirements
1. A major in Counseling Psychology, a minor in Psychology (24 credits).
2. Psychological foundations 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.
4. A qualifying exam.

Cognate in the Department of 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 the Department of 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.

Department Evaluation of Students
The Counseling faculty conduct periodic reviews of students’ progress in the MA and PhD programs, including their academic performance, counseling and psychoeducational skills, professionalism, and ethics. An interview may be required as part of the review. Deficits identified through faculty review may result in either a requirement that the student engage in remedial work or the removal of the student from the program.

Courses
501. Ethics and Professional Issues in Counseling. 3 credits. An introduction to counseling practice and services in mental health, addiction, rehabilitation, and other community agencies. Emphasizes 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 counselor’s roles in dealing with personal and crisis problems of students. Professional relationships, ethical and legal issues are addressed.
510. Counseling Methods. 2 credits. Two training components are combined to provide an intensive prepracticum experience. The didactic component introduces the basic interviewing and active listening skills; 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 analysis related to counseling and behavioral science. Experience in formulating and developing an independent research project. Considers research ethics and protection of human participants.
516. Counseling Research Laboratory. 1 credit. Prerequisite: COUN 515. Introduction to basic procedures in analysis of counseling research data. Topics include 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 support, task, psycho educational and therapeutic groups. Includes study of professional issues relevant to group processes. Involves participation in class group experiences.
519. Career Counseling. 3 credits. An introduction to the psychology of careers and to the practice of career counseling. Career development theories, occupational classification systems, assessment instruments, and the use of occupational information for career education and life planning are included. Career counseling strategies for use with a diverse population are introduced.
522. Management of School Counseling Programs. 2 credits. Study of the organization and administration of counseling programs, including foundations of program development and evaluation. Characteristics of effective school counselors. Consideration of professional and ethical concerns in school counseling.
530. Theories of Counseling, Personality and Development. 3 credits. Study and analysis of counseling interventions based on different theoretical models, emphasizing personality and human development. Course involves viewing video tapes of simulated or actual counseling sessions, role play demonstrations, and role played practice of various theoretically based counseling interventions.
531. Psychology of Women, Gender and Development. 3 credits. This course presents current research and trends in developmental theory, particularly theories pertaining to the psychological development of women and men. Issues such as abuse, ageism, depression, eating disorders, emotional experience and expression, heterosexism, feminism, and multiculturalism will be examined as related to the practice of psychology. Learning methods include writing, music, film, group discussion and creative projects. SU grading only.
532. Multicultural Counseling. 3 credits. This course offers an introduction to counseling theories and interventions appropriate for American ethnic and non-ethnic minority clients. The values suppositions of various cultural groups will be examined. In-class group experience is included.
533. Couples and Family Counseling. 3 credits. Prerequisite: COUN 510, or instructor approval. An introduction to the major theories of couples and family counseling and their associated interventions. A combination of readings, lecture, discussion, demonstrations and role plays will be used.
540. Career Counseling Theories. 3 credits. Prerequisite: COUN 519 or equivalent; admission to doctoral program. Advanced study of major career counseling theories, models, and methods.
550. Ethics and Professional Issues in Counseling Psychology. 3 credits. Prerequisite: Admission to the doctoral program. Study and analysis of the ethical, legal and professional issues in Counseling Psychology. Understanding and application of APA Ethical Guidelines will be emphasized. Professional issues include the history and
development of Counseling Psychology as a profession, issues of professional identity, and current trends affecting the field.

551. Research Issues in Counseling Psychology. 3 credits. Prerequisite: Admission to the doctoral program. 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.

555. Advanced Psychological Testing. 3 credits. Prerequisite: COUN 517 or equivalent; admission to doctoral program. A critical examination of the rationale, construction, and uses of structured personality tests and interest inventories, including current views of test validities and reliabilities, prediction models, and related observational techniques.

560. Supervision Theory and Technique. 3 credits. Prerequisite: Admission to the doctoral program or instructor permission. A survey and critical examination of approaches, techniques and issues in 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.

561. 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.

565. 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 8 credits. S/U grading only.

568. Personality Assessment. 3 credits. Theory, research, evidence, and training in the administration, scoring, interpretation and use of personality assessment instruments. Issues of race, ethnicity, gender, age and disability in the use of these instruments is emphasized. A 2-hour lab provides supervised practice in test administration and scoring.

569. Cognitive Assessment. 3 credits. Theory, research evidence, and training in the administration, scoring, interpretation and use of cognitive assessment instruments. Issues of race, ethnicity, gender, age and disability in the use of these instruments is emphasized. A 2-hour lab provides supervised practice in test administration and scoring.

575. 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.

580. Counseling Practicum. 6 credits. Prerequisites: COUN 510 and COUN 512; 12 completed COUN 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.

583. 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 small group and individual supervision and in case conferences. S/U grading only.

584. 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.

590. Problems in Counseling. 1 to 3 credits. Supervised independent study or application of selected problems in the counseling field. S/U grading only.

593. Readings in Counseling. 1 to 3 credits. Reading in selected areas of counseling. May be repeated up to six credits. S/U grading only.

996. Continuing Enrollment. 1 to 12 credits.

997. Independent Study. 2 credits.

998. Thesis. 4 credits.

999. Dissertation. 1 to 12 credits.

EDUCATION

Professors Ahler, Backes, Baker Big Back, Barrentine, Bass, Bock, Chalmers, Dahl, Fox, Fuller, Gershman, Guy, Hanhan, Harris, Helgeson, Holdman, Hoover, Keiffer, Kelley, Landry, Laycock, Lemon, Olsen, Olson, Rice, Shaeffer, Smart, Strackbein, Uhlenberg, J. D. Williams, Zidon

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.............................D. R. Rice
Teaching and Learning............................M. Shaeffer

PROGRAM COORDINATORS

Early Childhood Education ........................S. Hanhan
Educational Leadership.............................D. R. Rice
Elementary Education..............................M. Guy
Education, General Studies......................K. Gershman
(for educators of adolescents and adults)
Reading Education.................................D. Strackbein
Special Education.................................L. Chalmers
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 at UND advance development of expertise in the following areas.

1. Describing personal and possible educational practice orally and in writing.
2. Assessing the consequences of educational decisions for student and adult learners in schools.
3. Exploring the personal, historical, philosophical, sociological, anthropological, psychological, multicultural, and/or organizational origins of educational practices.
4. Interpreting current research and commentary on educational issues and recognizing sources of discrepancy among them.
5. Developing the habit of seeking and citing evidence in regard to educational decisions.
6. Acquiring knowledge, attitudes, and skills needed to practice in one or more of the areas of professional specialization.
7. Learning through dialogue, literature review, questioning, writing, observing, application of research methodology, and other scholarly means.
8. Distinguishing among educational practices on the basis of their contribution to the vision of teaching and learning espoused by the program.
1. A completed Graduate School application form which includes a degree. The portfolio will include the following items:

   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 option open normally only to doctoral students);
   d. One of the following standardized test scores: The Advanced Graduate Record Examination, Miller Analogies Test, Graduate Record General Examination (verbal, quantitative, and analytical).

After the completion of the equivalent of one full semester, but well before taking the comprehensive examination, a preliminary review of the progress of each doctoral student will be conducted.

Each student admitted to one of the graduate programs in Education will be assigned a temporary advisor. As soon as possible after the preliminary review, students should (1) remove any entrance deficiencies; (2) identify a permanent advisor or Advisory Committee by consulting with the program chairperson; and (3) develop a formal program of study for the degree in consultation with the advisor or Advisory Committee.

The specific admission requirements for each of the graduate programs in education are described in the section devoted to each program.

### SCHOLARLY TOOLS

The scholarly tool requirement for the M.S., Ed.D., and Ph.D. degrees is an integral part of the graduate degree program. Since the purpose of the scholarly tool requirement in graduate study is to enable the student to read, understand and conduct research, the tools are to be directly related to the research interests of each graduate student. Achievement levels will be demonstrated by satisfactory completion of 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) or their equivalents.

**Option 2:**
- Quantitative emphasis option: EFR 510 Qualitative Research Methods (3 semester credits), EFR 516 Statistics II (3 semester credits), and one of the following: EFR 517 Advanced Research Methodologies (3 semester credits), EFR 518 Multivariate Analysis (3 semester credits), EFR 519 Research Seminar-Experimental Design (3 semester credits) or their equivalents.
Option 3: Tests and measurements option: EFR 511 Curriculum Evaluation (3 semester credits), EFR 512 Educational Tests & Measurements (3 semester credits), EFR 516 Statistics II (3 semester credits), and EFR 517 Advanced Research Methodologies (3 semester credits) or their equivalents.

The student’s advisory committee may approve an exception to these three specializations upon consultation with the research faculty. An appropriate exception would be a different sequence of studies that assures breadth and depth in the research process that is related to both the student's career goals in research and in regard to the student’s research.

For the Ed.D., the minimum scholarly tool requirements may be met by one of the following options:

Option 1: Qualitative emphasis option: EFR 510 Qualitative Research methods (3 semester credits), EFR 590 Field Methods (1 semester credit), EFR 520 Advanced Qualitative Research Methodologies (3 semester credits) or their equivalents.

Option 2: Quantitative emphasis option: EFR 516 Statistics II (3 semester credits), and one of the following: EFR 517 Advanced Research Methodologies (3 semester credits), EFR 518 Multivariate Analysis (3 semester credits), EFR 519 Research Seminar-Experimental Design (3 semester credits) or their equivalents.

Option 3: Tests and measurements option: EFR 511 Curriculum Evaluation (3 semester credits), EFR 512 Educational Tests & Measurements (3 semester credits) or their equivalents.

The student’s advisory committee may approve an exception to these three specializations upon consultation with the research faculty. An appropriate exception would be a different sequence of studies that assures breadth and depth in the research process that is related to both the student’s career goals in research and to the student’s research.

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.

HIGHER EDUCATION

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 institutions.

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 boy sand 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 to 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 education 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.
Department of Educational Leadership

The primary 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. Another mission of the Department is to prepare educational leaders for other administrative positions in educational organizations and agencies, particularly higher education. A secondary mission of the Department is to prepare leaders for positions in non-educational settings such as medical and social service organizations.

Admission Requirements

Admission to the M.Ed. and M.S. degree programs requires a bachelor’s degree from an accredited college or university, a cumulative undergraduate GPA of 2.75 or at least 3.00 for the last two years. Normally, applicants with teaching experience in public schools apply to the M.Ed. program, others to the M.S. program.

Admission to the Specialist Diploma, the Ed.D., and the Ph.D. programs normally requires a master’s degree in educational leadership or a closely related field. Applicants to these programs are required to have a minimum GPA of 3.5 in all graduate work. Applicants are also required to respond to essay questions which are provided in the application packet.

Master of Education

The M.Ed. program in Educational Leadership is designed to prepare students for administrative positions in either elementary or secondary schools. Upon completion of the M.Ed. 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.

Specialist Diploma

The Specialist Diploma, available at UND only in Educational Leadership, is designed for students preparing for school administrative positions. This course of study is usually considered to be a terminal program of advanced preparation for professional practice. Upon completion of the Specialist Diploma, a student generally will have completed the requirements for administrative certification including those required for the position of school superintendent in North Dakota.

Doctor of Education

The Ed.D. program in Educational Leadership is designed primarily for practitioners preparing for school administration positions including elementary or secondary principalships, superintendencies, curriculum directorships, or other school district central office positions, as well as persons preparing for administrative positions in higher education. Upon completion of the Ed.D. degree, a student generally will have completed the requirements for administrative certification including those required for the position of school superintendent in North Dakota.

Doctor of Philosophy

The Ph.D. program in Educational Leadership is designed for students preparing for positions in which research and creative experience are predominant interests. Ph.D. candidates are expected to have undertaken and completed independent research leading to an original contribution to knowledge in the field. It is generally expected that the Ph.D. dissertation will be publishable in the literature of educational leadership. School administrators do not generally seek this degree. Those who aspire to leadership positions in the academic side of institutions of higher education, in government agencies, or in other educational policy organizations are more typically served by this degree.

Doctoral Residence

Beginning in 1999, doctoral students will be admitted to a cohort-based program. Course work in the first cycle will be delivered over a three-year period. Participation in this program will meet the residence requirement of the Graduate School. Courses will be delivered in compressed blocks of a day and one-half to two days every three to four weeks. Persons interested in applying to this program should contact the Department for more detailed information. In unusual circumstances, a
very limited number of doctoral students may be allowed to pursue an accelerated course of study by being full-time, on-campus students.

For information about admission, program of study, or other degree requirements, please contact the chair of the Department of Educational Leadership.

Courses

501. Leadership, Planning, and Organizational Behavior. 3 credits. This course provides school leaders with preparation in skills for providing purpose and direction for individuals, 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, initiate needs analyses, plan and implement with staff 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. Classes are designed for in-depth study and practice planning, organizing, and facilitating programs that improve faculty and staff effectiveness and are consistent with institutional goals and needs; supervising individuals and groups; providing feedback on performance; arranging for remedial assistance; engaging faculty and others to plan and participate in recruitment and development activities; and initiating self-development.

515. Education Law and Organizational Structure of Schools. 3 credits. This course is designed as a beginning law course for school administrators. Topics to be studied include organizational structure of schools, federal and state court systems, church-state issues, teacher rights, student rights, rights of students with disabilities, instructional issues, tax equity, and equal opportunity in education.

516. Policy and Educational Finance. 2 credits. Includes such topics as the organization of and responsibility for education in the United States at the federal, state, and local levels; basic administrative theories, processes, and techniques; and major issues and concerns in the operation of local school districts.

517. Social, Cultural, Political, and Community Dimensions of Schools. 4 credits. This course provides school leaders with an understanding of the historical, philosophical, ethical, social, and economic influences affecting education to the degree that they can apply their understandings to professional decisions. Students are expected to apply political concepts and strategies 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.

520. Middle School Principalship. 2 credits. Leadership responsibilities and techniques for middle school principals. Includes topics such as instructional improvement, administrator-staff-student relationships, communication, public relations, planning, and programming at the building level in middle schools.

521. Elementary School Principalship. 2 credits. Leadership responsibilities and techniques for elementary principals. Includes topics such as instructional improvement, administrator-staff-student relationships, communication, public relations, planning, and programming at the building level in elementary schools.

522. Secondary School Principalship. 2 credits. Leadership responsibilities and techniques for secondary school principals. Includes topics such as instructional improvement, administrator-staff-student relationships, communication, public relations, planning, and programming at the building level in junior and senior high schools.

523. The Educational Plant. 2 credits. Planning, construction, modification, and maintenance of school buildings. Includes techniques for developing and using the building, program, and community 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.

526. Business Management in Education. 2 credits. Study of the business function in educational organizations with emphasis on budget development and administration, accounting, purchasing, risk management, support services, and capital outlay.

527. Legal Issues in Education. 3 credits. Study of the legal issues affecting educational organizations with emphasis on state and federal relationships to local institutions, school boards and other governing bodies, contracts, teachers’ and students’ rights, and tort liability of educational organizations and their officers. Consideration is given to legal research and policy analysis.

529. Special Education Law. 3 credits. A course designed to give participants a working knowledge of the legislative, judicial, and administrative changes which have revamped the areas of teaching and administering special education since 1974. It will provide information useful to administrators, practitioners, attorneys, parents, and advocates on topics including student records, discipline, related services, due process, least restrictive environment, and appropriate education.

531. School District Leadership. 2 credits. A study of concerns and issues related to education leadership and administration at the district level, including relationships between the superintendent and the school board, community and school district staff.

532. Staff and Program Evaluation. 2 credits. A study of the evaluation of staff, including teachers, administrators, support personnel, and boards; and for purposes of accreditation, the evaluation of components that support the curriculum. Procedures, processes, and instruments will be identified and analyzed.

533. Collective Negotiations. 2 credits. A study of the collective bargaining process in the field of education. Includes topics such as contract language, planning for negotiations, bargaining strategies, impasse and arbitration, contract maintenance, grievance procedures, and results of the negotiations.

541. Introduction to Higher Education Administration. 3 credits. An overview of the organization of America’s colleges and universities. Topics include roles of state and federal government, institutional administration, higher education types of institutions, faculty, students, research about higher education, and the profession of administrator.

542. Curriculum in Higher Education. 2 credits. A study of processes for planning, implementing, and evaluating curriculum within institutions of higher education. Topics will include historical perspectives on curriculum in higher education, governance systems related to curriculum development and adoption, and issues of current interest and concern.

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.

554. Higher Education Student and Support Services. 2 credits. An overview of the organization and functions of student and support services within institutions of higher education. Students will gain an understanding of the administrative issues related to career services, student counseling, enrollment services, student activities, health services, student organization, and other institutional units which serve the needs of students at a college or university.

559. Seminar in Higher Education Leadership. 1 to 4 credits. SU grading only.

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 intervention; 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 in a topic area related to organizational behavior.

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.
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

<table>
<thead>
<tr>
<th>Program</th>
<th>Degrees Available</th>
<th>Catalog Reference (Page)</th>
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<tbody>
<tr>
<td>Early Childhood Education</td>
<td>M.S.</td>
<td>201</td>
</tr>
<tr>
<td>Education: General Studies</td>
<td>M.S.</td>
<td>202</td>
</tr>
<tr>
<td>Elementary Education</td>
<td>M.Ed., M.S.</td>
<td>201</td>
</tr>
<tr>
<td>Reading Education</td>
<td>M.Ed., M.S.</td>
<td>202</td>
</tr>
<tr>
<td>Special Education</td>
<td>M.Ed., M.S.</td>
<td>203</td>
</tr>
<tr>
<td>Teaching and Learning</td>
<td>Ed.D., Ph.D.</td>
<td>203</td>
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</tbody>
</table>

See pages 196 through 198 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 3 by concentrating on the study of children ages 3-8 and the implications such study holds for educational practice. Those pursuing this program will be prepared as professional teachers/leaders in a variety of early childhood settings, including public and private schools, 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 166 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 173. 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:

<table>
<thead>
<tr>
<th>Major:</th>
<th>Credits</th>
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<tbody>
<tr>
<td>T&amp;L 526 Play in Development and Early Childhood Education</td>
<td>2</td>
</tr>
<tr>
<td>T&amp;L 527 Curricular Foundations in Early Childhood Education</td>
<td>3</td>
</tr>
<tr>
<td>T&amp;L 529 Language Development in Children</td>
<td>3</td>
</tr>
<tr>
<td>T&amp;L 532 Home-School Relations</td>
<td>3</td>
</tr>
<tr>
<td>T&amp;L 547 Young Children’s Thinking</td>
<td>2</td>
</tr>
<tr>
<td>T&amp;L 510 Early Intervention for Children with Special Needs</td>
<td>2</td>
</tr>
<tr>
<td>*Electives (thesis option)</td>
<td>3-5</td>
</tr>
<tr>
<td>or (non-thesis option)</td>
<td>9</td>
</tr>
<tr>
<td>T&amp;L 997 Independent Study (non-thesis option)</td>
<td>2</td>
</tr>
<tr>
<td>or T&amp;L 998 Thesis (thesis option)</td>
<td>4-6</td>
</tr>
</tbody>
</table>

Scholarly Tools:

EFR 509 Introduction to Educational Research | 3
T&L 547 Observation Research in Child/Case Studies | 3

*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.
2. Teacher Certification or a baccalaureate degree for the M.S.
Refer to page 166 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 174; a detailed description of the M.S. degree can be found on page 173. Scholarly tool requirements are described on page 197.

**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 of two credits of readings.

Track II, available only in the non-thesis option, provides opportunities 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.

**Sample Program of Study, M.Ed., Elementary**

<table>
<thead>
<tr>
<th>Major</th>
<th>Credits</th>
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</thead>
<tbody>
<tr>
<td>T&amp;L 517 Creative Expression in the Elementary School</td>
<td>2</td>
</tr>
<tr>
<td>T&amp;L 518 Science in the Elementary School</td>
<td>2</td>
</tr>
<tr>
<td>T&amp;L 519 Social Studies in the Elementary School</td>
<td>2</td>
</tr>
<tr>
<td>T&amp;L 522 Mathematics in the Elementary School</td>
<td>2</td>
</tr>
<tr>
<td>T&amp;L 523 Home-School Relations</td>
<td>3</td>
</tr>
<tr>
<td>T&amp;L 530 Foundations of Reading Instruction</td>
<td>3</td>
</tr>
<tr>
<td>Electives</td>
<td>4</td>
</tr>
<tr>
<td>T&amp;L 997 Independent Study</td>
<td></td>
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**Cognate**

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<thead>
<tr>
<th>Major</th>
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<tbody>
<tr>
<td>T&amp;L 524 Reading in the Content Areas</td>
<td>2</td>
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<tr>
<td>T&amp;L 534/583 Basic Reading Diagnosis Clinic</td>
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**Educational Foundations**

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<tr>
<th>Major</th>
<th>Credits</th>
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<tbody>
<tr>
<td>EFR 500 Foundations of Educational Thought</td>
<td>3</td>
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<tr>
<td>EFR 505 Social Foundations of Education</td>
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**Sample Program of Study, M.S., Elementary**

<table>
<thead>
<tr>
<th>Major</th>
<th>Credits</th>
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<tbody>
<tr>
<td>T&amp;L 517 Creative Expression in the Elementary School</td>
<td>2</td>
</tr>
<tr>
<td>T&amp;L 518 Science in the Elementary School</td>
<td>2</td>
</tr>
<tr>
<td>T&amp;L 519 Social Studies in the Elementary School</td>
<td>2</td>
</tr>
<tr>
<td>T&amp;L 522 Mathematics in the Elementary School</td>
<td>2</td>
</tr>
<tr>
<td>T&amp;L 523 Home-School Relations</td>
<td>3</td>
</tr>
<tr>
<td>T&amp;L 530 Foundations of Reading Instruction</td>
<td>3</td>
</tr>
<tr>
<td>Electives (non-thesis)</td>
<td>10</td>
</tr>
<tr>
<td>Electives (thesis)</td>
<td>6-8</td>
</tr>
<tr>
<td>T&amp;L 997 Independent Study</td>
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<tr>
<td>T&amp;L 998 Thesis</td>
<td>4-6</td>
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**Scholarly Tools (Track I, only)**

<table>
<thead>
<tr>
<th>Major</th>
<th>Credits</th>
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<tbody>
<tr>
<td>EFR 509 Introduction to Educational Research</td>
<td>3</td>
</tr>
<tr>
<td>T&amp;L 548 Observational Research in Child/Case Studies</td>
<td>3</td>
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**Educational Foundations** (Track II, only)

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<tr>
<th>Major</th>
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<tbody>
<tr>
<td>EFR 500 Foundations of Educational Thought</td>
<td>3</td>
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<tr>
<td>EFR 509 Multicultural Education</td>
<td>3</td>
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</table>

**General Studies**

**Program Description**

This M.S. degree program (thesis or non-thesis) is designed for both the certified secondary teacher who seeks to 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.

**Reading Education**

**Program Description**

These programs are designed for educators or other professionals interested in the study of individual readers and writers and reading/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. 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.

Sample Program of Study, M.Ed., Reading

<table>
<thead>
<tr>
<th>Major</th>
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<tbody>
<tr>
<td>T&amp;L 517 Creative Expression in the Elementary School</td>
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<tr>
<td>T&amp;L 524 Reading in the Content Area</td>
<td>2</td>
</tr>
<tr>
<td>T&amp;L 530 Foundations of Reading Instruction</td>
<td>3</td>
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<tr>
<td>T&amp;L 531 Teaching Reading in Primary Grades</td>
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or

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<tr>
<th>Major</th>
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<tbody>
<tr>
<td>T&amp;L 532 Teaching Reading in Intermediate Grades</td>
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<tr>
<td>T&amp;L 534/583 Basic Reading Diagnosis &amp; Remediation/Clinic</td>
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<tr>
<td>T&amp;L 536 Teaching &amp; Supervision of Elementary Language Arts</td>
<td>3</td>
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<tr>
<td>Electives</td>
<td>2</td>
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<tr>
<td>T&amp;L 997 Independent Study</td>
<td>2</td>
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Cognate
(6 credits in chosen area of study, i.e., Elementary Middle Level, Secondary subject area, special education, early childhood or other)

Educational Foundations

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or

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<tbody>
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<td>T&amp;L 998 Thesis</td>
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Scholarly Tools (Track I, only)

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Educational Foundations (Track II, only)

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<tr>
<td>EFR 509 Multicultural Education</td>
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</table>

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 Room 303, Education Building.

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 graduate 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 173; a detailed description of the Master of Education (M.Ed.) degree can be found on page 174. The scholarly tool requirements are described on page 197. Applicants should refer to page 166 and 197 for application procedures.

A doctoral degree in Teaching and Learning is available with a concentration in Special Education. Interested persons are referred to page 204 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. 179 of this catalog, and requirements for the Doctor of Education (Ed.D.) are stated on p. 178.

Admission Requirements

See Graduate School requirements (p. 166) and Education requirements (p. 196).

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 197.

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 170. 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 197.

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 170. 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

Required Courses

<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
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<tbody>
<tr>
<td>T&amp;L 540</td>
<td>3</td>
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<tr>
<td>T&amp;L 542</td>
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Recommended Courses

<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
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<tbody>
<tr>
<td>T&amp;L 533</td>
<td>2</td>
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<tr>
<td>T&amp;L 538</td>
<td>2</td>
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<tr>
<td>T&amp;L 571</td>
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<tr>
<td>EFR 506</td>
<td>3</td>
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<td>EFR 507</td>
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Higher Education

Required Courses

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<tr>
<th>Course</th>
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<tr>
<td>T&amp;L 570</td>
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<tr>
<td>T&amp;L 539</td>
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<tr>
<td>T&amp;L 545</td>
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Recommended Courses

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<tr>
<td>T&amp;L 590</td>
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<tr>
<td>EDL 552</td>
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<td>EFR 506</td>
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<td>EFR 507</td>
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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

Students 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.

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 and 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., infant, school-age, adults). Multiply disabled children and adults are included as they relate to families of children with special needs. Emphasis is placed on methods and materials for preschool children with special needs. 3 credits. A comprehensive study of curricula, program development and intervention strategies for disabled children ages birth to 6.

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.

517. Creative Expression in the Elementary School. 2 credits. Content, methods, and theories in the field of writing instruction at the elementary school level.

518. Science in the Elementary School. 2 credits. Curricula, content, and curricular problems in the field of science 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 levels.

520. Curriculum and Instruction in Elementary Schools. 4 credits. A study of processes for planning, implementing, and evaluating curriculum and improving instruction in elementary schools.


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 to participate in the education of their children, how these needs are established in 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, Language Arts, etc.). How teachers learn about the field of content reading and a variety of instructional practices are reviewed.

526. Play in Development and Early Childhood Education. 2 credits. The play of children has long been viewed as essential to developmental processes. In addition, education has recognized the need to incorporate play into programs. This course explores the relationship of play to development (cognitive, physical and emotional), and the way in which play has been incorporated 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.

529. Language Development in Children. 3 credits. This course provides foundational information and a sense of appreciation for language, and an appreciation 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 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 elements of reading, strategies for facilitating learning to read, 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 teaching reading for learning in grades 4 credits each.

533. Reading in the Secondary School. 2 credits. Pre- or corequisite: CTL 530. Development of reading-study skills in the content subject areas and reading skill development.

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, and corrective 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 disabilities in the language arts program.

536. Teaching and Supervision of Elementary Language Arts. 3 credits. Pre- or corequisite: CTL 530. Considers the objectives of the elementary language arts program, methods of instruction, and recent curricular trends. Recent research is read and documented.

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.

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 and 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 lens 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-observer 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. This course will study the nature of learning and behavior problems, what determines whether or not a behavior is appropriate, the definitions of learning and behavior problems, and the appropriate intervention strategies for the resolution of the problems.

551. Advanced Assessment/Special Needs Students. 3 credits. Theory and practice of assessment, including formal and informal procedures for screening, identification and assessment of learning disabled, emotionally disturbed and educable mentally retarded students. Practical assignment included. Prerequisite CTL 423.

552. Inclusive Methods. 2 credits. The study of a variety of methods and materials for teaching children and youth with learning and behavior problems in the general education classroom.

553. Collaborative Relationships. 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 collaborative arrangements and consultation; (2) communication skills; (3) problem-solving: (4) conflict management; (5) diverse perspectives; (6) information collection procedures; and (7) supervisory skills.

554. Advanced Methods: LD. 2 credits. The study of specific strategies, methods, and materials for working with learning disabled students.

555. Advanced Methods: ED. 2 credits. The study of specific strategies, methods, and materials for working with students with emotional/behavioral disorders.

557. 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. Practices, issues, and trends in the design and implementation of programs for the preparation and development of K-12 teachers.

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 with 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. Practice in study of desirable school practices, observations in nearby schools, and application of research findings in solving practical problems. May be repeated.

581, 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 school’s radium instruction.

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 school consultations.

584. Internship in Education. 1 to 8 credits. Prerequisites: Appropriate foundational, cognitive, and major area course work and consent of the advisor and instructor. This is a culminating experience primarily for Sixth year and Doctoral students. The internships will be identified in one of the following sub-areas: (A)
Electrical Engineering
Professors Bengiamin (Chair), 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 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, and may include another one-third advanced engineering, and one-third in related areas.

Courses
503. Statistical Communications Theory and Signal Processing I. 3 credits. Theory of time series analysis of random signals as applied to signal processing is emphasized.
504. Statistical Communications Theory and Signal Processing II. 3 credits. Advanced methods of signal detection including linear parameter estimation and nonlinear estimation of parameters. Detection of signals and estimation of signal parameters from a probability point of view will be emphasized.
505. Control Systems II. 3 credits. Prerequisite: Electrical Engineering 405. Advanced topics in control systems including nonlinear systems, robust control, optimal control, and pole placement technique; selective topics from the state of the art.
506. Digital Control Systems. 3 credits. Prerequisite: Electrical Engineering 405. Digital systems representation, analysis and simulation; Z-transform; digital controllers design and realization; microprocessor based controllers.
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 electrical digital computers with some applications to counter circuits.
520. Electronic Computing Systems. 3 credits. Prerequisites: Electrical Engineering 201 and 421: Design of bus 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.
523. Power Systems II. 3 credits. Prerequisite: Electrical Engineering 423. Electric power systems analysis and control. Power flow; system response and stability; voltage and frequency control; computer methods in system analysis.
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. Prerequisite: EE 434 or consent of instructor. Propagation in optical fibers, optical receivers, amplifiers, detectors, sources, transmission links, noise consideration, optical fiber communication systems, applications and future developments.
537. Graduate Cooperative Education. 3 credits. Prerequisites: Approved status, 3.00 GPA, completed a minimum of 9 credits of the program of study, and approval of the department. A practical research experience with an employer closely associated with the student’s academic area. A written report which includes a literature survey and research findings and an oral presentation are required.
570. Seminar. 1 credit. Open to qualified advanced undergraduate students and graduates.
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

Professor Hasan (Graduate Director)

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 179.

1. Scholarly Tools: Proficiency in mathematics demonstrated by completing 9 approved mathematic 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 credit 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 the program (a minimum of 15 credit hours of course work in support of the doctoral research and EnE 501 and 502).
6. Each student must present to his or her advisory committee an annual oral progress report describing their research progress over the previous year. One 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 (Graduate Director), Beard, Carson, Coleman, Dixon, Donaldson, Hampsten, Huang, Koprince, Lewis (Chair), Marshall, McKenzie, J. Meek, M. Meek, O’Donnell, Rankin, Robison, Salzer, 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

500. Bibliography and Methods of Research. 2 credits. Required of all candidates for advanced degrees in English. An introduction to graduate study and the profession.

501. Teaching College English. 3 credits. An introduction to theories and methods of teaching college English. Required of Graduate Teaching Assistants in English.

501L. Teaching College English Lab. 1 credit. The practicum part of English 501. Required of Graduate Teaching Assistants in English.

510. History of Literary Criticism. 3 credits. A history of European criticism from the Classical Greek period to the present day, with emphasis on major texts.

511. Problems in Literary Criticism. 3 credits. A course in applied criticism. Repeatable when topics vary.

515. Creative Writing. 3 credits. Prerequisite: English 411 or 412 or permission of the instructor. Creative writing of fiction, 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. Cinema
C. English Literature
D. English Language
E. Creative Writing

Prerequisite: English 500 and the consent of the Department. Supervised independent study. Repeatable.

591. Readings for Ph.D. Comprehensive Examinations. 1 to 4 credits. Prerequisites: Consent of the Department. Supervised independent study on approved topics. Repeatable. This course is exempt from the normal “Incomplete” reversion schedule. A grade is assigned upon completion of the appropriate comprehensive examination.

593. Research. 1 to 4 credits.

A. American Literature
B. Cinema
C. English Literature
D. English Language
E. Creative Writing

Prerequisites: English 500 and the consent of the Department. Independent study of a problem in the field resulting in a long research paper or a series of short reports. Repeatable.

Courses

The following undergraduate courses are eligible for inclusion on graduate programs of study with permission. Additional assignments are required of students taking these courses for graduate credit.

370. Language and Culture. 3 credits.

401. Studies in Medieval Literature. 3 credits.

402. Studies in Early Renaissance Literature. 3 credits.

403. Studies in Colonial American Literature. 3 credits.

404. Studies in Late Renaissance Literature. 3 credits.

405. Studies in Restoration and Eighteenth Century Literature. 3 credits.

406. Studies in Nineteenth Century Literature. 3 credits.

407. Studies in Twentieth Century Literature. 3 credits.

409. Art of the Cinematic Drama. 3 credits.
Geography

Professors Anderton, Hammen, Hemmasi, Munski, Seidel, Todhunter

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 regional and community development track within the graduate program emphasizes the background education useful for students to enter career fields related to working for land use planning agencies, federal government service, historic preservation, and travel and tourism as well as being a stepping stone to pursue a doctoral degree in human geography elsewhere. The focus of this M.A. option is upon taking a well-chosen, career-orientated selection of courses in population, social, urban, political, cultural, historical, and regional geography. Students are encouraged to take cognate work in business and public administration, international relations, anthropology and archaeology, sociology, languages, and other fields appropriate to each graduate student’s long-range plans.

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, geoarchaeology, 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 area 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.

560. Seminar in Regional Geography. 3 credits.

575. Seminar in Remote Sensing. 3 credits. Prerequisite: Geography 475 or consent of instructor. A seminar in the analysis of remote sensing techniques as applied to contemporary research problems in geography.

576. Field Methods and Analysis in Geography. 3 credits. An advanced, intensive approach to the measuring and mapping of cultural and physical features of the earth in the field. Familiarization with the practical problems involved in data collection techniques in rural as well as urban areas and transfer of the pattern of phenomena of an area to a scale suitable for mapping.

578. Geographic Research and Writing. 2 credits. Prerequisite: Graduate standing. Required of all graduate students during the first semester in which they are registered and in residence or the first semester offered. Orientation to methods of research and communication in geography. Emphasis upon research design, identification of bibliographic and geographic source materials, communication skills, and proposal writing.

591. Directed Study in Geographical Problems. 1 to 4 credits.

595. Research Topic in Geography. 3 credits.


334. Climatology. 4 credits.

373. Graphics and Air Photo Interpretation. 3 credits.

373L. Air Photo Interpretation Laboratory. 1 credit.

377. Quantitative Applications in Geography. 2 credits.

377L. Spatial Analysis Laboratory. 1 credit.

421. Selected Topics in Physical Geography. 3 credits.

422. Geography of Water Resources. 3 credits.

452. Selected Topics in Economic Geography. 3 credits.

453. Historical Geography. 3 credits.

455. Political Geography. 3 credits.

457. Urban Geography and Planning. 3 credits.

462. Geography of North America 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 (Graduate Director), Ghassemi, Gosnold, Groenewold, Hartman, Karner, Korom, LeFever (Chair), Matheney, Perkins

Program Description

The Department of Geology and Geological Engineering offers programs of study leading to the degrees Master of Arts, Master of Science, and Doctor of Philosophy. Research emphasis is currently in the following areas: 1) hydrogeology, environmental geology, and geological engineering; 2) economic geology of petroleum, coal, and mineral resources; 3) sedimentology, stratigraphy, and paleontology; 4) geomorphology and glacial geology; 5) petrology and geochemistry; 6) geophysics and tectonics; and 7) interdisciplinary geological projects involving several research areas including integrated basin analysis, surface mining and reclamation, and underground coal gasification.

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 165 at UND) for the M.A. degree; the entire calculus sequence (equivalent to Math 165, 166, 265, at UND) for the M.S. and Ph.D. degrees.
5. 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.
6. Applicants are expected to score at the 50th percentile or better on the Graduate Record Examination General test; completion of geology GRE Advanced test is 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.

Undergraduate students in the Geology, Geological Engineering, or Environmental Geology and Technology majors are eligible for early admission to the M.S. program on Qualified status, providing that they have:
1. Completed 95 semester credit hours of course work.
2. Completed 30 semester hours of course work and 8 hours of upper division course work in the geological sciences, including the equivalent of physical and historical geology.
3. Achieved a GPA of 3.0 or better in the geological sciences.

Advancement to Approved status will occur when the student has completed the graduation requirements for the bachelor’s program they are enrolled in, and when all deficiencies have been removed.

Undergraduate students admitted on Qualified status are eligible to take 500-level courses in their last two semesters prior to completing the bachelor’s degree requirements. Such courses could be included in the 30 credit hours for the degree and could appear in the program of study.

Degree Requirements

Please see page 173 of this catalog for the general requirements for the M.A., M.S., and Ph.D. degrees.

Master of Arts and Master of Science

The Department expects every graduate student to have breadth in geology. Before a student can be advanced to candidacy, he or she must demonstrate such breadth 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 masters degree in geology is about two years of full-time work. Students with graduate teaching or research assistantships may need more time.

Depending upon the total number of undergraduate hours in geology, the undergraduate training in related sciences, and the area of geology selected for graduate work, up to 12 hours of 300-400 level 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 179 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. Prerequisites: 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 paleoclimatology, environmental isotope geochemistry, igneous, metamorphic, and sedimentary petrology.
506. Glacial Geology. 4 credits. 3 hours lecture, 2 hours laboratory. Prerequisite: Geology 311. Origin, growth, and movement of glaciers; landforms and deposits incident to glaciation.
509. Advanced Mineralogy. 1 to 4 credits. Prerequisite: Geology 320. Geology 321 is also recommended. Advanced study of specific mineral groups or selected topics in mineralogy.
511. Advanced Structural Geology. 4 credits. Reading and research in special topics in structural geology and geotectonics.
512. Advanced Petrology. 1 to 4 credits. Prerequisite: Geology 320. Selected topics in petrology taught using conventional lecture and laboratory/field approach.
515. Advanced Paleontology. 3 to 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. Paleocology; D. Paleontological procedures; E. Micropaleontology.
518. Topics in Advanced Stratigraphy. 2 to 4 credits. Prerequisites: Geology 411, 415. Selected topics in lithostratigraphy and biostratigraphy.
520. Statistical Applications in Geology. 3 credits. Prerequisites: An introductory statistics course, such as CTL 515 or Psych 241, and consent of instructor. The application of statistical techniques to geologic data and problems, with emphasis on analysis of geologic sequences, map analysis, and multivariate analysis of geologic data.
522. History and Philosophy of Geology. 3 credits. Prerequisite: Permission of instructor. Historical and philosophical development of the science of geology.
523. Topics in Advanced Geomorphology. 1 to 4 credits. Prerequisite: Geology 311. Selected topics in geomorphic processes and landforms.

525. Weathering and Soils. 3 credits. Prerequisites: Geology 311 and 411 or consent of instructor. Properties and classification of soils; the factors and processes of weathering and soil formation.

530. Advanced Physical Hydrogeology. 3 credits. Prerequisites: Geo/GeoE 417, Geol 427, Math 265, 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 166, or permission of instructor. The origin, characteristics and modeling of surface and ground water geochemistry.

532. Contaminant Hydrogeology. 3 credits. Prerequisites: Geo/GeoE 417, Geol 427, Math 265, or consent of instructor. Chemical and physical processes affecting contaminant behavior in groundwater with analytical/numerical modeling and case studies.

590. Research. 1 to 4 credits. Laboratory, field, or library research on problems of interest (may be repeated).

591. Directed Studies. 1 to 4 credits. Directed advanced research in a specialized field of geologic study (may be repeated).


311. Geomorphology. 4 credits.

320. Petrology. 3 credits.

321. Geochemistry. 3 credits.

322. Engineering Geology. 3 credits.

401. Geological Interpretation of Aerial Photographs. 3 credits.

405. Industrial Minerals. 3 credits.

406. Ore Deposits. 3 credits.

407. Petroleum Geology. 3 credits.

411. Sedimentology and Stratigraphy. 5 credits.

414. Geophysics. 3 credits.

415. Invertebrate Paleontology. 4 credits.

417. Hydrogeology. 3 credits.

418. Hydrogeological Methods. 2 credits.

419. Groundwater Monitoring and Remediation. 3 credits.

422. Seminar. 1 credit.

425. Design Hydrology for Wetlands. 3 credits.

427. Groundwater Modeling. 3 credits.

History

Professors Berger, Clingan, Ellis, Ettling, Handy-Marchello, Iseminger, Mochoruk, Porter

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 174 and 175 for further information. The program advisor for the M.Ed. will be in the Department of History, but students planning to take this option should also consult an advisor in the College of Education and Human Development.

Some Teaching Assistantships, providing stipends and waivers of tuition, are available. Applications for assistantships should be submitted by March 1, but later applications will be considered.

Master of Arts

Admission Requirements

1. Undergraduate preparation of a minimum of 20 semester credits in history with at least 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 21 in either United States or European history and 9 credits in: a) a field of history not included in the primary concentration, such as United States or European History or Latin American History, or b) a minor in a related discipline such as Communications, English, Geography, or Sociology, or c) a cognate as defined on page 181 of this catalog.

2. Research seminars, either 511 or 515.

3. At least one readings course, either 593 or 594.

4. History 502, Historiography, counted as 3 credits in the major concentration.

5. Six credits of thesis.

Doctor of Arts

This degree is designed to prepare those whose primary interest is teaching history at the undergraduate collegiate level. It places heavy emphasis upon subject matter and a supervised teaching internship. The internship requires teaching a survey course for one semester during the second year of the program and a second course for one semester at the 200 or 300 level during the third year. The department offers five fields of study: Ancient World, Early Modern Europe, Modern Europe, United States to 1877, and United States since 1877.

The Doctor of Arts program has been designated a Western Regional Graduate Program by the Western Interstate Commission on Higher Education (WICHE) because of its uniqueness and strength. It is, therefore, open to residents of the thirteen western states at resident tuition rates.

Admission Requirements

1. All M.A. admission requirements.

2. A master’s degree, preferably in history and with thesis, but at least 15 semester credits of history at the graduate level.

3. A GPA of at least 3.50 for the master’s level work.

4. General and advanced (history) tests of the Graduate Record Examination are optional, but strongly suggested for those whose previous academic record makes their admission questionable or those who have been out of school for several years. High GRE scores may indicate sufficient promise to permit admission of applicants with inadequate grade point averages or insufficient courses. The department may require the GRE as a condition of admission if preliminary examination of the student’s application indicates that the score would be helpful in determining ability to do graduate level work.

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. Applicants lacking teaching experience, but having comparable experience, may be considered.

Degree Requirements

1. History 502, 511 or 515, 551, 595, and 599.

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.)

7. Before receiving their degrees, all students will have taught both Western Civilization survey courses (History 101 and History 102) and both United States History survey courses (History 103 and History 104) or their equivalents. This requirement may be satisfied by teaching as a Teaching Assistant in the department or by teaching in the internship or, if approved by the department, by having previous teaching experience.
Students in both D.A. and M.A. programs should consider taking the Public History courses, 480 and 481, and some work in records management, or geography, including cartography; or journalism; to increase employment opportunities.

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.

585. Directed Readings. 3 credits. Prerequisites: Graduate Status. Independent, directed readings on a topic tailored to the individual needs of the student. (No more than 3 hours of HIST 585 can count as credit towards a Doctoral Program without the approval of the Chair, the Graduate Director, and the Adviser.)

593. Readings in American History—Colonial/Revolutionary. 1 to 3 credits. Requires examination of the historical literature pertaining to the Colonial and Revolutionary periods of United States History.

593. Readings in American History—Nineteenth Century. 1 to 3 credits. Requires examination of the historical literature pertaining to nineteenth-century United States History.

593. Readings in American History—Recent. 1 to 3 credits. Requires examination of the historical literature pertaining to twentieth-century United States History.

593. Readings in American History—Latin America. 1 to 3 credits. Requires examination of the historical literature pertaining to Latin American History.

594. Readings in European History—Ancient. 1 to 3 credits. Requires examination of the historical literature pertaining to the Ancient World, including Greece, Rome, and the surrounding areas.

594. Readings in European History—Medieval and Early Modern. 1 to 3 credits. Requires examination of the historical literature pertaining to Medieval and Early Modern Europe.

594. Readings in European History—Absolutism and Revolution. 1 to 3 credits. Requires examination of the historical literature pertaining to the Age of Absolutism and the era of the French Revolution.

594. Readings in European History—Modern. 1 to 3 credits. Requires examination of the historical literature pertaining to Modern Europe; the period since 1815 to the present.

595. Research. 1 to 5 credits. For candidates for the Doctor of Arts only. Requires a research project that will be a component of the area of concentration. Repeatable to the required maximum of five credits.

599. Internship in the Teaching of History. 1 to 12 credits. For candidates for the Doctor of Arts only. The internship requires the teaching of two or three courses to demonstrate proficiency in college-level teaching at the undergraduate level. Although the teaching is supervised, the student has full responsibility for the courses. The internship may be conducted on this campus or, with proper arrangement and supervision, on another campus. Eight credits of internship are required, but the course may be repeated to a maximum of twelve credits. S/U grading only.

All 593 and 594 courses involve reading, bibliographical study, discussion, and writing. May be confined to a subtopic within the general subject area. Repeatable with different subtopics. Students in the M.A. program will not ordinarily take more than one 593 or 594 in the primary concentration.

The following undergraduate courses are eligible for inclusion on graduate programs of study. Additional assignments and higher standards of accomplishment are required of students taking these courses for graduate credit. See the Undergraduate Section for course descriptions.

Industrial Technology

Professor Diez (Graduate Director), Holten, Moser (Division Director)

Program Description

The faculty of Industrial Technology offer 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

1. Bachelor’s degree from an accredited university or college.
2. An overall GPA of 2.75 (A=4.0) or GPA of at least 3.0 for the last two years of undergraduate study.
3. A minimum of 20 semester hours of undergraduate course work in technology education or industrial technology or related field of study.

An applicant who fails to meet these admission requirements may be admitted under provisional status. Students who do not meet requirement 3 will be required to satisfactorily complete undergraduate courses to make up their deficiency before advancement to approved status.

Degree Requirements

Master of Science

A. Thesis Option:
A minimum of 30 semester credits including 9 semester credits for approved minor or cognate courses.

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

408. The United States: 1920-1945. 3 credits.
410. History of Mexico. 3 credits.
411. U.S. Foreign Relations, 1776-1900. 3 credits.
412. U.S. Foreign Relations Since 1900. 3 credits.
413. The United States Since 1945. 3 credits.
414. France Since 1815. 3 credits.
415. Germany Since 1815. 3 credits.
416. Russia to 1855. 3 credits.
417. Russia Since 1855. 3 credits.
419. Great Britain Since 1815. 3 credits.
431. History of the Great Plains. 3 credits.
470. United States-Canadian Relations, 1776 to Present. 3 credits.
490. Introduction to Public History. 3 credits.
481. Public History Practice. 3 credits.
D. General:
1. At least half of the credits in the student’s Program of Study must be at or above the 500 level.
2. Degree requirements identified by the Graduate School must be met.
3. The approved Program of Study must be completed.

Courses

525. Research in Industrial Technology. 2 credits. Principles of methods and evaluation of research in industrial technology. Individual exploration of possible research topics for thesis.

535. Trends and Issues in Industrial Technology. 3 credits. A comprehensive investigation and analysis of the trends, issues, and influences that challenge the profession of industrial technology in a changing technology-dominated society.

537. Graduate Cooperative Education. 1 to 3 credits. A relevant field experience in government, industry, or business. Students must have their internships approved by the department.

540. Supervision and Industrial Training. 3 credits. Study and investigation of principles and techniques involved in supervision and technical training for industry and education. The application of supervisory techniques with emphasis on the analysis of industrial operations and the design, implementation, and evaluation of training programs through total quality management.

545. Seminar in Industrial Technology. 1 to 3 credits. Investigation and presentation of topical courses related to industry, technology, education, and industrial training. Repeatable to three credits.

550. Industrial Technology Management. 3 credits. Expectations of managerial responsibilities of the typical industrial technology career. Strategic and systems approaches to product and process technologies. The role of changing technology in manufacturing function.

560. Quality Planning and Analysis. 3 credits. Advances in quality planning and design, measurement, quality assurance, process control, supplier quality, and improvement concepts in business and industry. Administrative, functional, and logistics aspects of statistical quality control with computer applications.


590. Special Topics. 1 to 4 credits. Investigation of special topics dictated by individual student and faculty interests related to industrial technology and/or education. This course may be repeated to a total of 4 credits.

593. Technical Problems in Industrial Technology. 1 to 3 credits. Research and experimentation relating to contemporary problems, issues, and/or applications of either electronic and control systems, advanced graphic communication, or materials and manufacturing techniques. An individual and/or group may conduct an investigation on a problem. One credit per problem. Course may be repeated for a total of three credits.

341. Digital Integrated Circuits. 3 credits.
363. Manufacturing Automation. 3 credits.
401. Electronic Communication Systems. 3 credits.
403. Product Research and Development. 3 credits.
404. Materials Testing. 3 credits.
412. Design/Drafting. 3 credits.
423. Computer-Integrated Manufacturing. 3 credits.
441. Computer Aided Circuit Analysis & Design. 3 credits.
442. Desktop Publishing. 3 credits.

Instructional Design and Technology (IDT)

Don Lemon (Graduate Director)

Program Description

The Instructional Design and Technology (IDT) program is a collaboration between the College of Education and Human Development, the College of Arts and Sciences, and the John D. Odegard School of Aerospace Sciences. The designers believe the program benefits from the expertise of a diverse faculty, the various resources of the different organizational units, and a collaborative decision-making structure among the three units. The IDT program is administered through the College of Education and Human Development (CEHD) and follows the IDT, CEHD, UND, UND Graduate School, and NDUS rules and policies.

Program Mission

To prepare program graduates for service in education, business, government, and industry who will enhance instruction and learning through the use of technology. These graduates will be able to design, develop, implement, and evaluate technology-based instruction that is effective and that reflects sound principles of teaching and learning.

Minimum Admission Requirements

The Instructional Design and Technology program follows the regular Graduate School requirement of an overall undergraduate grade point average of 2.75 or a junior/senior year grade point average of 3.00. The grade point average requirement for graduate work is a 3.5 or better. Provisional admission to the IDT program may be considered for students who academic performance does not meet these criteria. Whether such consideration is given will depend on the circumstances and the judgment of the admissions group.

The applicant must have completed a baccalaureate degree in a field of study in the area or discipline appropriate to the field in which he or she intends to work. The applicant must have a basic knowledge of the microcomputer and substantial skill in using standard applications to produce work products (wordprocessing, database, spreadsheet, drawing/painting, graphing, and other common applications).

Degree Requirements

The IDT master’s degree programs offer three options: the M.Ed., the M.S. (independent study option), and the M.S. (thesis option). The programs are all targeted at 35 credits. These 35 credits consist of 11 hours of core course work in instructional design and technology, 3 to 6 hours of foundations course work in education and psychology, 3 hours of course work in the area of curriculum, 3 hours of course work in the research option, 6 to 9 hours of course work in some area of specialization, 2 to 4 hours of internship/practicum, and 2 hours of independent study credit. The M.S. (thesis option) adds 4 credits for the thesis and deletes the 2 credit practicum.

The IDT degree options are based on the same set of program components:

- Program core component: New courses presenting IDT content.
- Research component: Development of research skills.
- Curriculum component: Planning for and evaluating instruction.
- Foundations component: Fundamental background in psychology and philosophy of education.
- Clinical component: Opportunities for application.
- Cognate component: Opportunity for area or skill specialization.

The IDT course requirements are organized within a major, foundation area, and cognate. The major consists of the IDT core, the Curriculum requirement, and the Research requirement. Students in both the M.Ed. and M.S. options will be required to complete 11 hours of course work in IDT subject matter. This requirement includes:

Credits

- IDT 510: Technology-Based Instruction: Applications and Methods 3
- IDT 520: Instructional Systems Design & Development 3
- IDT 530: Introduction to Computer-Based Instruction 3
- IDT 590: Special Topics 2
Master of Education

The Master of Education (M.Ed.) degree is primarily intended for students who plan to work in an education environment, either the K-12 schools or higher education. Individuals pursuing this degree will work primarily with instructors in assisting them to appropriately, effectively, and successfully integrate technology into their instruction. They are also likely to do some direct work with students in teaching skills associated with the use of technology. Students pursuing this degree will learn the theoretical issues associated with technologically supported instruction but their emphasis will be in the application of this knowledge in terms of best practice. An independent study project (research) is required and is considered a capstone experience. The independent study may address a practical problem or address a theoretical construct in the same way that a thesis does.

Master of Science

The Master of Science (M.S.) degree is primarily intended for students who plan to work in business, government, and industry developing and delivering technologically supported curriculum. Students from backgrounds other than education (e.g., Nursing, Engineering, Aerospace) may prefer this option. This degree is available in two tracks. The M.S. (thesis option) is intended for those students who want to develop and utilize research skills in their work context. The M.S. (independent study option) is intended for those students who prefer to emphasize the development and evaluation of application and practice. Required course work within the two options is consistent with this distinction between an emphasis on research or practice.

Cognate/Minor

The IDT program welcomes graduate students who want to learn more about the integration of technology with instruction. To complete a cognate or minor in IDT, students must take IDT 510, IDT 520, and IDT 530 — a total of 9 semester hours.

Courses

510. Technology-Based Instruction: Applications and Methods. 3 credits. A study of the various methods for using technology to deliver and/or support instruction: tutorials, drills, simulation, interactive video, instructional games, intelligent CBI, performance support systems, job aids, testing, distance learning, intelligent tutoring systems, and instructional management systems.

520. Instructional Systems Design and Development. 3 credits. A study of methodologies for designing, developing, and evaluating technology-based instruction. Topics include needs analysis, job/task analysis, assessment of instructional outcomes, design of instructional units, development/production models, formative evaluation, and summative evaluation.

530. Introduction to Computer-Based Instruction. 3 credits. An examination of the technology (hardware and software) for developing and delivering computer-based instruction (CBI). A study of the characteristics of high-quality CBI, addressing such topics as program structure, user interface, navigation, message/screen design, use of graphics, response analysis, feedback strategies, error checking, branching, and computer-managed instruction.

584. Internship in Instructional Design and Technology. 2 to 4 credits. The internship is a culminating experience in which the student assumes responsibility for an instructional design and technology project.

590. Special Topics in Instructional Design and Technology. 1 to 3 credits. An in-depth study of a selected topic in instructional design and technology. Topics will vary with faculty expertise and current issues. Some topics would include simulations, instructional applications of the world wide web, performance support systems, adaptive testing, intelligent tutoring systems, and hypermedia applications.

591. Readings in Instructional Design and Technology. 1 to 3 credits. Selected readings with oral and written reports.

592. Research in Instructional Design and Technology. 1 to 3 credits. Supervised research in areas of student interest.

593. Directed Studies in Instructional Design and Technology. 1 to 3 credits. Individual project work in the design and development of technology-based instruction. All projects will require a final report.

997. Independent Study. 2 credits. The independent study requires the student to investigate a topic related to the major field of study and to prepare a formal report summarizing this investigation.

998. Thesis. 4 to 9 credits. The thesis is an original research project completed under the supervision of a thesis committee.

Kinesiology

Professors Brinkert (Chair), Steen, Von Duvillard, Whitehead

Program Description

The Department of Physical Education and Exercise Science offers programs of study leading to the Master of Science (thesis or non-thesis option) with a major in kinesiology. The program provides students with opportunities to study the scientific foundations of kinesiology as well as several of its professional applications.

Current areas of concentration include:

- Exercise Physiology
- Fitness/Wellness
- Sports/Exercise Psychology

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.

510. 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.

511. 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.

512. Theory and Practice in Sports Administration. 2 credits. Problems, policies and facilities in athletic departments with emphasis at the secondary level. Public relations problems met and problems of interrelationships with the general curriculum.
513. Supervision of Physical Education. 3 credits. Prerequisites: HPER 521 or consent of the instructor. The study of the knowledge and skills necessary to supervise teaching and coaching in sport and fitness education.

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.

520. Curriculum Development for Physical Education. 3 credits. A study of processes for planning, implementing, and evaluating curriculum in physical education.

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. Theory and practice of modified physical education activities adapted to needs, capacities and abilities of the atypical child.

525. Motor Development. 3 credits. Prerequisites: HPER 276 or HPER 355, or consent of 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 Biometrics. 4 credits. Prerequisite: HPER 332 or consent of the instructor. The application of principles of mechanics to the study of the 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).

Special Summer Faculty: Alexander, Bickford (Graduate Director), C. Black, H. Black, Clifton, Dooley, Everett, Frantz, Karan (Chair), Levinsohn, Lowe, Marlett, 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 181).

   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. Prerequisite: 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. Directed Studies in Linguistics. 1 to 4 credits. Supervised individual study.

594. Research in Linguistics. 1 to 6 credits.

450. Articulatory Phonetics. 2 credits.

451. Phonology I. 3 credits.
Mathematics

Professors Collings, Dearden (Chair), Dunnigan, Gilsdorf, Gregory, Harris, Liams, Khavanin, Metzger, Millsapugh, Peterson, 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 24 (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 each. Prerequisite: Math 432. Lebesque measure and integration, abstract measure and integration theory, product integral, the Lp classes, Hilbert and Banach spaces.
515, 516. Applied Mathematics. 3 credits each. Prerequisite: Math 266 or consent of instructor. The content of the course varies but includes 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 each. Prerequisite: Math 441 and 442. Group theory, rings and fields, vector spaces, Galois theory and finite fields.
520, 521. Topology I, II. 3 credits each. Prerequisite: Math 431. Point set topology, including metric spaces and such topics as homeomorphisms, separation axioms, compactness, connectedness, general convergence, compactifications and metrizability.
541. Linear Statistical Models. 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, Cochran’s theorem, projection operators and conditional inverses in generalized least squares, applications to ANOVA and experimental design models.
542. Multivariate Statistical Analysis. 3 credits. Prerequisite: Math 422 or consent of instructor. Random vectors and matrices, multivariate normal distribution, inferences about a mean vector, comparisons of several multivariate means, multivariate linear regression models, principal components, factor analysis.
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. Topics in Statistics. 1 to 3 credits.
421, 422. Statistical Theory. 6 credits.
431, 432. Advanced Calculus. 6 credits.
435. Theory of Numbers. 3 credits.
441. Abstract Algebra. 3 credits.
442. Linear Algebra. 3 credits.
450. Elements of Topology. 3 credits.
460. Mathematical Modeling. 3 credits.
461, 462. Numerical Analysis. 6 credits.
465. Operations Research. 3 credits.
471. Introduction to Complex Variables. 3 credits.
494, 495. Reading Course in Mathematics. Credit not to exceed 1 hour a semester and total credit not to exceed 3 hours.

Mechanical Engineering

Professors Ames, Bandyopadhyay, Bibel, Grewal, Moen (Graduate Director), Ness, Zhu

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

514. Processing of Advanced Materials. 3 credits. Prerequisite: ME 311. Structural ceramics, metal matrix composites, superalloys are considered as advanced materials because of their high specific strength. Modulus and high temperature resistance. However, machining of these materials presents a big challenge to
manufacturing engineers. The course will discuss in detail the latest achievement for cost effective machining of these materials.

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, gyrodynamics, stresses in thick cylinders and flywheels, lubrication, statistical considerations, energy methods, curved beams.

526. Advanced Vibrations. 3 credits. Prerequisites: Mechanical Engineering 426. Advanced vibration theory including the solutions of multi-degree of freedom coupled systems, continuous systems, energy methods, non-linear vibrations.

529. Advanced Finite Element Methods. 3 credits. Prerequisites: ME 429 or consent of instructor. Computer-aided techniques for finite element analysis of engineering systems. Topics include solution algorithm for nonlinear methods, large deflection, inelastic and contact analysis, and analysis of vibrating systems.


574. Advanced Heat Transfer. 3 credits. Prerequisite: Mechanical Engineering 474, or consent of instructor. Advanced conduction in isotropic media in two and three dimensions steady and unsteady problems. Advanced convection including solution of Prandtl Boundary layer equations. Numerical methods, Fourier series, Bessel functions, Laplace transforms, and error functions. Radiative heat transfer.

590. Special Topics. 1 to 6 credits. Prerequisite: Departmental approval. Investigation of special topics dictated by student and faculty interests. May be repeated up to a total of 6 credits.

591. Research in Mechanical Engineering. 1 to 6 credits.

595. Design Project. 3 to 6 credits. Prerequisite: Restricted to Master of Engineering students and subject to approval by the student’s advisor. A three to six credit course of engineering design experience involving individual effort and formal written report. S/U grading only.

416. Advanced Manufacturing Processes. 3 credits.

423. Computer Aided Design. 3 credits.

426. Mechanical Vibrations. 3 credits.

429. Intro to Finite Element Analysis. 3 credits.

445. Energy Technology. 3 credits.

446. Gas Turbines. 3 credits.

490. Special Laboratory Problems. 1 to 3 credits.

Core requirements for M.S. and Ph.D. degrees include courses in biochemistry, microbiology, molecular biology, immunology, statistics and graduate seminars. For both the M.S. and Ph.D. degrees students are expected to carry out original research suitable for publication in a professional journal.

Master’s degree candidates are required to write a thesis and defend their research in a final oral examination. Doctoral candidates are required to successfully complete both a written and oral comprehensive examination as well as to write a dissertation and defend their research in a final oral examination.

Research Facilities

A new, modern science building and an adjacent 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 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 Test.

4. A course in Microbiology and a background in chemistry, preferably through organic chemistry, are recommended.

Student Group

The department enrolls 10-12 graduate students in its program. This departmental enrollment ensures a close association between a faculty advisor and student for personal guidance and research training yet provides an adequate number of students for individual and group interaction. Students have the opportunity to present and participate in journal clubs, general seminars, and research seminars. All graduate students are expected to participate in teaching during their tenure in the Department.

Degree Requirements

Master of Science

See Graduate School Requirements for the M.S. on page 173.

Doctor of Philosophy

See Graduate School Requirements for the Ph.D. on page 179. Qualified applicants with a M.S. degree may apply directly to the Ph.D. program. A student enrolled currently in the M.S. program may bypass the M.S. degree and continue directly into the Ph.D. program. Requirements for these options include:

— Admission into the graduate program with approved status.

— An overall GPA of no less than 3.50 for all graduate work.

Microbiology and Immunology

Professors Bradley, Flower (Graduate Director), Hill, Melvold (Chair), Nilles, Young

Program Description

The Department of Microbiology and Immunology offers graduate programs leading to the M.S., Ph.D., and Ph.D./M.D. degrees. Graduate study is available in a number of disciplines including cell biology, pathogenic microbiology, genetics, immunology, immunogenetics, autoimmunity, microbial physiology, molecular biology, and virology. The goals of the program are to 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.
Courses

Courses marked with an asterisk (*) are offered in alternate years only.

BIMD 500. Cellular and Molecular Foundations of Biomedical Science. 7 credits. Prerequisite: A) one year of organic chemistry or B) one semester of organic chemistry and one course in either biochemistry or cell biology or C) permission of course director. The focus of this interdepartmental team-taught course will be in areas that are fundamental to all biomedical science graduate programs. Emphasis will be on developing a strong foundation in biochemistry, cell biology, and molecular biology with themes covering proteins, metabolism, information flow, vectors, membranes, cell signaling, cell shape and movement, cell growth and division, and immunology.

BIMD 510. Basic Biomedical Statistics. 2 credits. Prerequisites: BIMD 500 or permission of course director. A series of lectures and demonstrations to provide students with the basic rationale for the use of statistics in the assessment of biomedical data and a selected set of the most common and useful statistical tests.

BIMD 512. Seminars in Biomedical Sciences. 1 credit. Corequisite: BIMD 500 or permission of course director. Students will attend a weekly school-wide seminar series. Students will further explore aspects of scientific literature and fundamentals of scientific writing, and have opportunities to interact with intramural seminar speakers.

BIMD 513. Seminars in Biomedical Sciences. 1 credit. Prerequisites: BIMD 512 or permission of course director. A series of presentations on original research conducted by UND faculty members as well as extramural leaders in the fields of academic and industrial research in the biomedical sciences. Students will participate through assigned reading and writing exercises related to the presentation.

*B501. 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.

*B504. Microbial Physiology. 2 credits. Prerequisites: A basic course in microbiology and organic or biochemistry or consent of instructor. The course will investigate the physiology of the bacterial cell as it pertains to the processes carried out by the cell. Topics will include basic cell structure, motility, chemotaxis, uptake of nutrients, metabolism, gene regulation, evolution, cell division, differentiation, and pathogenesis. The integration of various cellular functions to sustain the living cell will be emphasized. The course will be based largely on current literature and will involve class discussions of assigned topics. In addition to gaining an understanding of the bacterial cell, students will learn to read primary literature critically and the principles involved in writing a scientific paper.

*B506. 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.

*B507. Microbiology 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.

S507. Seminar in Microbiology. 1 credit. S/U grading only.

*B508. Microbial Pathogenesis. 2 credits. Prerequisite: BIMD 500 or equivalent. A detailed study of pathogenic microorganisms and the mechanisms by which they cause tissue and cell injury.

*B509. Immunology. 2 credits. Prerequisite: BIMD 500 or equivalent. An introduction to the fundamentals of immunology including immunohemistry, humoral and cellular response, hypersensitivity, immunodeficiency, immunogenetics, tolerance and immunodiagnosis.

*B511. Microbiology & Immunology Literature. 1 credit. Prerequisite: Microbiology 302 or equivalent. A series of reports of current scientific literature in Microbiology and Immunology. S/U grading only.

*B512. Microbial Genetics. 2 credits. Prerequisites: Basic courses in genetics and microbiology or biochemistry and/or consent of instructor. Genetic mechanisms in microorganisms, mutation, fine structure of genetic material, genetic engineering. Selected Readings.

S513. 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, photomicrography, strain construction, genetic engineering, gel electrophoresis, enzyme immunosay, and western blot techniques are presented. S/U grading only.

*B514. Radiisotope 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.

*B515. Advanced Topics. 2 credits. Prerequisite: Previous basic course in the area to be covered. A series of topics in microbiology and immunology presented on an episodic basis. The topics may vary, but are expected to include: (A) Immunology, (B) Infectious Diseases, and (C) Molecular Biology.

*B516. Virology Laboratory. 3 credits. Prerequisite: Microbiology 508 or consent of instructor. Basic techniques in virology and tissue culture.

*B517. 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.

*B518. Molecular Genetics Laboratory. 2 credits. Prerequisites: Basic courses in microbiology and genetics or consent of instructor. Fundamental techniques in gene manipulation, cloning and engineering.

519. Research in Microbiology. 2 to 6 credits. Hours arranged. Advanced problems in microbiology and related fields.

591. Special Problems in Microbiology. 1 to 6 credits. Short term research projects performed under the supervision of a department faculty member. Intended to provide interested capable students with a challenge and an opportunity to conduct scientific research in microbiology. Arranged by consultation with participating faculty members.

NOTE: MBio 502 and 506 are undergoing revision. Require consent of instructor.

Music

Professors Brock, Fry (Chair), Lewis, Norman, Rodde, Towne, Tucker, Wittgraf

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 audition. This interview 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 Sightsinging Test
4. A Diction Test in German, French, and Italian (for Vocal Performance students only)

Achievement of a minimal score on the advisory examinations or completion of Review History (MUS 505) and Theory (MUS 501) is required prior to registration in Music 502 and 508.

**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**

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
Electives in Music Education 2 credits

**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 521 or 524 Instrumental or Choral Literature 3 credits
MUS 561 or 562 Advanced Choral or Instrumental Conducting 2 credits

**Electives (3 credits)**

MUS 594 and/or MUS 595 Individual Lessons 2 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 (11 credits)**

MUS 523 or 525 Keyboard or Vocal Literature 3 credits
MUS 551 or 552 Vocal or Keyboard Pedagogy I 3 credits

**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 997 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

**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

**Core Courses (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 524 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

**Other Studies**

MUS 594 Individual Lessons (Voice) 2 credits
MUS 580 Graduate Ensemble Performance 2 credits
MUS 551 Vocal Pedagogy I 3 credits

**Instrumental 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 580 Graduate Ensemble Performance 2 credits

**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 a 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 8 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 Proposal of Independent Study, available with instructions from the Graduate School, then submitting the proposal to the Advisory Committee for approval. The proposal, which should be approved no later than the beginning of the semester or session in which the student expects to graduate, must be filed in the Graduate School before 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 the approximate 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 performance 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 as 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 Committee, it is submitted to the Graduate School for the approval of the dean. 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 a Proposal for Independent Study on a form available from the Graduate School. This proposal, when approved by the Faculty Advisory Committee and deposited in the Graduate School, indicates acceptance of a topic for study and incorporation into an independent study. The proposal 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 on 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 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 developing the application of music history and music historical research approaches for music professionals. Topics may include historically-informed musical analysis, historical evolution of musical forms, music criticism, music editing, musical sources, historical performance practice, and 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.

525. Vocal Literature. 3 credits. The study of solo vocal literature through scores and recordings.

551. 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.

553. 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. Regular grading.

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 in 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 Public School 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, conduct-
Nursing

Professors Burd, Clayburgh, Gilje, Gragert, Gross, Heuer, Ide, Labun, Langemo, Lindseth, Melland, Milburn, Nichols, Yurkovich

Program Description

The College of Nursing offers a graduate program leading to a Master of Science (M.S.) degree with a major in nursing. Six areas of specialization are offered:
1. Adult Health Nursing
2. Anesthesia Nursing
3. Family Nurse Practitioner
4. Rural Health Nursing
5. Parent-Child Nursing
6. Health Administration in Nursing

The program is targeted to prepare advanced practice nurses in areas of clinical specialization, or as nurse practitioners, nurse educators or nurse administrators; and to expand the scientific knowledge for nursing practice through research. The entire program is accredited by the National League for Nursing Accrediting Council (NLNAC), and has preliminary approval of the Commission on Collegiate Nursing Education (CCNE). The course of study for Anesthesia Nursing is accredited by the Council on Accreditation (COA) for Nurse Anesthesia Education Programs.

Admission Requirements

1. A Bachelor’s degree in nursing from an NLNAC or CCNE accredited program. (Foreign schools will be evaluated on an individual basis.)
2. A minimum GPA of 3.00 for the last two years of baccalaureate study.
3. An undergraduate or graduate course in statistics.
4. Current R.N. licensure. (Photocopy must be attached to application.)
5. A minimum of one year of experience as a registered nurse.
6. Additional requirements for Anesthesia Nursing are: an under-

graduate course in biochemistry (Biochemistry 301 or equivalent), one year of critical care nursing experience, and a successful interview.
7. An additional requirement for the Family Nurse Practitioner specialization is completion of a successful interview.
8. Meet current health and immunization requirements of the College of Nursing before being permitted to enroll in a clinical nursing course.

Applications will be considered as they are completed except Anesthesia Nursing must be received by December 15, and FNP must be received by January 15. Students anticipating full-time study should plan to start their course of study in the fall. Post-master’s students seeking admission to the FNP or anesthesia nursing specializations are encouraged to consult the respective program coordinator to identify a plan for course work that meets the requirements for admission to the certification exams.

Degree Requirements

Thesis or the non-thesis options are available for all specializations. The thesis option requires completion of 4 credits of 598. The non-thesis option also requires completion of 4 project-related credits, including 997 (2 credits) and 2 credits of 590, 591, nursing electives, and/or electives in a related field. There is no residence requirement.

Adult Health requires completion of 500; 510; 511; 515; 556; 525; 530; 516; either 555, 560, or 565; 5 cognate elective credits, and the 4 thesis or independent study-related credits.

Anesthesia Nursing requires completion of 500; 510; 511; 505; 506; 507; 530; 525; 517; 527; 597; and the 4 thesis or independent study-related credits. Students complete 32 credits of 597 (Advanced Clinical Practicum) to comply with accreditation standards for supervised practice hours in anesthesia nursing.

Family Nurse Practitioner requires completion of 500; 510; 511; 586; 556; 525; 530; 532; 523; 534; 535; 555; 536; 539; 597; and the 4 thesis or independent study-related credits. Students complete 14 credits of 597 (Advanced Clinical Practicum) to comply with National Organization of Nurse Practitioner Faculty (NONPF) guidelines for supervised practice hours.

Rural Health Nursing requires completion of 500; 580; 556; 525; 530; 557; 581; 558; 5 credits of cognate electives; either 555, 560, or 565; and the 4 thesis or independent study-related credits.

Parent-Child Nursing requires 500; 532; 533; 514; 525; 530; 518; 577; either 555, 560, or 565; 5 credits of cognate electives; and the 4 thesis or independent study-related credits.

Health Administration in Nursing requires completion of 500; 530; 562; PSCI 552; Law 291 (PSCI 593); PSCI 531; Econ 575; 8 credits of cognate electives; and the 4 thesis or independent study-related credits.

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.

505. Advanced Pharmacology I, 3 credits. Pharmacodynamic and pharmacokinetic principles with a focus on clinical anesthesia practice. Physiologic systems and drug classifications are used; emphasis on therapeutic use, side effects, drug interactions, and contraindications of drugs used for intravenous anesthesia induction, inhalation, and balanced anesthesia maintenance. Pediatric and geriatric variations will be addressed.


507. Anesthesia Seminar & Clinical Practicum, 4 credits. Corequisites: NURS 500 Theories/Concepts; NURS 530 Research; NURS 510 Pathophysiology. A study of basic principles of anesthesia, physical and chemical concepts related to anesthesia,
and an introduction to pathophysiological concepts applied to nursing problems in the surgery/anesthesia setting. Pathophysiological/developmental concepts, theory, and research findings are utilized as appropriate in the classroom and applied in clinical through the process of diagnostic reasoning. Analysis, integration, and utilization of research findings to improve practice are emphasized. Includes eight hours of clinical laboratory and clinical simulation experience weekly.

510. Advanced Physiology/Pathophysiology I. 3 credits. Prerequisite: Admission to Graduate Study. Normal physiologic functions associated with cellular structure and environment. Physiologic and pathophysiologic functions of the human body and its organ systems. Both separately and integrated in whole body activities.

511. Advanced Physiology/Pathophysiology II. 3 credits. Prerequisites: NURS 510 or consent of instructor. Continuation of NURS 510. Physiologic and pathophysiologic functions of the human body and its organ systems, both separately and integrated in whole body activities.

514. Parent-Child Specialization: Practicum and Seminar I. 3 credits. Prereq- or corequisites: Nursing 533. The course focuses on 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.

515. Advanced Adult Health Clinical Practicum and Seminar. 3 credits. Advanced pathophysiological concepts applied to nursing problems in acute/critical care or long-term care setting. Includes six hours of clinical experience weekly.

516. Anesthesia Seminar & Clinical Practice II. 4 credits. Prerequisite: NURS 516. Pre- or corequisite: NURS 515 and PHYS 512. Advanced adult health nursing concepts applied to nursing problems in acute/critical care of long-term settings. Includes six hours of clinical experience weekly.

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. Paradigms 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 trends in the delivery of health care 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.

527. Anesthesia Seminar & Clinical Practice III. 4 credits. Prerequisites: NURS 517. The course includes a detailed investigation and analysis of anesthesia management of patients with complex co-exisitng diseases. Exploration and determination of various anesthesia care modalities to maximize patient care are presented. Economic, ethical, and legal dilemmas facing nursing and nurse anesthetists are explored. The course provides students the opportunity to examine, promote, or defend various economic, ethical, and legal aspects of advanced nursing practice. Includes a clinical practicum component.

532. Family Nursing: Theory, Research and Practice. 3 credits. Theoretical and scientific foundations for advanced practice nursing care for the family-as-unit in health and illness across the lifespan.

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 perspectives of nursing and other health care professions. Emphasis is on use of standardized instrumentation for assessment and theory-based interventions.

534. Specialization in Family Nurse Practitioner I: Management of Health Conditions in Primiparous Women. 3 credits. Prerequisite: NURS 523. Clinical decision making skills are developed in the diagnosis and management of acute and chronic health conditions throughout the lifespan. Health promotion, health protection, disease prevention, health maintenance, and restoration are emphasized.

535. Drug Therapy I for Advanced Nursing Practice: Common Health Conditions. 2 credits. Prerequisites: Nurs 510 and Nurs 556, or consent of instructor. Pharmacological agents utilized to treat common acute and chronic health problems are explored in depth. The focus course is on advanced nurse practice roles related to prescription, pharmacological and therapeutic applications of the drugs.

536. Specialization in Neonatal Nurse Practitioner I: Management of Health Conditions in Primary Care. 4 credits. Prerequisites: Nurs 534 and Nurs 555. The focus of this course is on the development of clinical competency in the management of common acute and chronic conditions in all age groups. Concepts from the basic and second year clinical experience are applied in developing intervention strategies. The role of the FNP as case manager is emphasized.

537. Graduate Cooperative Education. Credits 1-3. The course is focused upon experience in advanced nursing practice integrating theory, research, and advanced practice in a specific area of nursing. The objectives of this course are to provide the graduate nursing student with a research practical experience as an employee in a health care agency and to evaluate that experience in relation to their educational program.

539. Drug Therapy II for Advanced Nursing Practice: Common Health Conditions. 2 credits. Prerequisites: Nurs 535 or consent of instructor. Pharmacological agents utilized to treat common acute and chronic health problems are explored in depth. The focus course is on advanced nurse practice roles related to prescription, pharmacological and therapeutic applications of the drugs.

555. Role Dimensions of Advanced Nursing Practice: Seminar and Practicum. 3 credits. Prereq- or corequisites: Nursing 534, 577, or 580, or consent of instructor. The role dimensions of advanced nursing practice are explored in the minor dimension. Theory based content enhances the graduate student’s knowledge for directing care, providing leadership, and developing advanced nursing practice roles. A clinical/practicum component is included.


577. Seminar in Advanced Nursing Practice. 3 credits. Prereq- or corequisites: Nursing 577 or 580, or consent of instructor. The focus of this course is on the development and management of nursing resources in rural communities.

580. Rural Nursing Practicum II. 3 credits. Prerequisite: Consent of instructor. The course will focus on advanced practice roles related to the administration of health care delivery organization or subdivision within the organization.

581. Rural Nursing Practicum III. 1 to 3 credits. Prerequisite: Consent of instructor. The course will focus on advanced practice roles related to the administration of health care delivery organization or subdivision within the organization.

582. Seminar in Advanced Nursing Practice. 3 credits. Prereq- or corequisites: Nursing 577 or 580, or consent of instructor. The focus of this course is on the development and management of nursing resources in rural communities.
Pharmacology and Toxicology

Professors Blake, Borg, Epstein (Acting Chair), Drewett, Ho, Clarens

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. 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 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.
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 BIMD 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—Nobility 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.

Courses

BIMD 500. Cellular and Molecular Foundations of Biomedical Science. 7 credits. Prerequisite: A) one year of organic chemistry or B) one semester of organic chemistry and one course in biochemistry or cell biology or C) permission of course director. The focus of this interdepartmental team-taught course will be in areas that are fundamental to all biomedical science graduate programs. Emphasis will be on developing a solid grounding in biochemistry, cell biology and molecular biology with themes covering proteins, metabolism, information flow, vectors, membranes, cell signaling, cell shape and movement, cell growth and division, and immunology.

BIMD 510. Basic Biomedical Statistics. 2 credits. Prerequisites: BIMD 500 or permission of course director. A series of lectures and demonstrations to provide students with the basic rationale for the use of statistics in the assessment of biomedical data and a selected set of the most common and useful statistical tests.

BIMD 512. Seminars in Biomedical Sciences. 1 credit. Corequisite: BIMD 500 or permission of course director. Students will attend a weekly school-wide seminar series. Students will further explore aspects of scientific literature and fundamentals of scientific writing, and have opportunities to interact with intramural seminar speakers.

BIMD 513. Seminars in Biomedical Sciences. 1 credit. Prerequisites: BIMD 512 or permission of course director. A series of presentations on original research conducted by UND faculty members as well as extramural leaders in the fields of academic and industrial research in the biomedical sciences. Students will participate through assigned reading and writing exercises related to the presentation.

BIMD 501. Medical Pharmacology/General Principles and Toxicology. 1 credit. Prerequisite: Biochemistry and Molecular Biology 301 or equivalent. Introductory presentation of the general principles of pharmacology and toxicology, including pharmacodynamics, pharmacokinetics, pharmacogenetics, drug-drug interactions, and drug and chemical toxicity. Fall Semester.

BIMD 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.

BIMD 503. Medical Pharmacology/Chemotherapy of Infectious and Neoplastic Diseases. 1 credit. Pre- or corequisites: PhTx 501 and 502 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.

BIMD 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.

BIMD 505. Medical Pharmacology/Endocrine and Gastrointestinal System. 1 credit. Prerequisites: 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.

BIMD 506. Medical Pharmacology/Respiratory and Renal System. 1 credit. Pre- requires: 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.

BIMD 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.

BIMD 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.

BIMD 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.

BIMD 590. Readings in Pharmacology and Toxicology. 1 to 4 credits. A supervised readings course on topics of mutual interest to the student and a faculty member. Repeatable to eight credits. Consent of instructor required.

BIMD 539. 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.

BIMD 595. 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.

BIMD 996. Continuing Enrollment. Consent of instructor required.

Physical Education

(See Kinesiology, pg. 214)

Physical Therapy

Graduate Faculty: Professors Johnson, Mabey, P. Mohr, T. Mohr (Chair); Instructors: Danks, Flom-Meland, Jeno, Romanick, Relling, LaBrecque, Decker

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 (PTIC); 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.
   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 seminars; 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 Name</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>ENGL 110, 120 or 125 &amp; COMM 110</td>
<td>Communication</td>
<td></td>
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<tr>
<td>BIOL 150, 151</td>
<td>Arts and Humanities</td>
<td></td>
</tr>
<tr>
<td>CHEM 121, 122</td>
<td>Introduction to Biology</td>
<td></td>
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<tr>
<td>SOC 110</td>
<td>Intro to Sociology (or approved substitute)</td>
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<tr>
<td>PSY 111</td>
<td>Intro to Psychology</td>
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<tr>
<td>PHYS 161, 162</td>
<td>Intro to College Physics</td>
<td></td>
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<tr>
<td>ANAT 204</td>
<td>Anatomy for Paramedical Personnel</td>
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<tr>
<td>PHY 301</td>
<td>Mechanics of Human Physiology</td>
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<tr>
<td>PSY 250</td>
<td>Development Psychology</td>
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<tr>
<td>PT 101</td>
<td>Orientation to Physical Therapy</td>
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</tbody>
</table>

Electives (required) (3-8)

Professional Program - Physical Therapy

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Name</th>
<th>Credits</th>
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<tbody>
<tr>
<td>PT 309, 310</td>
<td>Medical Sciences I, II</td>
<td></td>
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<tr>
<td>PT 311</td>
<td>Orientation and Ethics</td>
<td></td>
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<tr>
<td>PT 314</td>
<td>Introduction to Patient Care Techniques</td>
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<tr>
<td>PT 318</td>
<td>Techniques I: Theory and Techniques of Massage</td>
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<tr>
<td>PT 319</td>
<td>Techniques II: Theory and Techniques: Thermo-Photo-Hydrotherapy</td>
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<tr>
<td>PT 320</td>
<td>Research I: Research Methods</td>
<td></td>
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<tr>
<td>PT 322</td>
<td>Anatomy for Physical Therapy</td>
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<tr>
<td>PT 326</td>
<td>Introduction to Manual Therapy</td>
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<tr>
<td>PT 370</td>
<td>Abnormal Psychology</td>
<td></td>
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<tr>
<td>PT 412</td>
<td>Muscle Function in Health and Disease</td>
<td></td>
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<tr>
<td>PT 413</td>
<td>Theory and Technique of Therapeutic Exercise I: Mobility-Strength-Endurance</td>
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<tr>
<td>PT 414</td>
<td>Pediatric Physical Therapy</td>
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<tr>
<td>PT 415</td>
<td>Theory and Technique of Therapeutic Exercise II: Muscle Control and Coordination</td>
<td></td>
</tr>
<tr>
<td>PT 417</td>
<td>Theory and Technique of Therapeutic Exercise III: Tests and Measurements—Specialized Exercise</td>
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</tbody>
</table>

*Continued availability subject to curricular revision in School of Medicine and Health Sciences. Consent of department required.
Professional Year 03—Fall Semester (12-16 cr.)

PT 511: Applied Movement Science and Rehabilitation Procedures—3 credits
PT 525: Techniques IV: Clinical Evaluation—3 credits
PT 561: Seminar: Physical Therapy—1 credit
PT 590: Directed Studies—1-12 credits
ELECTIVES: 4-8 credits

Professional Year 03—Spring Semester (16 cr.)

PT 552: Clinic II: Clinical Practice—7-14 credits
PT 590: Directed Studies/Clinical Concepts—1-12 credits
PT 997: Research III—2 credits

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, neurological 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 physical therapy with emphasis on patient-therapist interactions including communication, values, professional issues, and ethical considerations. Laboratory.

314. Introduction to Patient Care Techniques. 2 credits. Prerequisite: Registration in Professional Physical Therapy Curriculum. Theory and practical application of introductory patient care techniques in physical therapy including gait, range of motion, transferring, bandaging, wound care, vital signs, and aseptic and isolation techniques. 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: Research Methods. 1 credits. Prerequisite: Registered in Professional Physical Therapy Curriculum. Lectures and practice in physical therapy documentation, introduction to the proper use of research source material and scientific manuscript preparation.

322. Anatomy for Physical Therapy. 5 credits. Prerequisite: Registered in Professional Physical Therapy Curriculum. Detailed lectures and demonstrations on neuroanatomy 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 and 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. Lectures and lab work in therapeutic exercise to increase and maintain mobility, strength, and endurance in the human body. Laboratory.

414. Pediatric Physical Therapy. 2 credits. Prerequisites: Registered in Professional Physical Therapy Curriculum. This course is designed to present pediatric physical therapy theory and current physical therapy practice procedures to prepare physical therapy students to work with pediatric patients and their families as early intervention service providers. Components of the course include both didactic work and practical application through lecture classes, laboratory exercises, field experiences, and collaborative group assignments. Course materials focus on the characteristics of disabling conditions that influence growth and development, with a specific emphasis on motor skills acquisition and therapeutic intervention. Content material will be presented with an emphasis on collaborative service provision within an interdisciplinary approach.

415. Theory and Technique of Therapeutic Exercise II: Control and Coordination. 3 credits. Prerequisite: Registered in Professional Physical Therapy Curriculum. Lecture and laboratory work in therapeutic exercise to establish and maintain muscular control and coordination, including muscle re-education, facilitation, and relaxation. Laboratory.

417. Theory and Technique of Therapeutic Exercise III: Test and Measurements. 4 credits. Prerequisite: Registered in Professional Physical Therapy. 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 Electrodiagnosis. 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. Laboratory.

421 Administration—Physical Therapy. 3 credits. Prerequisite: Registered in Professional Physical Therapy Curriculum. Lecture/discussion and seminar formats used to explore concepts of administration procedures as applied to Physical Therapy and the health care delivery system.

423. Neuroscience for Physical Therapy. 3 credits. Prerequisite: Registered in Professional Physical Therapy Curriculum. Structure and function of the human nervous system including clinical application relevant to physical therapy practice.

424. Sports Physical Therapy. 2 credits. Prerequisites: Registered in Professional Physical Therapy Curriculum. The theory and practice of sports-related injury management with emphasis upon pre-participation screening, emergency/trauma evaluation, the principles of support devices, and accelerated rehabilitation techniques.

482. Clinic I: Clinical Practice. 14 credits. Prerequisite: Registered in Professional Physical Therapy Curriculum. Full-time clinical practice in selected hospital affiliations (18 weeks), in and out of City of Grand Forks.

490. Special Topics, 1 to 4 credits. Prerequisite: Registered in Professional Physical Therapy Curriculum. Introduction and investigation of advanced clinical procedures and topics. Topics discussed will be dictated by student and faculty interests.

491. Independent Study in Physical Therapy. 1 to 4 credits. Prerequisite: Registered in Professional Physical Therapy Curriculum. Research and independent study in a specialized area of Physical Therapy.

493. Psychosocial Aspects of Disability. 2 credits. Prerequisite: PSY 101, PSY 251, PSY 339, and/or equivalents, and consent of instructor. Readings and discussion course. Study of psychological coping mechanisms, reactions and motivational factors pertinent to the disabled. Review of adjustment problems unique to specific disabilities and/or disease processes, including the terminally ill.

498. Research II: Clinical Conference and Paper. 1 to 2 credits, repeatable to 3. Prerequisite: Registered in Professional Physical Therapy Curriculum. Clinical research design, clinical decision making, and preparation of a case study and a paper on a clinical topic.

499. 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.


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.

535. Gerontology Seminar. 2 credits. Examine the factors and forces that affect life quality in the late years. The physiological, psychological, and sociological aspects of aging will be considered, including those influences in the cultural context that enhance and impede continued growth of the person.

537. Strategies for Early Intervention. 2 credits. Prerequisite: PT 415. This course is 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 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: PT 415. This course is designed to provide physical therapy students with opportunities to explore and implement standardized and criterion-referenced evaluation instruments to identify need areas for treatment. In addition, students will design treatment programs for children with disabilities by integrating current therapeutic techniques with efficacy studies.

549. Advanced Applied Anatomy/Clinical Kinesiology. 2 credits. Prerequisite: Registered in Professional Physical Therapy Curriculum. Study of applied anatomy and its importance to research and clinical application, particularly as related to Physical Therapy.

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 will be related to student area of Directed Studies, the other either research or additional clinical.


570. Patient Education Techniques—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. 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 the 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, “Proposal of Independent Study” and submitting the proposal 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 proposal should be on file in the Graduate School no later than the end of Fall Semester, Year 03.

Additional Information

Information on courses, prerequisites, and credit hours is subject to change without notice. Students are encouraged to consult the current academic catalog for the most accurate and up-to-date information.

Physics

Professors Chen, Dewar, Henriksen, Kim, Lykken, Rao (Chair), 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.

Physiology

Professors Brown-Borg, Haselton, Ren, Samson (Chair and Graduate Director), 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. Master's degree or equivalent and an overall GPA of at least 3.50 for all previous graduate work.
2. Minimum GRE composite score on the General test (verbal, quantitative, and analytic) and Advanced test (biology or chemistry or cognate) score which places the candidate in the upper 50th percentile.

Doctor of Philosophy

1. Master’s degree or equivalent and an overall GPA of at least 3.50 for all previous graduate work.
2. Students must prepare a thesis based on results from experimental investigation of special topics in advanced physics; the subject matter determined by student-faculty interest. May be repeated to a total of 6 credits.
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. Students may complete course work and bypass investigation of special topics and take comprehensive examinations in their area of specialization.

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; however, Biomed 500, must be included in the cognate.
2. Completion of at least nine semester hours of graduate work (400 level or above) in a single related field.
3. Experience in teaching physiology is required before the degree is granted.
4. Graduate Record Examination—General Test. (Minimum overall percentile on both.
5. Completion of a research project and the writing of a thesis.

Doctor of Philosophy

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.
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. Students may complete course work and bypass investigation of special topics and take comprehensive examinations in their area of specialization.

Admission Requirements

Master of Science

1. Master's degree or equivalent and an overall GPA of at least 3.50 for all previous graduate work.
2. Minimum GRE composite score on the General test (verbal, quantitative, and analytic) and Advanced test (biology or chemistry or cognate) score which places the candidate in the upper 50th percentile.

Doctor of Philosophy

1. Master’s degree or equivalent and an overall GPA of at least 3.50 for all previous graduate work.
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. Students may complete course work and bypass investigation of special topics and take comprehensive examinations in their area of specialization.

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; however, Biomed 500, must be included in the cognate.
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. Students may complete course work and bypass investigation of special topics in advanced physics; the subject matter determined by student-faculty interest. May be repeated to a total of 6 credits.

Required Courses

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:
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

1. Methods of Theoretical Physics. 3 credits. 3 hours per week. An introduction to the mathematical methods currently used in physics.
2. Method of Theoretical Physics. 3 credits. 3 hours per week. A continuation of Physics 509.
3. Solid State Physics. 3 credits. 3 hours per week. The crystal lattice, electron theory of metals and semiconductors, and transport phenomena in solids.
4. Quantum Mechanics. 3 credits. 3 hours per week. Lattice vibrations, phonon-electron interactions, and cooperative phenomena in solids.
5. Quantum Mechanics. 3 credits. 3 hours per week. The Schroedinger equation, perturbation methods, and simple quantum mechanical systems.
6. Quantum Mechanics. 3 credits. 3 hours per week. Matrix methods, spin, and scattering phenomena.
7. Theory of Electricity and Magnetism. 3 credits. 3 hours per week. Electrostatics, magnetostatics, electromagnetic waves.
8. Electrodynamics. 3 credits. 3 hours per week. Special theory of relativity, scattering of charged particles, and radiation.
9. 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.
10. Analytical Mechanics. 3 credits. 3 hours per week. Variational methods. Lagrange’s equations, oscillations, Hamilton equations, and special relativity.
the Masters Degree, proceeding straight to the Ph.D., by taking a qualifying examination. The qualifying examination will consist of the preparation and defense of a research proposal on their intended studies. It is suggested that the proposal be completed on NIH forms.

**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. Statistics (Bod 470 or EFR 515).
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. 2 credits. Prerequisites: Physiology 523 and/or consent of instructor. The emphasis in this course is the correlation of the structure, function and chemistry of the central nervous system. Of particular interest are the relationships of behavioral changes to electrophysiological and chemical changes.
503. Advanced Physiology. Credits arranged. Prerequisite: Physiology 523 and/or consent of instructor.
505. Introduction to Surgical Techniques. 2 credits. Three to six laboratory hours a week. Prerequisite: consent of instructor.
521. Seminar in Physiology. 1 credit. (All students must enroll when seminar series is offered.)
523. Medical Physiology for Graduate Students. 5 credits. Consent of instructor. Lecture and discussion formal. Survey of human physiology with attention to integrative, systems based biology. Does not include neurophysiology (see PHY 502).
525. Renal Physiology. 1 to 3 credits. Prerequisites: Physiology 523 and/or consent of instructor.
526. Respiratory Physiology. 1 to 3 credits. Prerequisites: Physiology 521 and/or consent of instructor.
527. Neurophysiology. 1 to 3 credits. Prerequisite: consent of instructor.
528. Endocrinology. 1 to 3 credits. Prerequisites Physiology 523 and/or consent of instructor.
529. Cardiovascular Physiology. 1 to 3 credits. Prerequisites Physiology 523.
590. Problems. Credits arranged.
591. Research in Physiology. Credits arranged.

**Psychology**

Professor Antes, Ferraro, Foster, Grabe, Holm (Graduate Director), King, McDonald, Peters, Petros, Till (Chair), Tyler, Vogeltanz, Zevenbergen

**Program Description**

The master’s degree in Psychology is given only in General Psychology. The Ph.D. degree is given upon further specialization in the areas of General, Experimental or Clinical Psychology. The Clinical Psychology program is accredited by the American Psychological Association.

**Admission Requirements**

1. Eighteen (18) hours of undergraduate work in psychology including a course in General Psychology, Developmental, Abnormal, Statistics, and Experimental Psychology.
2. A year of biological science (biology, physiology, etc.).
3. A semester of college algebra.
4. General background in other social and natural sciences also recommended.
5. Graduate Record Examination—General and Subject.

Applications must be complete by February 1.

**Degree Requirements**

1. Scholarly Tool for the Ph.D.—directed toward developing skills in the area of measurement, design, and analysis. Normally in courses Psychology 541, 542, and 543.
2. Clinical Psych—one calendar year full time internship, ordinarily during the fifth year of the Ph.D. program.
3. 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.

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 or consent of instructor. Examination of the evidence 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. Multivariate Statistics for Psychology. 3 credits. Prerequisites: Graduate standing and Psychology 541. The appropriate use and interpretation of multivariate data analytic techniques in psychology.

543. Experimental Design. 3 credits. Prerequisite: Psychology 541 or consent of instructor. Application of statistics and probability theory to the design and analysis of experiments.

551. Advanced Developmental Psychology. 3 credits. Prerequisites: 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. 4 credits. One hour lecture, four hour laboratory. Prerequisites: Clinical psychology graduate status or consent of instructor. Provides the conceptual and practical frameworks upon which to build expertise in the assessment and prediction of human behavior in relation to intellectual 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. 4 credits. Prerequisites: Psychology 570, and/or consent of instructor. Provides the conceptual and practical frameworks upon which to build expertise in the assessment and prediction of human behavior in relation to personality assessment, behavioral assessment, neuropsychological assessment, and the assessment of high incidence behavioral disorders. Skills in 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 practice 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 practice in individual psychotherapy, with emphasis on systematic comparison of major theoretical viewpoints.

574. Advanced Therapeutic Interventions. 3 credits. Prerequisites: Psychology 573 or consent of instructor. An in-depth study of the key issues of psychotherapy research with a focus on critical evaluation of the psychotherapy research literature and the development of knowledge of empirically-supported approaches to psychotherapy with special problems.

575. Behavior Pathology. 3 credits. Prerequisites: Psychology 270 and consent of instructor. A survey of various forms of behavior pathology with emphasis upon current research and theories relating to pathology.

576. Child Psychopathology and Treatment. 3 credits. Prerequisites: Psychology 570 and 575 or instructor permission. An overview of child and developmental psychopathology including discussion of pertinent treatments for disorders such as conduct disorders, attention-deficit, substance abuse, and developmental disabilities.

579. Professional Issues and Ethics in Psychology. 3 credits. Prerequisites: Graduate standing in Psychology or consent of instructor. An exploration of ethical issues pertinent to the science and practice of psychology and discussion of current professional issues facing psychology.

580. Clinical Practice. 1 to 3 credits. Prerequisite: 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.

593. Readings in Psychology. 1 to 3 credits. Prerequisites: advanced standing in psychology and consent of instructor. May be repeated.

594. Special Topics in Psychology. 1 to 3 credits. Prerequisite: consent of instructor. Topical courses in Psychology organized on a semester by semester basis.

595. Seminar in Psychology. 1 to 3 credits. Prerequisite: consent of instructor.

907. 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:
   - PSCI 500 Research Methods 3 credits
   - PSCI 501 Political & Policy Analysis 3 credits
   - PSCI 531 Seminar: Public Administration 3 credits
   - PSCI 997 Independent Study 2 credits
   - PSCI Electives 12-21 and/or Up to 9 credits in cognate/elective courses. Total 32 credit hours

6. Students wishing to take a health concentration must take the following courses as part of their 32 credit hours:
   - PSCI 551 Health Administration and Organization 3 credits
   - PSCI 552 Health Policy 3 credits
   - ECON 575 Seminar in Health Economics 3 credits
   - LAW 291 Legal and Ethical Issues in Health Care 3 credits (Also offered as Psci 593 Problems in Political Science and Public Administration)
7. A thesis option is also available. See page 173 for detailed explanation.
Joint MPA/JD Program

Admission Requirements

1. Students are required to apply to both the Law School and the Graduate School and indicate that they wish to be admitted to the joint MPA/JD track. This admission will be determined by the Director of the M.P.A. Program and the Dean of the Law School or their designees.

2. Acceptance to the joint program track requires a minimum overall undergraduate GPA of 3.00 or a GPA of 3.25 in the last two academic years.

Sample Curricular Plan

Year One—Law School
Year Two—Law School w/two MPA courses*
Year Three—Law School w/two MPA courses
Year Four—Six MPA courses + Independent Study

or

Year One—Seven MPA courses
Year Two—Law School
Year Three—Law School w/two MPA courses*
Year Four—Law School w/one MPA course + Independent Study

*2 MPA course requirements could be met with law courses as cognates.

The total credits required for each degree will be unchanged, because each program will accept six credits toward each other degree. This will save the student one semester (12 credits) and make the program more appealing.

Normally, the joint program will be completed in only four years. With summer school classes it may be possible to obtain both degrees even more quickly. Students must be enrolled in the Law School for at least three years; therefore, students wishing to receive both degrees in less than four years should enroll first in the Law School.

Below is a list of Law School courses which can be used as cognates in the MPA program and MPA courses which can be used as electives in the JD program.

**JOINT MPA/JD COMPLEMENTARY COURSES**

**LAW**

LAW 150 CONSTITUTIONAL LAW I
LAW 152 CONSTITUTIONAL LAW II
LAW 201 AGRICULTURE LAW
LAW 203 EMPLOYMENT DISCRIMINATION LAW
LAW 206 LAW OF POLITICS
LAW 210 ADMINISTRATIVE LAW
LAW 263 ENVIRONMENTAL LAW
LAW 277 LAND USE PLANNING
LAW 281 LEGISLATION
LAW 289 STATE & LOCAL GOVERNMENT LAW
LAW 291 POVERTY LAW
LAW 291 CIVIL RIGHTS
LAW 291 STATE CONSTITUTIONAL LAW

Or other courses with the approval of MPA Directors and Graduate Dean

**POLITICAL SCIENCE & PUBLIC ADMINISTRATION**

PSCI 308 INTERGOVERNMENTAL RELATIONS
PSCI 404 URBAN POLITICS AND ADMINISTRATION
PSCI 405 POLITICAL BEHAVIOR
PSCI 502 PROBLEMS IN STATE AND LOCAL GOVERNMENT
PSCI 508 LEGISLATIVE EXECUTIVE PROCESSES
PSCI 531 PUBLIC ADMINISTRATION
PSCI 532 PUBLIC POLICY
PSCI 535 PUBLIC ORGANIZATIONS
PSCI 536 PUBLIC PERSONNEL ADMINISTRATION
PSCI 538 PUBLIC BUDGETING AND FINANCIAL MANAGEMENT
PSCI 539 ADMINISTRATIVE LAW

Or other courses with the approval of the Dean of the Law School

Certificate Programs in Public & Health Administration

Three certificate programs are also offered. Each program consists of four three-credit courses. These programs are open to anyone with an undergraduate degree in any area of study. The certificate programs are offered to those who do not wish to make the initial commitment to a master’s degree program but wish to update or upgrade their skills. All courses taken may be applied to an MPA if a student decides to pursue the degree.
Certificate in Health Administration

The health administration certificate program is designed to prepare professionals from many academic backgrounds who have risen to positions of authority in the public and not-for-profit sector without benefit of formal management training. Take four of the following:

Courses
- PSCI 552 Health Policy (3 credits)
- PSCI 551 Health Organization and Administration (3 credits)
- LAW 291 Legal and Ethical Issues in Health Administration (also offered as PSCI 593 Problems in Political Science & Public Administration: Legal and Ethical Issues in Health Administration) (3 credits)
- ECON 575 Health Economics (3 credits)

Certificate in Public Administration

This program seeks to provide the management core needed by professionals from many academic backgrounds who are required to do or understand policy analysis and program planning in the public and not-for-profit sector. Even managers who do not do research themselves must understand the work of others if they are to make informed decisions based on the information provided in research reports. Take four of the following:

Courses
- PSCI 501 Research Methods (3 credits)
- PSCI 533 Administrative Ethics in the Public Sector (3 credits)
- PSCI 536 Public Personnel Administration (3 credits)
- PSCI 538 Public Budgeting and Financial Administration (3 credits)
- PSCI 539 Administrative Law (3 credits)

Certificate in Policy Analysis

This program seeks to provide the analytic skills needed by professionals from many academic backgrounds who are required to do or understand policy analysis and program planning in the public and not-for-profit sector. Even managers who do not do research themselves must understand the work of others if they are to make informed decisions based on the information provided in research reports. Take four of the following:

Courses
- PSCI 501 Research Methods (3 credits)
- PSCI 533 Administrative Ethics in the Public Sector (3 credits)
- PSCI 536 Public Personnel Administration (3 credits)
- PSCI 538 Public Budgeting and Financial Administration (3 credits)
- PSCI 539 Administrative Law (3 credits)

Reading Education

(See Education: Reading Education, p. 202.)

Social Work

Professors Bailey, Decker, Furman, Haagenstad, Haga, Heitkamp, Jacobsen (Chair), Kraft, Muhlhauser, Perry, Stevens, 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 within seven years of admission. 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 seven years of their acceptance for the MSW program, have taken a required statistics course, 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 seven 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 which Advanced Standing is required. The foundation courses are:

- SWk 510. Human Behavior in the Social Environment
- 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 548, 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 at 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 173 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. Biosocial-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 paradigmatic 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 an ecological system perspective and focuses on intervention with the various micro, midlevel 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 the instructor. This course develops the student’s understanding of human development and behavior in the context of various paradigms from a strengths perspective. Much of the content will focus on the reciprocal processes between systems, including individuals, families, groups, organizations and communities in the social environment of this region.

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. This course is designed to develop an understanding of both qualitative and quantitative data analysis in the context of this region. This 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 instructor. Corequisite or prerequisite: 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. 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 or prerequisite: 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-requisite or prerequisite: 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. Field 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.

566. 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. SU/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. SU/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 increasingly 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

Professors Crawford, Driscoll, Huang, Larson (Chair), Ludtke, Meyer, Moen, Staples (Graduate Director), Stofferahn, Tiemann

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 thought, social theory, research design, and analytical methods. Courses in the scholarly tools component include one course in statistics and other courses in research methods. The cognate includes nine credits in a minor or cognate; and thesis is comprised of four credits.

Admission Requirements

1. Completion of a minimum of twenty semester hours of undergraduate sociology or related fields with an overall grade point average of 3.00 (A=4.0), a GPA of at least 3.25 for the last two years of undergraduate study; and 3.25 GPA in their major.

2. Approved status presupposes some undergraduate training in methods of social research, statistics, sociological theory and social psychology with a minimum grade of B in each.

Degree Requirements

1. Program must include a systematic treatment of the field of sociological theory plus sufficient training in research methods and statistical techniques to assure understanding and competence in their use. This is fulfilled upon successful completion of (grade B or higher) in Soc 510, Soc. 511, Soc. 520, Soc. 521, and EFR 516.

2. One graduate seminar.

3. Students in the pre-doctoral track typically declare cognates in sociology, theory and philosophy, or methodology and statistics. These cognates prepare them for admission to doctoral programs in sociology or to teach at a junior or community college.

4. Students in the sociological practice track typically declare cognates in planned intervention, public policy, organizational behavior, management, or criminal justice. These cognates prepare them for employment with federal or state agencies or private businesses.

5. Other cognates of a student’s own choosing may be approved by their faculty advisory committee.

6. Faculty will assist students in the sociological practice track in locating an internship to gain practical experience.

7. Under exceptional circumstances, where the spirit of residency is met, the Department may waive the residence requirements for an M.A. in Sociology. (See page 170 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 theorists.

520. Advanced Research Design. 3 credits. Prerequisites: Sociology 323 and 326. This course emphasizes the development of research design skills including survey research.

521. Advanced Analytical Methods. 3 credits. Prerequisites: Sociology 323, 326, and 520. An in-depth examination and application of the following topics as they relate to survey research in sociology: data processing; quantification and analysis of
data; analytical design; and procedures. The student will apply the various analytical methods to available data.

528. Seminar in Research Methods. 2 to 4 credits. Prerequisite: Sociology 323. An examination of special topics in the field of research methods.

537. Graduate Cooperative Education. 3 credits. Prerequisites: Program of study committee and Director of Graduate Studies approval. A practical work experience with an employer closely associated with the student's cognate area.

538. Seminar in Social Organization. 2 to 4 credits.

539. Seminar in Social Disorganization. 2 to 4 credits.

568. Seminar in Social Psychology. 2 to 4 credits. Prerequisite: Sociology 361.

598. Individual Research. 1 to 4 credits. Maximum of six credits.

407. Political Sociology. 3 credits.

409. Computer Applications. 3 credits.

431. Organizations and Behavior. 3 credits.

435. Racial and Ethnic Relations. 3 credits.

436. Social Inequality. 3 credits.

437. Population. 3 credits.

450. Deviant Behavior. 3 to 4 credits.

492. Practicum in Sociology. 3 credits

494. Readings in Sociology. 1 to 5 credits.

498. Thesis. 4 to 9 credits.

Space Studies

Professors Gabrynowicz (Graduate Director), Graham, Jensen, Johnson, Seielstad, Wood (Chair)

Program Description

The Department of Space Studies offers a program leading to a Master of Science degree. This interdisciplinary program is a study of the implications of humankind's entry into space: the social, political, scientific, medical, commercial, and legal impacts, on a national and international level, that are associated with the evolutionary development of space. 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, settlement, and communication.

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 program. 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: SpSt 501 or permission of instructor. The small bodies of the solar system are clues to its origin. All planets and larger moons have been chemically transferred, but many asteroids, meteorites and comets are apparently little modified from the time of their origin 4.5 billion years ago. Each of these classes of objects is investigated separately, and relationships between them are examined.

525. Technical Issues in Space. 3 credits. An examination of the highly developed technological base required for the exploration and development of space. An understanding of this technology and of its impact on humans is essential to an appreciation of many of the issues and problem areas that are and will be associated with our continuing efforts to explore and settle this new frontier. May be repeated if the topic is different.

535. Satellite Information Processing. 3 credits. The complex issues raised by the creation of new means of observing and managing our planet will be examined. Three billion bits of data per day are already being transmitted to Earth from satellites in space. This is anticipated to reach ten trillion bits in the next decade. 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 data needs and use will grow exponentially once the space station and associated facilities are in operation.

541. Management of Space Enterprises. 3 credits. This course investigates the management of space organizations. These include organizations that are public and private, R&D and operations, profit and non-profit. You will learn the basics of management theory, the history of systems management, and the technical issues that must be considered in the management of space R&D and operations.

545. Space Policy and International Implications. 3 credits. Analysis of U.S. international space policy and the strengths and weaknesses it has demonstrated. Proposals for change and their implications are discussed. Space exploration and development is now a species rather than single-nation activity. What effect does, should this have on the development of space policy and our overall relations with other nations and international organizations?

550. Aerospace Vehicles and Facilities Operations. 3 credits. A technically oriented examination of the management issues involved in the planning, design, development and operation of new and existing vehicles and facilities. The course will include a review of present vehicles and those that will be required in the next two decades, from expendable launchers to the aerospace plane.

555. 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: SpSt 501. This course focuses on the evolving laws, policies, and institutions that have long-term ramifications for earth observations. Some topics addressed are the United Nations
Principles on Remote Sensing: the United Kingdom’s 1984 National remote sensing policy; the Montreal Protocol; and, the United States Land Remote Sensing Policy Act of 1992. Ground segment institutions considered are the Landsat Ground Stations Operations Working Group and the Global Land 1-KM AVHRR Project. Remote sensing litigation that has begun to address various applications of remote sensing will also be considered. Cases include Dow vs US and EOSAT vs NASA and NOAA.

590. Space Studies Seminar. 1 credit. A series of lectures presented by visiting lecturers and the faculty. May be repeated for up to 4 credits.

593. Individual Research in Space Studies. 1 to 3 credits. Individual student projects designed to develop advanced knowledge in a specific area of expertise. A written report is required. May be repeated for up to 6 credits.

595. Space Studies Capstone. 3 credits. The capstone course integrates, extends and applies knowledge learned in earlier Space Studies courses and reading. The major component of this course is a collaborative project inter-relating policy, technology and science. This course is required by SPACE.EDU students and should be taken during the year they plan to graduate. The course begins in the spring semester and concludes with an intensive seven-day capstone experience on the UND campus.


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, 541, 545, 555, 565, 575.

Special Education
(See Education: Special Education, p. 203).

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 Sciences Disorders.
3. Admittance to approved status typically requires an undergraduate major in Communication Sciences Disorders.
4. Those admitted to Qualified Status must have at least 12 semester credits of undergraduate work in the field, but will be required to complete the 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: 501, 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.
525. Introduction to Research in Speech-Language Pathology and Audiology. 3 credits. Research methods in Speech-Language Pathology and Audiology. Steps in research before data analysis is undertaken. Culminates in a research proposal.
531. Clinical Audiology I. 3 credits. Prerequisites: CSD 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 assessment.
532. Adult Neurogenic Communication Disorders. 3 credits. Prerequisites: CSD 422 and 231. 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: CSD 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: CSD 231 and CSD 235. A study of the application of instrumental analysis of speech production, transmission and perception to the diagnosis and treatment of communication impairments in children and adults.
536. Stuttering Intervention. 3 credits. A study of the theoretical bases for and the clinical management of stuttering in children and adults.
537. Advanced Clinical Management. 2 credits. Prerequisite: completion of undergraduate major sequence in CSD or consent of instructor. Integrated study of the process involved in total clinical case management including the development of communication and observation competence, clinical literacy, creative problem solving, decision making, supervisory and consultation skills.
542. Child Neurogenic Communication Disorders. 2 credits. Prerequisite: CSD 422. 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: CSD 532. A study of the diagnoses and management of motor speech disorders, including dysarthria, apraxia, and dysphagia.
562. Augmentative/Alternative Communication. 3 credits. Prerequisites: CSD 422 and CSD 542. A study of the evaluation and application of manual and electronic communication aids for the severely handicapped.
Teaching and Learning
(See Education: Teaching and Learning, p. 203).

Theatre Arts

Professors Cutler (Graduate Director), McLennan (Chair), Gillette

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 Introduction to Graduate Research 2 credits
   - TA 501 Sem in Dramatic Literature 6 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 I 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

500. Introduction to Research in Theatre Arts. 2 credits. Bibliography, research methods, and resource materials for graduate work in Theatre Arts.

501. Seminars in Theatre Arts. 1 to 3 credits, repeatable. 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.

537. Graduate Co-op Education. 1-6 credits.

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.

404. Acting for the Music Theatre. 3 credits.

415. Selected Problems in Theatre Arts. 1 to 3 credits.

422. American Theatre History. 3 credits.

423. History of the Theatre: Classical, Medieval, and Renaissance. 3 credits.

424. History of the Theatre: Seventeenth Century to the Present. 3 credits.

425. Play Direction II. 3 credits.

427. Costume Design. 3 credits.

480. Theatre Performance Studio. 1 credit.

482. Scene Design for the Stage. 3 credits.

488. Playwriting. 3 credits.

Visual Arts

Professors Fundingsland, Luber (Graduate Director), McIeey-Edwards, Meyers, Miller, Monsebroten, Paulsen, Schaefer (Chair)

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 (8” x 8” 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:

<table>
<thead>
<tr>
<th>Category</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Major Media Area (Ceramics, Painting, Drawing, Metalsmithing, Printmaking, Mixed Media, or Sculpture)</td>
<td>30</td>
</tr>
<tr>
<td>Art History and Theory</td>
<td>9</td>
</tr>
<tr>
<td>Electives (including at least 12 credits in visual arts)</td>
<td>18</td>
</tr>
<tr>
<td>Professional Exhibition</td>
<td>3</td>
</tr>
</tbody>
</table>

2. Formal review of the M.F.A. candidates work will be conducted by the appropriate faculty at the end of the student’s second and third semesters of the graduate program.

3. Prerequisites to graduation include:
   a. Preparation and presentation of a Graduation Exhibition, which will be a formal presentation of creative work.
   b. An exhibition catalog which will include an artist’s statements and reproductions of the work.
   c. A slide portfolio of the Graduation Exhibition must be submitted to the 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 3.00.

   4. Completion of the second formal departmental comprehensive evaluation prior to the end of the semester preceding the semester in which the student expects to graduate (normally the third semester in residence). The evaluation will be conducted by the student’s faculty advisory committee and will consist of a review of the student’s progress toward completion of degree requirements, and a review of plans for the professional exhibition. The results of the evaluation will be filed with the Graduate School and will include a recommendation regarding advancement to candidacy for the M.F.A. degree.

   5. Recommendation to the dean of the Graduate School for advancement to candidacy by the faculty advisory committee.

   Final Evaluation. The faculty advisory committee will examine and evaluate the student’s performance in the Professional Exhibition, and report the results to the Graduate School on the form titled “Final Report on Candidate” by the deadline specified in the Academic Calendar. The advisor and department chairperson will certify receipt of a copy of the Exhibition Catalog and a slide portfolio of the Exhibition.

Courses

   501. Sculpture. 1 to 6 credits. Prerequisite: Permission of instructor. Extensive work and study in three dimensional form, media, and methods. Repeatable to 30 credits.

   510. Art History: Contemporary Trends and Theory. 2 credits. Presentation of contemporary trends in the visual arts from the 1960s forward and discussion of contemporary theory and criticism.

   511. History of Art: Graduate Seminar. 1 credit repeatable to 2 credits. Offered S. Explores the theoretical basis for integrated concepts and methods of critical analysis in the visual arts. The course is intended to help students become aware of the major critical perspectives of the discipline and practical issues related to careers in the fine arts. Methodological, critical, and professional projects will be completed by students in the course.

   520. Painting. 1 to 6 credits. Prerequisite: Permission of instructor. Individual research and experimentation in painting. Repeatable to 30 credits.

   530. Drawing. 1 to 6 credits. Prerequisite: Permission of instructor. Experimentation and elaboration to drawing skills and techniques, both innovative and traditional. Emphasis on individual exploration. Repeatable to 30 credits.

   537. Graduate Co-op Education. 1-4 credits. Prerequisite: Graduate standing: approval of Departmental Advisor/Coordinator, with student on file with the Co-op Ed. Office prior to registration, and written permission from the student’s VA graduate committee. An elective opportunity in the VA graduate program toward the MFA to participate in an apprenticeship in one’s selected field of concentration.

   540. Printmaking. 1 to 6 credits. Prerequisite: Permission of instructor. Individual research and experimentation in printmaking. Repeatable to 30 credits.

   550. Ceramics. 1 to 6 credits. Prerequisite: Permission of instructor. Individual instruction and experimentation in Ceramics. Repeatable to 30 credits.

   560. 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. History of Art: Selected Topics. 1 to 4 credits.

   411. History of Art: Study of Eastern Art from Proto-literate Periods to the Present. 3 credits.

   412. History of Art: 20th Century. 3 credits.

   414. History of Art: Contemporary. 2 credits.

   415. History of Art: Museum Internship. 1 credit repeatable to 3.

   416. History of Art: Renaissance, Baroque, Rococo. 3 credits.

   419. History of Art: 19th Century Art and Architecture. 3 credits.

   420. History of Art: Greek and Roman Art and Architecture. 3 credits.

   421. History of Art: Computer Applications. 1 credit repeatable to 4.

   422. History of Art: Computer Internship. 1 to 3 credits.

   490. Individual Research/Special Projects. 1 to 6 credits. Repeatable to twelve credits.

   496. Fine Arts: Symposium in the Arts. 1 to 3 credits.
Administration and Faculty

STATE BOARD OF HIGHER EDUCATION

The University of North Dakota is a part of the North Dakota University System consisting of ten publicly supported colleges and universities and one branch campus. The State Board of Higher Education, 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

JEANETTE SATROM, Oriska; term expires June 30, 2003
JOHN HOEVEN, JR., Minot; term expires June 30, 2002
BEV CLAYBURGH, Grand Forks; term expires June 30, 2003
CRAIG CASPERS, Wahpeton; term expires June 30, 2001
WILLIAM ISAACSON, Stanley; term expires June 30, 2002
WILLIAM KORSMO, Fargo; term expires June 30, 2003

STUDENT MEMBER, named annually to one-year term
NON-VOTING FACULTY MEMBER, named annually to one-year term

Chancellor of Higher Education, LARRY A. ISAAK, Bismarck

Terms were changed from seven to four years by the North Dakota State Legislature in 1997, effective with the appointee in 1997.

ADMINISTRATION

**CHARLES E. KUCHEL, President

ALICE BREKKE, M.Acc. Assistant to the President and Director, Budget and Grants Administration
GERALD H. GROENWOLD, Ph.D., Director, Energy and Environmental Research Center
SALLY PAGE, M.B.A., Affirmative Action Officer
JAMES F. PENWARDEN, B.A., Director, Office of University Relations
TIMOTHY KERIC, B.S.B.A., Internal Auditor
EARL STRINGDEN, M.A., Executive Vice President, UND Alumni Association and Foundation
ROGER THOMAS, M.A., Director, Athletics
DAVID VORLAND, M.S., Executive Assistant to the President

JOHN ETLING, Ph.D., Interim Vice President for Academic Affairs and Provost

Deans reporting to the academic vice president:

W. JEREMY DAVIS, J.D., LL.M., Dean, School of Law
DENNIS ELBERT, Ph.D., Dean, College of Business and Public Administration
ALBERT FIVIZZANI, Ph.D., Interim Dean, College of Arts and Sciences
MARY HARRIS, Ph.D., Dean, College of Education and Human Development and Director of Teacher Education

HARVEY KNULL, Ph.D., Dean, Graduate School
RICHARD NELSON, Interim Dean, Odegard School of Aerospace Sciences
ELIZABETH G. NICHOLS, Ph.D., Dean, College of Nursing
DON RICHARD, Ph.D., Dean, School of Engineering and Mines

Other administrators reporting to the academic vice president:

JEANNE ANDREEG, M.L.S., Coordinator, Honors Program
FRANK D’ANDRAIA, M.L.S., Director, Libraries
CARL FOX, Ph.D., Director, Office of Research and Program Development
DORIETTE KERIAN, Interim Director, Computer Center
MICHAIL W. DRUMM, M.S., Lieutenant Colonel, Professor, Military Science
LIBBY RANKIN, Ph.D., Director, University Writing Program; Interim Director, Office of Instructional Development
KATHY SMART, Ed.D., Director, Center for Instructional and Learning Technologies
BARRY STINSON, M.A., Director, International Programs
TO BE ANNOUNCED, Registrar of the University

H. DAVID WILSON, M.D., Dean, School of Medicine & Health Sciences

STEPPHEN CHRISTENSTEN, M.D., Assistant Dean for Students, Southeast Medical Campus, Fargo
EUGENE L. DEORME, J.D.S., Director, Indians Into Medicine (INMED) Program
RANDE EKEN, B.A., Associate Dean, Administration & Finance
PAMELA D. KNUDSON, B.A., Director, Public Affairs
KAP J. LEE, D.V.M., Director, Biomedical Research Facility

ERIC LUNN, M.D., Assistant Dean & Director, Health Education, Northeast Medical Campus, Grand Forks
LOUISE A. MURPHY, M.D., Assistant Dean & Director, Southwest Medical Campus, Bismarck
WILLIAM NEWMAN, M.D., Assistant Dean for Veterans Affairs
LILA A. PEDERSEN, M.A.L.S., Director, Harley French Library of the Health Sciences
BRUCE PITT, M.D., Associate Dean & Director of Health Education, Southeast Medical Campus, Fargo
MARTIN L. ROTHBERG, M.D., Assistant Dean & Director, Health Education, Northwest Medical Campus, Minot
ROBERT RUBECK, Ph.D., Associate Dean, Academic Affairs & Information Resources
H. DAVID WILSON, M.D., Interim Director, Rural Health

PEGGY LUCKE, B.S.B.A., Interim Vice President for Finance & Operations
PAT HANSON, B.S.B.A., Director, Payroll & Risk Management
PAM HURDELBURG, B.S., Controller
RICHARD LEHN, Director, Telecommunications
MARGARET MYERS, R.S. B.A., Assistant Vice President
DIANE NELSON, B.A., Director, Personnel Services
JUDY SARGENT, M.A., Director, Residence Services
JAMES UHLER, Director, Auxiliary Services
LARRY ZITZOW, Director, Facilities

ROBERT BOYD, Ed.D., Vice President for Student and Outreach Services
LILLIAN ELSINGA, M.A., Associate Vice President for Student and Outreach Services and Dean of Students
JAMES SHAEFFER, Ph.D., Associate Vice President for Student and Outreach Services and Dean of Outreach Programs
ALAN ALLERY, M.H.A., Director, Student Health Service
BARRY BREDE, M.S., Director, Television Center
DONNA BRUCE, B.S.B.A., Director, Admissions
CATHY BUYARSKY, M.S., Director, Student Academic Services
ROB CAROLIN, B.A., Director, Enrollment Services
MATSIMELA C. DIOP, M.Ed., Director, Multicultural Student Services
RICHARD GROSZ, Ed.D., Director, Counseling Center
ALICE HOFFERT, M.S.Ed., Director, Student Financial Aid
LEIGH JEANOTTE, Ed.D., Director, Native American Programs
MARIANNE LUSTGRAAF, M.Ed., Director, Memorial Union
KAY MENDICK, Director, Women’s Center
JILL NOVOTNY, B.S., Administrative Officer
JAMES PENWARDEN, B.A., Director, University Relations Office
DON PIPER, Ed.D., Director, Summer Session
NEIL REUTER, M.S., Specialist in Counseling and Student Personnel, Director, TRIO Programs
MARK THOMPSON, M.S., Director, Career Services
FRED WITTMAN, M.S., Director of Project Development/Assistant to the Vice President

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.

ABBOTT, DAVID W., Assistant Professor of Neuroscience; M.D., Tulane University

**ABRAHAMSON, HARMON B., Professor and Chairperson of Chemistry; Ph.D., Massachusetts Institute of Technology

AHLEN, MICHAEL J., Professor of Law; J.D., Vanderbilt University

**AHLER, JANET, Professor of Educational Foundations and Research; Ph.D., University of Missouri

ALLEN, KRISTIN E., Captain, United States Army and Assistant Professor of Military Science; B.S., United States Military Academy West Point

ALLEVA, PATI A., Professor of Law; J.D., Hofstra University School of Law

**AMES, FORREST E., Assistant Professor of Mechanical Engineering; Ph.D., Stanford University

**AMUNDSON, MARY, Assistant Professor of Community Medicine and Rural Health; M.A., University of North Dakota

**ANDREEG, MICHAEL A., Professor of English and Chester Fritz Distinguished Professor; Ph.D., Yale University

*associate graduate faculty status
**full graduate faculty status
***adjunct graduate faculty status
ANDERSON, CINDY, Clinical Associate Professor of Nursing; M.S., University of North Dakota

**ANDERSON, SVEN,** Assistant Professor of Computer Science; Ph.D., Indiana University

**ANTIS, 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

ASKIM, MARY KAY, Assistant Professor of Marketing; M.S., North Dakota State University

ATKINSON, MICHAEL, Associate Professor of Anatomy and Cell Biology; Ph.D., University of Minnesota

AUSTIN, CHRISTOPHER, Assistant Professor of Biology; Ph.D., University of Texas at Austin

**BACKES, JOHN,** Associate Professor of Educational Leadership; Ed.D., University of North Dakota

*BAGHERI, FATHOLLAH,* Assistant Professor of Economics; Ph.D., University of Pennsylvania

BAILEY, TAMMY, Assistant Professor of Social Work; Ph.D., Southern Illinois University at Carbondale

BAIRD, JOHN R., Associate Program Director of Fargo Family Practice Center and Associate Professor of Family Medicine; M.D., Washington University, St. Louis

*BAKER/BIG BACK, CLARICE,* Assistant Professor of Teaching and Learning; Ph.D., 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

BARRETTINE, CARL, Associate Professor of Humanities; D.A., Idaho State University

**BARRETTINE, SHELBY,** Associate Professor of Teaching and Learning; Ed.D., University of California-Los Angeles

**BASS, GERALD,** Professor of Educational Leadership; Ed.D., University of North Dakota

BASS, GAIL S., Instructor of Occupational Therapy; 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,** Associate Professor of Accounting and Business Law; Ph.D., University of North Dakota

*BEAVER, FRANK, P.E.,* Assistant Professor of Geology and Geological Engineering; Ph.D., University of North Dakota

*BECKER, WILLIAM K.,* Professor of Surgery and Director of Surgery Residency Program; M.D., University of Minnesota

**BENGAMIN, 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

*BERNE, JANE,* Associate Professor of Languages and Chairperson of Department; 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

BILLINGS, DAVID, Assistant Professor of Family Medicine; M.D., Michigan State University

BILODEAU, THOMAS, Assistant Professor of Electrical Engineering; Ph.D., State University of New York at Buffalo

BIRGER, C. JUDITH, Clinical Instructor of Statewide Psychiatric Nursing Education Program at Jamestown, College of Nursing; M.S., University of North Dakota

BIERKE, 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

BLAKE, MICHAEL J., Assistant Professor of Music; M.Ed., University of North Dakota

BLAUFUSS, MARK C., Assistant Professor of Pediatrics; M.D., Washington University

*BOCK, MARJORIE,* Assistant Professor of Teaching and Learning; Ed.D., University of Kansas

*BORG, KURT E.,* Assistant Professor of Medical Education and 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

BRAATHEN, SANDY, Assistant Professor of Business and Vocational Education; Ph.D., University of Minnesota-St. Paul

**BRADLEY, DAVID S.,** Assistant Professor of Microbiology and Immunology; Ph.D., University of South Dakota School of Medicine

BRIDEWELL, JOHN, Associate Professor of Aviation; M.DIV, Southwestern Baptist Theological Seminary

*BRINKERT, RONALD,* Associate Professor and Chairperson of Physical Education and Exercise Science; Ph.D., University of Oregon

*BROCK, GORDON,* Assistant Professor of Music; DMA, University of Colorado, Boulder

BROSSEAU, 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 North Dakota

*BURD, CHRISTINE,* Assistant Professor of Nursing; Ph.D., University of North Dakota

BURD, LARRY J., Assistant Professor of Pediatrics and Neuroscience; 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 Associate Professor of Family Medicine; M.D., Baylor College of Medicine

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

**CARMICHAEL, JEFFREY,** Associate Professor of Biology; Ph.D., University of Georgia

CARR, PATRICK, Associate Professor of Anatomy and Cell Biology; Ph.D., University of Minnesota

CARSON, PAUL, Assistant Professor of Internal Medicine; M.D., University of North Dakota

**CARSON, SHARON,** Associate Professor of English; Ph.D., University of Washington

**CHACKO, JACOB,** Associate Dean of College of Business and Public Administration, Associate Professor of Marketing; D.B.A., United States International University

Administration and Faculty

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**CHALMERS, LYNNE,** Associate Professor of Teaching and Learning; Ph.D., University of North Dakota

**CHEN, TAR-PIN,** Associate Professor of Physics; Ph.D., State University of New York–Buffalo

CHELLIAH, NOAH N., 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

**CHRISTENSEN, STEFFEN,** Assistant Dean of Students at Southeast Campus, Fargo and Associate Professor of Obstetrics and Gynecology; M.D., University of Iowa

CHRISTIAN, STEPHANIE J., Clinical Assistant Professor of Nursing; B.S.N., University of North Dakota

CLARENS, RICHARD D., Associate Professor of Family Medicine and Pharmacology and Toxicology; Pharm. D., University of Minnesota

**CLINGAN, EDMUND,** Assistant Professor of History; Ph.D., University of Wisconsin–Madison

**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,** Associate Professor of Mathematics; Ph.D., Washington State University

COOLEY, ALBERT MARVIN, Associate Professor of Pathology; M.D., Northwestern University

**COURTRIGHT, JEFFREY,** Assistant Professor of Communication; Ph.D., Purdue University

**CRAWFORD, GLINDA,** Associate Professor of Sociology; Ph.D., Iowa State University

**CRAWFORD, RICHARD D.,** Professor of Biology; Ph.D., Iowa State University

**CRONIN, JAMES,** Assistant Professor of Biology; Ph.D., Florida State University

CURLEY, KEVIN R., Instructor of Family Medicine; M.S., South Dakota State University

**CUTLER, MARY,** Associate Professor of Theatre Arts; Ph.D., Bowling Green State University

**DAHL, IVAN J.,** Professor of Educational Foundations and Research; Ed.D., University of North Dakota

DANIELSON, BYRON D., Associate Professor of Internal Medicine; M.D., University of Minnesota

DANKS, MERIDEE, Instructor of Physical Therapy; M.P.T., University of North Dakota

**DAUGHTRY, DONALD,** Assistant Professor of Counseling; Ph.D., Texas Tech University

DAVIS, W. JEREMY, Dean, School of Law and Professor of Law; J.D., University of Denver, LL.M., Yale University

Davis, WADE A., Captain, United States Army and Assistant Professor of Military Science; B.S., University of Phoenix

**DEARDEN, BRUCE G.,** Professor of Mathematics; Ph.D., Washington State University

**DECKER, JAMES,** Associate Professor of Social Work; Ph.D., University of Minnesota and Pacifica Graduate Institute

DECKER, SCHWANN, Instructor of Physical Therapy; M.P.T., University of North Dakota

DELORME, EUGENE, Director of Indians into Medicine Program (INMED), and Assistant Professor of Family Medicine; J.D. University of North Dakota

DEMERS, JUDY L., Associate Dean for Student Affairs and Admissions, and Associate Professor of Family Medicine; M.Ed., University of Washington, Seattle

DEMERER, E. DALE, Professor of Aviation; Ph.D., Utah State University

**DETKE, SIEGFRIED,** Associate Professor of Biochemistry and Molecular Biology; Ph.D., Colorado State University

**DEWAR, GRAEIME,** Associate Professor of Physics; Ph.D., Simon Fraser University

**DIEZ, CLAYTON R.,** Assistant Professor of Industrial Technology; DIT, University of Northern Iowa

DIXON, KATHLEEN, Associate Professor of English, Ph.D., University of Michigan

**DONALDSON, SANDRA M.,** Professor of English; Ph.D., University of Connecticut

**DOUGAN, WILLIAM L.,** Assistant Professor of Management; Ph.D., Cornell University

DREWETT, JAMES, Assistant Professor of Pharmacology and Toxicology; Ph.D., University of Minnesota

**DRISCOLL, TIMOTHY G.,** Assistant Professor of Sociology; Ph.D., University of North Dakota

DRUMM, TIMOTHY M., Lieutenant Colonel, United States Army and Professor of Military Science; M.S., University of Central Texas

**DUBOIS, GENE W.,** Assistant Professor of Languages–Spanish; Ph.D., University of California

DUKE, BILL J., Assistant Professor of Family Medicine, Ph.D., California Coast University

**DUNNINGAN, GERRI,** Associate Professor of Mathematics; Ph.D., Iowa State University

**EBERHARDT, BRUCE,** Professor of Management; Ph.D., Iowa State University

EBERTOWSKI, MARY L., Instructor of Pediatrics; M.S.N., University of North Dakota

EELEKEMA, ROBERT C., Chairperson and Professor of Community Medicine and Rural Health; M.D., University of Washington, Seattle

EINARSON, EINAR, JR., Associate Professor of Music; M.Ed., University of North Dakota

**ELBERT, DENNIS,** Dean, College of Business and Public Administration and Professor of Marketing; Ph.D., University of Missouri-Columbia

ELLINGSON, DEE ANN, Assistant Professor of Accounting and Business Law; Ph.D., Virginia Polytechnic Institute and State University

**ELLIS, WALTER,** Associate Professor of History; Ph.D., University of California-Los Angeles

EMERY, RUSSELL J., Associate Director of Bismarck Family Practice Center and Assistant Professor of Family Medicine, M.D., University of North Dakota

**EPSTEIN, PAUL N.,** Associate Professor of Pharmacology and Toxicology; Ph.D., Baylor College of Medicine

**ERJAVEC, JOHN,** Associate Professor of Chemical Engineering; Ph.D., University of Wisconsin

**ETTLING, JOHN,** Interim Vice President for Academic Affairs and Provost, Professor of History; Ph.D., Harvard University

**FAIRCLOTH, JAMES B.,** III, Assistant Professor of Marketing; D.B.A., Mississippi State University

**FERRARO, F. RICHARD,** Associate Professor of Psychology; Ph.D., University of Kansas

**FIORIO, RICHARD,** Professor and Director of the School of Communication; Ph.D., University of Illinois–Urbana

**FIRE, KEVIN M.,** Associate Professor of Communication Sciences and Disorders; Ph.D., Ohio State University

**FIVIZZANI, ALBERT J., JR.,** Acting Dean, College of Arts and Sciences, Professor of Biology and Chester Fritz Distinguished Professor; Ph.D., Louisiana State University

**FLESHER, SHERRIE,** Assistant Professor of Languages–French; Ph.D., University of Oregon

**FLOM-MELAND, CYNTHIA,** Instructor of Physical Therapy; M.P.T., University of North Dakota

**FLOWER, ANN M.,** Assistant Professor of Microbiology and Immunology; Ph.D., University of Colorado Health Sciences Center

**FORSMAN, NIELS F.,** Assistant Professor of Geology and Geological Engineering; Ph.D., University of North Dakota

**FOSTER, MINDI,** Assistant Professor of Psychology; Ph.D., Carleton University

**FOX, LAYONNE,** Instructor of Occupational Therapy; B.S.O.T., University of North Dakota

**FRAPPIER, JOHN,** Assistant Professor of Family Medicine and Adjunct Instructor of Physical Therapy; M.S., University of Kansas

**FRY, JAMES H.,** Professor of Music; Ph.D., Eastman School of Music, University of Rochester

**FRY, PATRICIA B.,** Professor of Law; J.D., Southwestern University

**FULLER, MARY LOU,** Professor of Teaching and Learning and Chester Fritz Distinguished Professor; Ph.D., University of New Mexico
**FUNDINGLAND, PAUL E.**, Professor of Visual Arts; M.F.A., University of Washington

**FURMAN, LEOLA E.**, Associate Professor of Social Work; Ph.D., Fielding Institute

**GABRYNOWICZ, JOANNE**, Professor of Space Studies, Center for Aerospace Sciences; J.D., Yeshiva University

**GAGNON, GREGORY**, Assistant Professor of Indian Studies; Ph.D., University of Maryland

**GAINES-STONER, KELLY**, Clinical Instructor of Law; J.D., University of Oklahoma

**GANJE, LUCY A.**, Associate Professor of Communication; M.F.A., Academy of Art College-San Francisco

**GERBER, ANNE**, Assistant Professor of Biology; Ph.D., Washington University

**GERLA, PHILIP**, Associate Professor of Geology and Geological Engineering; Ph.D., University of Arizona

**GERSHMAN, KATHLEEN**, Associate Professor of Teaching and Learning and Educational Foundations and Research; Ed.D., Harvard University

**GHASSEMI, AHMAD**, Assistant Professor of Geology and Geological Engineering; Ph.D., University of Oklahoma

**GIBBENS, BRAD**, Assistant Professor of Community Medicine and Rural Health; M.P.A., University of North Dakota

**GILJE, FREDRICKA**, Associate Professor of Statewide Psychiatric Nursing Education Program at Jamestown, College of Nursing; Ph.D., University of Colorado

**GILLETTE, GREG**, Associate Professor of Theatre Arts; M.F.A., Brandeis University

**GILDSORF, THOMAS**, Associate Professor and Chairperson of Mathematics; Ph.D., Washington State University

**GLICK, AUDREY**, Clinical Assistant Professor in Communication Sciences and Disorders; M.S., University of North Dakota

**GOODWIN, JANICE K.**, Associate Professor of Nutrition and Dietetics; Ph.D., Iowa State University

**GOSNOLD, WILLIAM D., JR.**, Professor of Geology; Ph.D., Southern Methodist University

**GOTT, GARY D.**, Associate Professor of Law and Director of Law Library; J.D., Brigham Young University

**GRABE, MARK**, Professor of Psychology and Chairperson of Department ; Ph.D., Iowa State University

**GRAGERT, MARCIA**, Associate Professor of Adult Health Nursing; Ph.D., the University of Texas at Austin

**GRAINGER, CEDRIC A.**, Associate Professor of Atmospheric Sciences; Ph.D., State University of New York

**GREEK, GREG D.**, Associate Program Director of Grand Forks Family Practice Center and Associate Professor of Family Medicine; M.D., University of North Dakota

**GREGORY, MICHAEL**, Professor of Mathematics; Ph.D., University of Connecticut

**GREILA, BERNARD**, Assistant Professor of Communication Sciences and Disorders; Ph.D. (ABD), Purdue University

**GREWEL, NANAK S.**, Professor of Mechanical Engineering; Ph.D., University of Illinois-Chicago

**GRIJALVA, JAMES**, Associate Professor of Law; J.D., Northwestern School of Law

**GROENEWOLD, GERALD H.**, Director of the Energy and Environmental Research Center and Associate Professor of Geology; Ph.D., University of Illinois-Chicago

**GROSS, DEAN**, Assistant Professor of Family and Community Nursing; DNSc, Rush University

**GROVE, BYRON D.**, Assistant Professor of Anatomy and Cell Biology; Ph.D., Clemson University

**GUIDO, GINNY**, Associate Dean of College of Nursing and Associate Professor of Nursing; J.D., South Texas College of Law

**GULICKS, HARVEY**, Associate Professor of Civil Engineering; Ph.D., Iowa State University

**GUY, MARK**, Assistant Professor of Teaching and Learning; Ph.D., University of Georgia

**HAAGENSTAD, SONJA**, Assistant Professor of Social Work; DSW, School of Social Work, University of Alabama

**HAGA, MYRNA P.**, Associate Professor of Social Work; Ph.D., University of Minnesota

**HAGA, WAYNE**, Assistant Professor of Business and Vocational Education; Ph.D., University of Northern Colorado

**HALL, JUDITH**, Assistant Professor and Chairperson of Nutrition and Dietetics; M.S., Kansas State University

**HALL, KENNETH E.**, Professor of Languages–Spanish; Ph.D., University of Arizona

**HALVORSON, LARRY**, Program Director of the Grand Forks Family Practice Center and Associate Professor of Family Medicine; M.D., University of North Dakota

**HAMMEN, JOHN L., III**, Associate Professor of Geography; Ph.D., Indiana State University

**HAMPSTEN, ELIZABETH M.**, Professor of English and Chester Fritz Distinguished Professor; Ph.D., University of Washington

**HANDA, KUSHAL**, Associate Professor of Internal Medicine; MBBS, FAC, Charing Cross and Westminster Medical Center

**HANDEY-MARECHLLO, BARBARA**, Associate Professor of History; Ph.D., University of Iowa

**HANHAN, SARA**, Interim Associate Vice Provost and Associate Professor of Teaching and Learning; Ph.D., University of North Dakota

**HANLEY, JAMES, F.**, Associate Professor and Chairperson of Internal Medicine and Program Director of Internal Medicine Residency Program; M.D., University of Connecticut School of Medicine

**HANLEY, YVONNE M.**, Assistant Professor of Teaching and Learning; M.S., University of North Dakota

**HANS, BIRGIT**, Associate Professor and Chairperson of Indian Studies; Ph.D., University of Arizona

**HANSEN, KENNETH**, Associate Professor of Accounting and Business Law; J.D., Indiana University of Law

**HANSON, DARLENE**, Clinical Associate Professor of Nursing; M.S., University of North Dakota

**HARMSON, PHILLIP**, Associate Professor of Accounting and Business Law; J.D., University of North Dakota

**HARRIS, MARY M.**, Dean of College of Education and Human Development, Director of Teacher Education, and Professor of Teaching and Learning; Ph.D., University of Pittsburgh

**HARRIS, T. ROBERT**, Associate Professor of Mathematics; Ph.D., Kansas State University

**HART, J. PATRICK**, Adjunct Professor of Community Medicine and Rural Health; Ph.D., University of Oklahoma

**HARTSON, DAVID**, Assistant Professor of Family Medicine; Ph.D., University of Missouri

**HASAN, ABU RASHID**, Professor of Chemical Engineering; Ph.D., University of Waterloo (Canada)

**HASELTON, JAMES R.**, Assistant Professor of Physiology; Ph.D., University of Miami at Coral Gables

**HEITKAMP, THOMASINE**, Associate Professor of Social Work; M.S.W., University of Wisconsin-Madison

**HELGESON, DIANE**, Associate Professor of Nursing; M.S., University of North Dakota

**HELGESON, LARS**, Associate Professor of Teaching and Learning; Ph.D., University of California–Los Angeles

**HEMMASI, MOHAMMED**, Professor of Geography; Ph.D., Indiana University

**HENLY, GEORGE A.**, Associate Professor of Counseling; Ph.D., University of Minnesota

**HENLY, SUSAN**, Associate Professor of Nursing; Ph.D., University of Minnesota

**HETLAND, BRUCE**, Assistant Professor of Internal Medicine; M.D., Southwestern University

**HEUER, LORETTA**, Assistant Professor of Nursing; Ph.D., University of North Dakota

**HEXMOOR, HENRY**, Assistant Professor of Computer Science; Ph.D., State University of New York at Buffalo

**HIKENS, JAMES**, Professor of Communication; Ph.D., University of Texas at Austin
Administration and Faculty

**L**

**LABRECQUE, MICHELLE,** Instructor of Physical Therapy; M.P.T., University of North Dakota

**LABUN, EVELYN,** Assistant Professor of Adult Health Nursing; Ph.D., University of San Diego

**LuDuke, JOHN C.,** Professor and Chairperson of Biology; Ph.D., Ohio State University

**LAKSHMAN, MEHESH,** Assistant Professor of Chemistry; Ph.D., University of Oklahoma

**LAMBEITH, DAVID O.,** Professor of Biochemistry and Molecular Biology and Chester Fritz Distinguished Professor; Ph.D., University of Wisconsin

**LANDRY, RICHARD G.,** Professor and Chairperson of Educational Foundations and Research; Director of Bureau of Educational Research, and Chester Fritz Distinguished Professor; Ph.D., Boston College

**LANG, GRETCHEN,** Professor of Anthropology; Ph.D., University of Missouri

**LANG, JEFFREY,** Professor of Biology; Ph.D., University of Minnesota

**LANGEMO, DIANE,** Professor of Nursing; Ph.D., University of Minnesota

**LARSON, ANNETTE C.,** Instructor of Community Medicine and Rural Health; F.N.P., University of North Dakota

**LARSON, JAMES H.,** Professor and Chairperson of Sociology; Ph.D., University of Kentucky

**LARSON, LINDA M.,** Assistant Professor of Pathology; M.S., University of North Dakota

**LAYCROOK, MARY,** Associate Professor of Educational Foundations and Research; Ph.D., Pennsylvania State University

**LEACH, MELINDA,** Assistant Professor of Anthropology; Ph.D., University of California-Los Angeles

**LEBUGLE, ANDRE M.,** Associate Professor of Languages-French; Ph.D., State University of New York-Buffalo

**LEE, JEOG WAN,** Associate Professor of Finance; Ph.D., University of Texas at Austin

**LEE, KAP J.,** Director of Biomedical Research Facility and Professor of Community Medicine and Rural Health; D.V.M., Seoul National University

**LEE, RANDY H.,** Professor of Law; J.D., Washington and Lee University

**LEFEEVER, RICHARD,** Associate Professor of Geology; Ph.D., University of California

**LEMON, DONALD K.,** Professor of Educational Leadership; Ed.D., University of Kansas

**LESSARD, JAMES,** Associate Professor of Internal Medicine; M.D., Southern Illinois University

**LEWIS, BARBARA E.,** Associate Professor of Music; Ph.D., Indiana University

**LEWIS, ROBERT W., JR.,** Professor and Chairperson of English, Coordinator of Peace Studies, and Chester Fritz Distinguished Professor; Ph.D., University of Illinois

**LINDHOLM, LYNN,** Associate Professor of Philosophy; Ph.D., City University of New York

**LINDSETH, GLENDAY,** Associate Professor of Nursing; Ph.D., Saint Louis University

**LINDSETH, PAUL,** Associate Professor of Aviation; Ph.D., University of Michigan

**LOCKNEY, THOMAS M.,** Professor of Law; LL.M., Harvard University

**LOVLACE, KENT,** Professor of Aviation and Chairperson of Department; M.S., University of North Dakota

**LOWE, D. SCOTT,** Associate Professor of Religion; Ph.D., University of Iowa

**LOYLAND, MARY,** Associate Professor of Accounting and Business Law; Ph.D., University of Nebraska-Lincoln

**LUBER, PATRICK,** Associate Professor of Visual Arts; M.F.A., University of New Mexico

**LUDTKE, RICHARD L.,** Professor of Sociology; Ph.D., University of Kentucky

**LUNN, ERIC R.,** Associate Professor of Pediatrics and Assistant Dean for Medical School Northeast Campus at Grand Forks; M.D., University of South Carolina

**LUTZ, DENNIS J.,** Professor and Chairperson of Obstetrics and Gynecology; M.D., Cornell University Medical College

**LYKKEN, GLENN L.,** Professor of Physics; Ph.D., University of North Carolina

**M**

**MABEY, RENEE R.,** Assistant Professor of Physical Therapy; Ph.D., University of North Dakota

**MACJEVNIK, CHERYL,** Clinical Assistant Professor of Nursing; M.S., University of North Dakota

**MADDEN, JOHN P.,** Associate Professor of Communication Sciences and Disorders; Ph.D., Ohio State University

**MALLOW, GAIL,** Clinical Assistant Professor of Satewide Psychiatric Nursing Education Program at Jamestown, College of Nursing; M.S.N., University of Mary

**MANN, MICHAEL D.,** Associate Professor of Chemical Engineering; Ph.D., University of North Dakota

**MANN, WILLIAM S.,** Associate Professor and Chairperson of Family Medicine; M.D., University of Glasgow

**MARIN, PHILIP,** Assistant Professor of Internal Medicine; M.D., Northwestern University

**MARKOVICH, DENISE,** Professor of Finance; Ph.D., University of Manitoba

**MARKOVICH, STEPHEN C.,** Professor of Political Science and Public Administration; Ph.D., University of Virginia

**MARSHALL, DAVID F.,** Professor of English; Ph.D., New York University

**MARSHALL, DOUGLAS,** Assistant Professor of Aviation; J.D. Hastings College of Law

**MARTSOEEL, JOHN T.,** Professor of Pediatrics and Pharmacology and Toxicology; M.D., Jefferson Medical College-Philadelphia

**MASON, EARL S., P.E.,** Professor of Civil Engineering; Ph.D., Utah State University and J.D., University of North Dakota

**MATHENEY, RONALD K.,** Associate Professor of Geology and Geological Engineering; Ph.D., Arizona State University

**MATTSON, STEVEN R.,** Associate Program Director of Minot Center for Family Medicine Program and Associate Professor of Family Medicine; M.D., Michigan State University

**MAURY, DEBRA,** Assistant Professor of Languages-Spanish; Ph.D., University of California, Berkeley

**McBride, ROSEANNE,** Assistant Professor of Family Medicine; Ph.D., University of North Dakota

**McCleary, Vikki L.,** Instructor of Physiology, Ph.D., University of North Dakota

**McCleery, KATHRYN,** Professor of Visual Arts; M.F.A., Michigan State University

**McCormack, JOHN T.,** Associate Professor of Anatomy and Cell Biology; Ph.D., University of Kansas

**McDONALD, JUSTIN,** Associate Professor of Psychology; Ph.D., University of South Dakota

**McINTYRE, SUSAN,** Assistant Professor and Chairperson of Occupational Therapy; M.S., University of North Dakota

**McKENZIE, JAMES J.,** Professor of English; Ph.D., University of Notre Dame

**McKEON, MATTHEW,** Assistant Professor of Philosophy and Religion; Ph.D., University of Connecticut

**McLENAN, KATHLEEN,** Associate Professor and Chairperson of Theatre Arts; Ph.D., University of Wisconsin

**MEBERG, PETER,** Assistant Professor of Biology; Ph.D., Northwestern University

**MEDALEN, RODNEY E.,** Associate Professor of Accounting and Business Law; M.S. and M.Ed., University of North Dakota

**MEEK, JAY,** Professor of English; M.A., Syracuse University

**MEEK, MARTHA,** Associate Professor of English; Ph.D., Syracuse University

**MELLAND, HELEN,** Associate Professor of Nursing and Chairperson of Department of Professionalism and Practice; Ph.D., University of Minnesota

**MELVOLD, ROGER,** Professor and Chairperson of Microbiology and Immunology; Ph.D., University of Kansas, Lawrence

**METZGER, JERRY M.,** Professor of Mathematics; Ph.D., University of Connecticut

**MEYER, MICHAEL E.,** Associate Professor of Sociology and Director of Criminal Justice Studies; Ph.D., University of Oklahoma-Norman

**MEYERS, ELIZABETH,** Assistant Professor of Visual Arts; Ph.D., University of Pennsylvania
Administration and Faculty

POOLMAN, MARK, Instructor of Family Medicine; M.S., University of North Dakota
**PORTER, KIMBERLY, Assistant Professor of History; Ph.D., University of Iowa
**POTTER, THOMAS A., Associate Professor of Finance; Ph.D., University of Colorado
**PRIGGE, GLENN, Professor of Mathematics; Ph.D., University of Minnesota
**PRIGGE, LILA, Professor of Business and Vocational Education; Ph.D., University of North Dakota
**PYLE, SALLY, Assistant Professor of Biology; Ph.D., Duke University

R
RABADI, KHALED, Assistant Professor of Internal Medicine; M.D., University of Jordan, Amman
**RADA, JODY, Assistant Professor of Anatomy and Cell Biology; Ph.D., University of North Dakota
RADEL, CURTIS, Clinical Instructor and Director of Nurse Anesthesia Clinical Specialization; M.S., University of North Dakota
**RAKOW, LANA, Professor of Communication; Ph.D., University of Illinois
**RAMSETT, DAVID E., Professor of Economics and Division Director of Economics and Public Affairs; Ph.D., University of Oklahoma
RAND, THOMAS A., Associate Dean of College of Arts and Sciences and Associate Professor of Humanities; B.D., Harvard Divinity School
**RANKIN, ELIZABETH D., Professor of English, Director, University Writing Program, Interim Director of Instructional Development; Ph.D., State University of New York at Binghamton
**RAO, B. SESHAGIRI, Professor and Chairperson of Physics; Ph.D., Pennsylvania State University
RUSH, LAURA A., Assistant Professor of Pathology; M.D., University of North Dakota
*REESE, DONA, Assistant Professor of Social Work; Ph.D., University of Maryland
REINHARDT, EDWARD, Clinical Instructor of Law; J.D., University of North Dakota
RELLING, DAVID, Instructor of Physical Therapy; M.S., Kansas State University, Manhattan
REMBOLDT, PAUL A., Assistant Professor of Social Work; M.S.W., Arizona State University
REN, JUN, Assistant Professor of Psychology; Ph.D., University of Alberta
*RENDAHL, STEPHEN E., Associate Professor of Communication; Ph.D., University of Minnesota
RHEUDE, ELIZABETH, Assistant Professor of Music; M.M., Michigan State University
**RICE, DANIEL R., Associate Professor and Chairperson of Educational Leadership; Ph.D., University of North Dakota
RICHARD, DON, Dean of the School of Engineering and Mines, and Professor of Civil Engineering, ScD, New Mexico State University
**RICHARDS, THOMAS, Assistant Professor of Mathematics; Ph.D., Washington State University
RJECKE, WILLIAM C., Assistant Professor of Pediatrics; M.D., Tulane University
**RIEKE, GERALD K., Associate Professor of Anatomy and Cell Biology; Ph.D., Louisiana State University
RHINE, RUSSELL, Assistant Professor of Economics and Public Affairs; Ph.D., West Virginia University
**RINEHART, RONALD, Professor of Atmospheric Sciences; Ph.D., Colorado State University
ROBERTSON, CHARLES L., Associate Professor of Aviation; M.A., Ball State University
**ROBISON, JAMES, Associate Professor of English; M.A., Ohio State University
*ROBLES, MARCEL, Assistant Professor of Business and Vocational Education; Ph.D., University of North Dakota
**RODEE, JAMES F., Director of Choral Studies and Professor of Music; D.M.A., University of Iowa
ROMANICK, MARK A., Instructor of Physical Therapy; M.P.T., University of North Dakota
RUBECK, ROBERT F., Associate Dean of Academic Affairs and Information Resources and Associate Professor of Family Medicine; Ph.D., Ohio State University, Columbus
RUDD, JAMES D., Director of Division of Sports Medicine, Head Athletic Trainer and Assistant Professor of Family Medicine; M.S., University of North Dakota
RUDY, REBECCA, Assistant Professor of Nutrition and Dietetics; M.S., North Dakota State University
**RUIT, KENNETH G., Associate Professor of Anatomy and Cell Biology; Ph.D., Loyola University of Chicago
RYAN, CASEY J., Associate Professor of Internal Medicine; M.D., University of Colorado

S
SAILER, FRANCES, Instructor of Microbiology and Immunology; M.S., University of North Dakota
**SALEHAFAR, HOSSEIN, Assistant Professor of Electrical Engineering; Ph.D., Texas A&M University at College Station
*SAIZER, MAUREEN, Assistant Professor of English; Ph.D., University of Arizona
**SAMSON, WILLIS K., Professor and Chairperson of Physiology; Ph.D., University of Texas Health Science Center
SCHAUER, JANET, Clinical Associate Professor of Nursing; M.S., University of Minnesota
SCHAUER, ROGER W., Associate Professor of Family Medicine; M.D., Wayne State University School of Medicine, Detroit
SCHIL, MARY JO, Clinical Assistant Professor of Communication Sciences and Disorders; M.A., Indiana University
**SCHLOSSER, ISAAC, Professor of Biology; Ph.D., University of Illinois
**SCHNEIDER, FREDERICK E., Professor and Chairperson of Anthropology; Ph.D., University of Missouri
SCHNEIDER, MARK R., Associate Professor of Radiology; M.D., University of North Dakota
**SCHNEIDER, MARY JANE, Professor of Indian Studies and Chester Fritz Distinguished Professor; Ph.D., University of Missouri
**SCHROEDER, TIM, Associate Professor of Recreation and Leisure Services; Re.D., Indiana University
**SCHULTZ, RICHARD, Assistant Professor of Electrical Engineering; Ph.D., University of Notre Dame
SCHUMACHER, PETER, Assistant Professor of Aviation; M.S., Embry-Riddle Aeronautical University
**SCHWALM, WILLIAM, Professor of Physics; Ph.D., Montana State University
SEIDEL, ROBERT E., Assistant Professor of Geography; Ph.D., University of North Dakota
**SEIELSTAD, GEORGE A., Associate Dean for Academics and Professor of Space Studies, Center for Aerospace Sciences; Ph.D., California Institute of Technology
**SHABB, JOHN B., Associate Professor of Biochemistry and Molecular Biology; Ph.D., West Virginia University
**SHEAFFER, MARGARET B., Associate Professor of Teaching and Learning; Ph.D., University of North Dakota
**SHAFER, RICHARD, Associate Professor of Communication; Ph.D., University of Missouri
SHARBO, DAVID A., Professor of Neuroscience; M.D., St. Louis University School of Medicine
**SHAY, WILLIAM, Assistant Professor of Chemistry; Ph.D., State University of New York at Stony Brook
SHEIKH-IBRAHIM, FIRAS, Associate Professor of Civil Engineering; Ph.D., University of Texas at Austin
SHEEHAN, WILLIAM, Assistant Professor of Neuroscience; M.D., University of South Dakota
**SHERIDAN, DANIEL P., Associate Dean College of Arts and Sciences; Professor of English; Ph.D., Northwestern University
**SHERIDAN, WILLIAM P., Professor of Biology and Chester Fritz Distinguished Professor; Ph.D., University of Illinois
SKRAMSTAD, ALLAN, Assistant Professor of Aviation; M.S., University of North Dakota
**SLOTNICK, HENRY B., Professor of Neuroscience; Ph.D., University of Illinois
**SMART, KATHY, Director of the Center for Instructional and Learning Technologies and Assistant Professor of Industrial Technology; Ed.D., University of North Dakota
SMITH, C. MILTON, Program Director of Minot Center for Family Medicine and Associate Professor of Family Medicine; M.D., University of Texas
**SMOLIYAKOVA, IRINA, Assistant Professor of Chemistry; Chemical Sciences Degree, Zelinsky Institute of Organic Chemistry, Russian Academy of Science
SOLBERG, DAVID, Instructor of Neuroscience; M.Ed., North Dakota State University
**TILL, ROBERT,** Associate Professor of Chemistry; Ph.D., University of Utah

**STANLAKES, L.,** Associate Professor of Mechanical Engineering; M.S., University of North Dakota

**STAPLES, CLIFFORD L.,** Associate Professor of Sociology; Ph.D., Washington State University

**STEEN, PRESTON D.,** Associate Professor of Internal Medicine; M.D., University of Minnesota

**STEEN, THOMAS B.,** Associate Professor of Physical Education and Exercise Science; Ph.D., Ohio State University

**STEvens, wes,** Assistant Professor of Social Work; Ph.D., University of Illinois–Urbana/Champaign

**STILES, ROBERT E.,** Assistant Professor of Physical Education and Exercise Science and Head Golf Coach; M.S., University of North Dakota

**STITH, JEFFREY,** Professor and Chairperson of Atmospheric Sciences; Ph.D., University of Washington

**STOFFERahn, CURTIS W.,** Associate Professor of Sociology and Director, Social Science Research Institute; Ph.D., Iowa State University

**STRackbein, DEANNA L.,** Associate Professor of Teaching and Learning; Ph.D., Arizona State University

**STRADLeY, SCOT A.,** Associate Professor of Economics; Ph.D., University of Utah

**STREET, STEVEN,** Assistant Professor of Teaching and Learning; M.Ed., University of Central Florida

**STUBE, JAN,** Instructor of Occupational Therapy; M.S., University of North Dakota

**SUkALSkI, KATHERINE A.,** Associate Professor of Biochemistry and Molecular Biology; Ph.D., University of North Dakota

**SWEiTZER, RICK,** Assistant Professor of Biology; Ph.D., University of Nevada

**SWENSON, WAYNE M.,** Professor of Surgery; M.D., Harvard Medical School

**SWisher, WAYNE E.,** Associate Professor and Chairperson of Communication Sciences and Disorders; Ph.D., University of Wisconsin

**SYMSer, GERALD,** Adjunct Associate Professor of Anatomy and Cell Biology and Clinical Associate Professor of Radiology; Ph.D. and M.D., Temple University

**TANGEeNL, GUY P.,** Program Director of Bismarck Family Practice Center and Assistant Professor of Family Medicine; M.D., University of North Dakota

**TANGEsRUD, ROBERT J.,** Assistant Professor of Marketing; MBA, University of North Dakota

**TEiTZEN, MERLE L.,** Adjunct Assistant Professor of Physical Therapy and Clinical Assistant Professor of Neuroscience; M.D., Medical College of Wisconsin

**THACTeR, RICKY M.,** Master Sergeant, United States Army and Instructor of Military Science; B.S., Columbia University

**THeIeG, DAVID J.,** Associate Professor of Internal Medicine and Director of Clinical Education; M.D., University of North Dakota

**THOMAS, STEVEN L.,** Captain, United States Army and Assistant Professor of Military Science; B.S., Southern Illinois University

**THOMaSSON, KATHRYN,** Assistant Professor of Chemistry; Ph.D., Iowa State University

**THOMpSON, BRIDGET M.,** Clinical Assistant Professor of Nursing; M.S., University of Texas

**THOMpSON, HOWARD E.,** Assistant Professor of Pathology and Director of Cytotechnology Program; B.A., University of Washington

**THOMpSON, MYRA J.,** Assistant Professor of Nursing; M.S.N., South Dakota State University

**THUREEN, FAYTHE,** Instructor of Languages–Norwegian; M.A., University of Minnesota

**TIeMMAN, KATHLEEN A.,** Associate Professor of Sociology; Ph.D., Western Michigan University

**TIESZEN, MARK,** Associate Professor of Internal Medicine and Director of Transitional Residency Program; M.D., University of South Dakota

**TIGHT, ROBERT R.,** Professor of Internal Medicine; M.D., University of Rochester

**TILL, ROBERT,** Professor of Psychology; Ph.D., University of Minnesota

**TIOLTTA, DAVID,** Associate Professor of Chemistry; Ph.D., Kansas State University

**TODHUNTER, PAUL,** Associate Professor and Chairperson of Geography; Ph.D., University of California-Los Angeles

**TOLBERT, SCOTT,** Assistant Professor of Mechanical Engineering; M.S., University of North Dakota

**TORGERSON, LESLIE A.,** Assistant Professor of Pathology; M.D., Washington University, St. Louis

**TOvARES, RAUL,** Assistant Professor of Communication; Ph.D., University of Texas

**TOWNE, GARY,** Associate Professor of Music; Ph.D., University of California

**TRAPNELL, BENJAMIN,** Assistant Professor of Aviation; M.S., Embry-Riddle Aeronautical University

**TSCHACHer, WALeR,** Associate Professor of Languages–German; Ph.D., University of Wisconsin

**TsuchiYa, MAKoTo,** Assistant Professor of Family Medicine; M.S., West Virginia University

**Tucker, Eric H.,** Assistant Professor of Music; DMA, Ohio State University

**TWOHEnY, DENISE,** Associate Professor of Counseling; Ed.D., Western Michigan University

**TYLer, JOHN D.,** Professor of Psychology; Ph.D., University of Texas

**TYRRe, ELIZABETH,** Clinical Associate Professor of Nursing and Chairperson of the Department of Family and Community Health Nursing; M.P.H., University of Michigan

**UHLENBERG, BEVERLY,** Associate Professor of Teaching and Learning; Ph.D., University of North Dakota

**UHlERkA, DAVID J.,** Professor of Mathematics; Ph.D., University of Utah

**VALEROSo, ELSA,** Assistant Professor of Computer Science, Ph.D., University of Toledo

**VARi, RICHARD C.,** Associate Professor of Physiology; Ph.D., University of Kentucky

**VAUGHAN, ROXANNE,** Assistant Professor of Biochemistry and Molecular Biology; Ph.D., Virginia Polytechnic Institute and State University, Blacksburg

**VITTON, JOHN J.,** Associate Professor of Management; Ph.D., University of Nebraska-Lincoln

**VOGELTAIZ, NANCY D.,** Associate Professor of Psychology and Assistant Professor of Neuroscience; Ph.D., University of Maine

**VOLDEN, CECILIA,** Professor of Nursing; M.S., University of Minnesota

**vON DuVILLARD, SERGE,** Associate Professor of Physical Education and Exercise Science; Ph.D., University of North Texas

**WACKSMAN, RICHARD M.,** Associate Professor of Internal Medicine; M.D., American University of the Caribbean

**WAGNER, BARRY,** Assistant Professor of Communication Sciences and Disorders; Ph.D., Indiana University

**WAGNER, JOHN L.,** Assistant Professor of Physics; Ph.D., University of Virginia

**WALKER, DEBRA,** Assistant Professor of Family Medicine and Assistant Program Director of Fargo Family Practice Center; M.D., University of Minnesota School of Medicine

**WAMSBSGANSS, JACOB,** Professor of Accounting and Business Law; Ph.D., University of Nebraska, Lincoln

**WANBERG, LARRIE,** Adjunct Assistant Professor of Community Medicine & Rural Health; Ph.D., University of Denver

**WATSON, DIETTA,** Assistant Professor of Physical Education and Exercise Science; M.A., Adams State College

**WEATHERLY, JEFFREY,** Assistant Professor of Psychology; Ph.D., Washington State University

**WEILAND, TIMOTHY L.,** Medical Director of Cytotechnology and Assistant Professor of Pathology; M.D. Mayo Medical School

**WELLS, DIANA,** Associate Professor of Mathematics; Ph.D., Washington State University

**WHITCOMB, DAVID,** Assistant Professor of Counseling; Ph.D. (pending), State University of New York at Buffalo

**WHITE, FRANCIS,** Instructor of Sociology; M.A., University of North Dakota

**WHITHEAD, JAMES R.,** Associate Professor of Physical Education and Exercise Science; Ed.D. Arizona State University
**WIENER, DAVID M., Associate Professor of English; Ph.D., University of Illinois**

**WIGGEN, THOMAS P., Associate Professor of Computer Science; Ph.D., Louisiana State University.**

**WILDE, HAROLD H., Associate Professor and Division Director of Accounting and Finance; Ph.D., University of Nebraska**

**WILLIAMS, JOHN A., Professor of Anthropology; Ph.D., Ohio State University.**

**WILLIAMS, JOHN D., Professor of Educational Foundations and Research; Ph.D., Colorado State College.**

**WILSNACK, RICHARD W., Professor of Neuroscience; Ph.D., Harvard University.**

**WILSNACK, SHARON C., Professor of Neuroscience and Chester Fritz Distinctedg Professor; Ph.D., Harvard University.**

**WILSON, H. DAVID, Dean of School of Medicine and Health Sciences and Professor of Pediatrics; M.D., St. Louis University School of Medicine.**

**WITTGRAF, MICHAEL, Assistant Professor of Music; D.M.; Northwestern University.**

**WOEHLLE, RALPH, Associate Professor of Social Work; Ph.D., The Union for Experimenting Colleges and Universities.**

**WONDERLICH, STEPHEN, Professor of Neuroscience; Ph.D., University of Missouri.**

**WOOD, CHARLES, Professor and Chairperson of Space Studies; Ph.D., Brown University.**

**WRENN, WILLIAM J., Professor of Biology; Ph.D., University of Kansas.**

**Y**

**YEARWOOD, DAVID, Assistant Professor of Industrial Technology; Ph.D. (pending); University of North Dakota.**

**YOUNG, KEVIN, D., Professor of Microbiology and Immunology; Ph.D., University of Oklahoma.**

**YOUNGS, LINDA F., Clinical Instructor of Nursing; M.A., University of North Dakota.**

**YURKOVICH, ELEANOR E., Associate Professor of Adult Health Nursing and Family and Community Health Nursing; Ed.D.; Montana State University.**

**Z**

**ZACHER, DALE, Associate Professor of Communication; ABD (pending); Ohio University.**

**ZAHRLY, JANICE H., Associate Professor of Management; Ph.D., University of Florida.**

**ZEVENBERGEN, ANDREA, Assistant Professor of Psychology; Ph.D., State University of New York at Stony Brook.**

**ZHU, WEIDON, Assistant Professor of Mechanical Engineering; Ph.D.; University of California at Berkeley.**

**ZIDON, MARGARET, Assistant Professor of Teaching and Learning; Ph.D., University of North Dakota.**

**ZIEGLER, CATHY, Instructor of Family Medicine; M.S., South Dakota State University.**

**ZIERDT, CANDACE, Associate Professor of Law; LL.M. Temple University.**

**ZIMMERMAN, SONIA, Assistant Professor of Occupational Therapy; M.A., University of North Dakota.**

---

**OTHER ACADEMIC PROFESSIONALS**

**AYERS, ELAINE, Director, Central Legal Research, School of Law; J.D., University of North Dakota.**

**BASSINGTHWAITE, SCOTT, Research Assistant, Regional Weather Information Center; B.S., University of North Dakota.**

**BLAIS, DEAN, Head Hockey Coach; M.Ed., University of North Dakota.**

**BLOCK, CORY, Research Assistant, Regional Weather Information Center; B.S., University of North Dakota.**

**BORHO, ALAN A., Research Associate of Atmospheric Sciences; B.S., University of North Dakota.**

**BOWEN, JEFF, Assistant Hockey Coach, B.B.A., University of North Dakota.**

**BRATTIEL, MARLYS J., Program Director of Consortium of Geovontology; M.S.S.W., University of Wisconsin.**

**BRODE, BARRY, Director, UND Television; M.S., Illinois State.**

**BRUGGEMAN, MARIA B., Head Volleyball Coach, B.S., University of North Dakota.**

---

**CLAY, RICHARD D., Head Women’s Track Coach; M.S., St. Cloud State University.**

**DEUTSCH, DARCY, Assistant Women’s Basketball Coach; B.S., University of North Dakota.**

**DOSCH, THOMAS, Assistant Football Coach; B.S. Dickinson State University.**

**ELWORTH, JAMES, Assistant Athletic Director; J.D., University of Nebraska.**

**EVANS, JULIE, Assistant Dean and Legal Counsel, School of Law; J.D., University of North Dakota.**

**FONTAINE, CORELL, Research Associate, Social Science Research Institute; M.A., University of North Dakota.**

**GIBBONS, CORDEL, General Manager, Northern Lights Public Radio.**

**GLOB, RICHARD, Head Basketball Coach; M.S., Western State University.**

**GRANDALL, MICHAEL G., Men’s Track Coach; M.S., University of North Dakota.**

**GRINER, JON W., Program Director, Small Business Development Center; B.S., Mayville State University.**

**HAHN, BRYAN, Research Associate, Regional Weather Information Center; M.S., University of North Dakota.**

**HAWTHORNE, JOAN, Coordinator, Writing Across the Curriculum; Ph.D., University of North Dakota.**

**HEDBERG, RANDY, Assistant Football Coach; M.Ed., University of North Dakota.**

**HORNE, DAVID, Research Assistant, Atmospherium; M.S., University of North Dakota.**

**HURLEY, PATRICK, Research Associate of Atmospheric Sciences; B.S., Pennsylvania State University.**

**JACOBSON, BENJAMIN, Assistant Men’s Basketball Coach; M.S., University of North Dakota.**

**JAMES, MORGAN, Research Assistant, Regional Weather Information Center; B.S., University of North Dakota.**

**JONES, B.L., Director, Northern Plains Tribal Judicial Training Institute, School of Law; J.D., University of Virginia School of Law; B.A., Virginia Tech.**

**KEARNS, WALTER J., Director, Small Business Development Center; M.B.A., Florida Institute of Technology.**

**KROEBER, SCOTT, Research Assistant, Regional Weather Information Center; B.S., University of North Dakota.**

**LENNON, DALE, Head Football Coach; M.A., Northern State University.**

**MCCANN, KATHLEEN, Assistant Athletic Director, Ph.D., University of North Dakota.**

**MEHRER, RONALD E., Project Director, Business and Vocational Education; M.S., North Dakota State University.**

**MUHLHAUSER, TARA, Project Director, Children and Family Services Training Center; J.D., University of North Dakota.**

**NORDLIE, JOHN, Research Assistant, Regional Weather Information Center; B.S., University of North Dakota.**

**OLSON, DOUGLAS, Project Manager, Upper Midwest Aerospace Consortium (UMAC); M.S., University of North Dakota.**

**OWENS, MARK, Research Assistant, Regional Weather Information Center; B.S., Troy State University at Montgomery.**

**PETERSON, JAN M., Program Director, Small Business Development Center; M.S., North Dakota State University.**

**ROEBUCK, GENE, Head Women’s Basketball Coach; M.S., Mayville State College.**

**SANDELIN, SCOTT, Assistant Hockey Coach; B.S., University of North Dakota.**

**SCHWEIGERT, KYLE, Assistant Football Coach; B.A., Jamestown College.**

**SHEAFFER, JAMES, Associate Dean and Co-Director of Programming, Division of Continuing Education, Outreach Programs; Ph.D., Northwestern University.**

**SNYDER, GORDON, Program Director, Small Business Development Center; B.S., Northern Illinois University.**

**STROMBERG, MICHAEL, Swimming Coach; M.S., University of North Dakota.**

**TILBURY, ROGER, Research Associate of Atmospheric Sciences.**

**TOOM, DENNIS, Research Archaeologist, Anthropology; Ph.D., University of Colorado.**

**VARRICCHIO, LOUIS, Research Associate, Earth System Science; B.A.; Temple University.**

**VENDSEL, BRYAN G., Program Director, Small Business Development Center; B.A., Minot State University.**

**ZIEGLER, KELVIN, Baseball Coach; M.Ed., University of North Dakota.**
FACULTY MEMBERS EMERITI

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University of North Dakota

Grand Forks, North Dakota

## TELEPHONE AREA CODE IS 701

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INFORMATION SOURCES

ABOUT THE

University of North Dakota

Grand Forks, North Dakota

Freshman Student Applications and Undergraduate Transfer Student Applications

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

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

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

Telephone: 701-777-4463

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http://www.und.edu

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