ACADEMIC CATALOG
1995-97
University of North Dakota
Grand Forks, North Dakota

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University of North Dakota

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

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Vol. 87, Issue 4, June, 1995; USPS 476-010
Welcome to the University of North Dakota!

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

Don’t be misled by the heft and detail of the publication you are reading. Although universities are among the most enduring of society’s institutions, they are alive, dynamic and changing continuously. This is true of every one of the 113 undergraduate and 53 graduate and professional programs offered at UND. Here, you will grow in a challenging and exciting environment of excellence in scholarship and discovery.

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

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

Sincerely,

Kendall L. Baker
President
# Academic Calendar

(Subject to Change)*

### FALL SEMESTER

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<th>Event</th>
<th>1995-96 (961)</th>
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<tr>
<td>Beginning of Instruction</td>
<td>August 29</td>
<td>August 27</td>
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<tr>
<td>Last Day for Advancement to Candidacy for M.F.A., Specialist, or Doctoral Students, and for Advancement to Approved Status for Master’s Students Planning to Graduate in January</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Holiday, Labor Day</td>
<td>September 4</td>
<td>September 2</td>
</tr>
<tr>
<td>Last Day to Add a Full-Term Course</td>
<td>September 12</td>
<td>September 10</td>
</tr>
<tr>
<td>Last Day on Which Candidates May Apply for a Degree</td>
<td>September 26</td>
<td>September 24</td>
</tr>
<tr>
<td>Last Day to Change to/from S/U</td>
<td>September 29</td>
<td>September 27</td>
</tr>
<tr>
<td>Last Day for Graduate Students to Remove Incompletes</td>
<td>October 3</td>
<td>October 1</td>
</tr>
<tr>
<td>Last Day to Drop</td>
<td>November 3</td>
<td>November 1</td>
</tr>
<tr>
<td>Holiday, Veterans Day</td>
<td>November 10</td>
<td>November 11</td>
</tr>
<tr>
<td>Last Day to File Preliminary Approval of Thesis or Dissertation in the Graduate School</td>
<td>November 22</td>
<td>November 21</td>
</tr>
<tr>
<td>Thanksgiving Recess</td>
<td>November 23-24</td>
<td>November 28-29</td>
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<tr>
<td>Last Day to Submit Final Copy of Thesis or Dissertation to the Graduate School</td>
<td>December 7</td>
<td>December 5</td>
</tr>
<tr>
<td>Last day to File Final Report on Degree Examinations and Independent Study Completion in the Graduate School</td>
<td>December 20</td>
<td>December 20</td>
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<tr>
<td>Grades Due</td>
<td>December 22</td>
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### SPRING SEMESTER

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<td>Beginning of Instruction</td>
<td>January 10</td>
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<td>Last Day for Advancement to Candidacy for M.F.A., Specialist, or Doctoral Students, and for Advancement to Approved Status for Master’s Students Planning to Graduate in January</td>
<td>January 10</td>
<td>January 8</td>
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<tr>
<td>Holiday, Martin Luther King Jr. Day</td>
<td>January 15</td>
<td>January 20</td>
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<tr>
<td>Last Day to Add a Full-Term Course</td>
<td>January 24</td>
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<tr>
<td>Last Day on Which Candidates May Apply for a Degree</td>
<td>February 7</td>
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</tr>
<tr>
<td>Last Day to Change to/from S/U</td>
<td>February 9</td>
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<td>Last Day for Graduate Students to Remove Incompletes</td>
<td>February 14</td>
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<tr>
<td>Holiday, Presidents’ Day</td>
<td>February 19</td>
<td>February 17</td>
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<tr>
<td>Spring Recess Beginning at Close of Classes</td>
<td>March 9-17</td>
<td>March 10-14</td>
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<tr>
<td>Last Day to Drop</td>
<td>March 29</td>
<td>March 27</td>
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<tr>
<td>Holiday, Easter</td>
<td>April 5</td>
<td>Mar. 28 &amp; Mar. 31</td>
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<tr>
<td>Last Day to File Preliminary Approval of Thesis or Dissertation in the Graduate School</td>
<td>April 11</td>
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<tr>
<td>Reading and Review Day</td>
<td>April 25</td>
<td>April 24</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>May 2</td>
<td>May 1</td>
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<tr>
<td>Semester Examination Period</td>
<td>May 3-10</td>
<td>May 9-10</td>
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<tr>
<td>Spring Commencement and Official Graduation Day</td>
<td>May 12</td>
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<td>Grades Due</td>
<td>May 14</td>
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### SUMMER SESSION

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<td>May 13</td>
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<tr>
<td>Last Day to Add a Full-Term Course</td>
<td>May 24</td>
<td>May 23</td>
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<tr>
<td>Holiday, Memorial Day</td>
<td>May 27</td>
<td>May 26</td>
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<tr>
<td>Last Day on Which Candidates May Apply for a Degree</td>
<td>June 7</td>
<td>June 6</td>
</tr>
<tr>
<td>Holiday, Independence Day</td>
<td>July 4</td>
<td>July 4</td>
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<tr>
<td>Last Day to File Preliminary Approval of Thesis or Dissertation in the Graduate School</td>
<td>July 5</td>
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<td>July 12</td>
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<td>Last Day to Submit Final Copy of Thesis or Dissertation to the Graduate School</td>
<td>July 18</td>
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<td>Last day to File Final Report on Degree Examinations and Independent Study Completion in the Graduate School</td>
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<td>Final Examination Period</td>
<td>August 1-2</td>
<td>July 31 &amp; Aug. 1</td>
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<td>Summer Commencement and Official Graduation Day</td>
<td>August 2</td>
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<td>August 6</td>
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*All academic deadlines dates apply to full-time, on-campus courses.

**Please note that Summer 1996 has been changed since publication of the 1994-95 Catalog.
## 1995-1997 Academic Biennium

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

SATISFACTORY PROGRESS
Any time you drop a course or withdraw from the University, you may be jeopardizing your federally funded student financial aid, now or in the future. You must successfully complete at least two-thirds of all the courses in which you enroll. Dropping after the first day of class may not affect your academic standing, but it may affect your ability to borrow. 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.

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 Dean of Students 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, socioeconomic background, and sexual orientation; of persons with disabilities; and of people from other countries. Of particular importance is the University’s longstanding commitment to support the cultures and traditions of the American Indian people while providing learning and teaching experiences which enhance their self-determination, educational advantages, and professional opportunities. Policies and procedures of the University oblige its students, faculty, staff, and alumni to foster the awareness and sensitivity necessary for acceptance and understanding of all people in society. The University of North Dakota strongly disapproves and disavows acts of racism, sexism, bigotry, harassment, and violence in any form and actively uses its human and other resources to provide opportunities for its constituents and public to learn and appreciate the values of a diverse and multicultural world.
Also see the document titled “Diversity and Cultural Pluralism at the University of North Dakota,” a report to the UND President from the UND Diversity Steering Committee, dated September 10, 1993.

POLICY ON EQUAL OPPORTUNITY
It is the policy of the University of North Dakota that there shall be no discrimination against persons because of race, religion, age, color, sex, disability, sexual orientation, national origin, marital status, veterans’ status, or political belief or affiliation, and that equal opportunity and access to facilities shall be available to all. This policy is particularly applicable in the admission of students in all colleges and in their academic pursuits. It also is applicable in University-owned or University-approved housing, food services, extracurricular activities and all other student services. It is a guiding policy in the employment of students either by the University or by non-University employers through the University and in the employment of faculty and staff. Inquiries as to the equal opportunity, affirmative action, or diversity policies for the University of North Dakota or coverage of state and federal civil or human rights statutes or regulations may be directed to Sally J. Page, Affirmative Action Officer, 307 Twamley Hall, P.O. Box 7097, University of North Dakota, Grand Forks, ND 58202-7097; telephone 701-777-4171/TDD 777-2796. Concerns regarding Title VI of the Civil Right Act, Title IX of the Education Amendments of 1972, Section 504 of the Rehabilitation Act of 1973 (educational opportunity) or the Americans With Disabilities Act may be addressed to the Affirmative Action Officer or to the Office of Civil Rights, Federal Building, Suite 310, 1244 Speer Blvd., Denver, CO 80204-3582.
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(Also see the Index beginning on page 244 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 49,000. The campus is in the center of the Red River Valley, one of the richest farming areas in the world. In addition, UND is responsible for free-standing branch campuses at Devils Lake and Williston.

The University is the oldest of the state’s 11 public institutions of higher education, enrolling a third of all students attending state four-year colleges and universities. With about 12,000 students, UND is the largest post-secondary institution in the region of the Dakotas, Montana, and western Minnesota.

The University’s academic programs are offered in 166 fields through 12 major academic units: College of Arts and Sciences, Center for Aerospace Sciences, College of Business and Public Administration, School of Engineering and Mines, College of Fine Arts and Communication, College for Human Resources Development, College of Nursing, Center for Teaching and Learning, Graduate School, School of Law, School of Medicine and Division of Continuing Education.

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

The campus itself includes 570 acres, 240 buildings, and 4.9 million square feet of space.

The full-time faculty and research staff numbers 521, non-instructional staff 1,868, for a total of 2,389 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, 1994, was $225 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. Depression, 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 years 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 1994 enrollment, 11,521, included 9,550 undergraduate students, 1,488 graduate students, and 483 professional law and 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 44 foreign countries. More than half of the students were older than age 21. Forty-nine percent were women and about 13 percent were married.

In the fall of 1994, the University enrolled 1,635 new freshmen, 860 new transfer students and 593 new graduate and graduate professional students, bringing the total number of students matriculated during its history to more than 179,000. Degrees granted during fiscal 1993-94 included 1,750 undergraduate degrees, 393 graduate degrees, and 142 graduate professional degrees in law and medicine. The number of degrees granted since the first commencement in 1889 total 76,699.

MISSION OF THE UNIVERSITY

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

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

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

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

ACCREDITATION

The University of North Dakota has been accredited by the North Central Association of Colleges and Schools since the Association was organized in 1913. UND received its most recent NCA accreditation in 1994. Many individual colleges, schools and departments are members of accrediting associations in their respective fields.

THE ACADEMIC YEAR

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

The University of North Dakota’s academic programs are described elsewhere in this catalog. Please see the listings of the colleges and schools, beginning on page 22, and to the listings of the departments and program areas beginning on page 59 (undergraduate) and page 176 (graduate). See also the fields of Study summary and the index, both at the back of the catalog.

VISITOR INFORMATION

Visitors always are welcome at the University of North Dakota.

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

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

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

Event Information: Call the Info-Center at 777-4321, watch UND Television Cable Channel 3, stop at the Visitor information locations listed above, or write or call the Office of University Relations, 777-2731.

Campuswide Information System (UNDInfo): A variety of information about UND can be obtained from its menu system through Gopher on the Internet. The Campuswide Information System (CWIS, designated as UNDInfo in its Internet icon) contains events and calendar information about a broad variety of entertainment and sports schedules, and 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 is available through Gopher, a menu system on the Internet, by typing undinfo.und.nodak.edu, or through the Worldwide Web by typing undinfo.und.nodak.edu, or through the Worldwide Web by typing http://www.und.nodak.edu, and through online computer services (for America Online, Compuserve, Prodigy, and other online services, call your Computer Service representative for information on accessing UNDInfo).

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; Burmeister 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 772-4090 for information, 772-5151 to purchase tickets or visit any Ticket Master outlet.

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

Campus Police and Emergency Services: Call 777-3491 for UND’s 24-hour a day police desk. For all emergencies, dial 9-911 from campus phone, 911 from other phones. The University Police Department provides statistical information upon request in accordance with the Campus Security Act of 1990.

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

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

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

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

J. Lloyd Stone Alumni Center: This restored turn-of-the-century mansion is open for tours; today it serves as headquarters for the UND Alumni Association (telephone 777-2611, 1-800-543-1874 out-of-state).

TOURS OF CAMPUS FOR PROSPECTIVE STUDENTS

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

During a visit you can meet with campus personnel in a variety of situations. You can talk to an Enrollment Services counselor, to faculty members, and to students, and you can eat in campus dining facilities. When you set up an appointment for a visit to UND, we can assist you with arrangements to stay in town or on campus.

Tell us when you want to come and we will work out the details. We will send you a special brochure about visiting the University to help answer questions about what to do when you come to campus. If special arrangements are needed, let us know in advance. It is best if you give us a week’s notice for a visit, but feel free to stop in or call at any time. The easiest way to set up a visit is to call the Office of Enrollment Services, (701) 777-4463, or write to: Office of Enrollment Services, Box 8135, Grand Forks, ND 58202.

UNIVERSITY PARKING REGULATIONS

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

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

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

Public Directory Information

Directory information, which may be released publicly, 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. See the Code of Student Life, section 8, for details on the various ramifications of the Family Educational Rights and Privacy Act (FERPA), its implementing federal regulations, and UND policies. Students have a right to file a complaint regarding a violation of FERPA with the Affirmative Action Office, 307 Twamley Hall, P.O. Box 7097, Grand Forks, ND 58202-7097, or with the Family Policy and Regulations Office, U.S. Department of Education, Washington, D.C. 20202.

EXTRACURRICULAR OPPORTUNITIES

As a complement to classroom instruction, individual colleges and departments, residence hall, fraternal organizations, Student Senate, 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 170 recognized student organizations, which are formed around academic pursuits, politics, cultural, religion, service and other interests.

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

Intramural-Recreational Sports

Intramural-Recreational Sports offers a diverse array of competitive and non-competitive sports to all UND students, faculty, and staff, in men’s, women’s, co-recreational, and faculty-graduate divisions.

Sports include: aerobics, basketball, beach volleyball, basketball, flag football, golf, hockey, racquetball, softball, tennis, and volleyball. Intramural-Recreational Sports is administered and officiated by students, with facilities including the Engelstad Arena, Hyslop Sports Center, Intramural-Recreational Fields, Ray Richards Golf Course, and use of Grand Forks Parks and Recreations Apollo Park Softball Complex.

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

Intercollegiate Athletics

A program of men’s intercollegiate athletic competition is offered in football, baseball, basketball, hockey, track and field, golf, wrestling, cross country and swimming. The women’s program includes competition in basketball, cross country, 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 American Indian students in its student body, the variety and substance of its Native American programs, and the number and success of its American Indian alumni, it is important that the nickname and logos be acceptable to UND’s American Indian community, which includes many tribes. Surveys have indicated that the currently approved logos and the name “Fighting Sioux” are acceptable as long as stereotyped, racist or demeaning usages are avoided. The University community is committed to respect the past and present customs and traditions of the American Indian population. Further information on this subject is available from the Native American Programs Office, the Vice President for Student Affairs, the Office of University Relations, or the Athletic Department.

Religious Activities on the Campus

A number of campus religious groups are available with a variety of individual and cooperative programs. The groups which have centers adjacent to the campus to serve the University community are: Evangelical Lutheran Church in America (Christus Rex Campus Center), the Lutheran Church Missouri Synod (Wittenberg Chapel), the Catholic Church (The Newman Center) and the United Campus Ministry (The Wesley Center) representing the American Baptist, Episcopal, 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, projects and discussions, and service to the community.

Some of the other groups active on campus are Inter-Varsity Christian Fellowship, Campus Crusade for Christ International, Baha’i, Chi Alpha, and Muslims. These groups have members of the University faculty as advisers. Community parishes afford the opportunity for worship to many other denominations.
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. Unusual circumstances may cause persons to request a waiver of this restriction. Written documented requests, which must include reasons for requesting the waiver, will be considered by the Administrative Procedures Committee.

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

RESEARCH

Research is an important component of the mission of the University of North Dakota. As a result of research activities conducted by the faculty, UND students, both undergraduate and graduate, have an opportunity to further broaden their educational experience. Besides contributing to the educational mission of the University, the results of the research are often of direct benefit to the residents of the state and to the nation as a whole. Research activities are conducted either through University and local research agencies or through individual faculty members working within their own departments. Several of the UND research agencies and programs are involved in public service activities which provide an opportunity for faculty and students to use service data in research projects and to initiate new research studies based on the findings of the public service projects. Financial support for research activities is provided either from University sources, such as the Faculty Research Committee or the Office of Research and Program Development, or through funds provided from external agencies such as the Federal or State government, private foundations, and industry. In fiscal year 1994, $41.5 million of external support was received for sponsored program activities, of which $24.3 million was for research.

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

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

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

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

AWU Membership: The University of North Dakota is a member of Associated Western Universities, Inc. AWU is a consortium of more than 40 universities that directly supports the Department of Energy’s (DOE) mission to develop and maintain educational and training activities which insure that the scientific and technical needs of the energy research and development community are met. AWU provides an interface among the academic community, DOE, and its western laboratories. For information regarding AWU, contact the Office of Research and Program Development (777-4278).

THE HONORS PROGRAM

I. General

The Honors Program brings together highly capable students and dedicated faculty members in an atmosphere conducive to creative learning and intellectual exploration. The Program is intended for students with a personal interest in learning who will pursue intellectual and creative interests beyond the requirements of the particular courses in which they are enrolled. Well-qualified high school graduates are encouraged to apply at the time of their initial registration in the University. Students may also enter the Program after the freshman year; inquiries from interested students are welcome. Students in any College of the University may enroll in the Honors Program.

II. Administration

The Program is administered by a Coordinator and a University Honors Committee. The Honors Program has its own administrative apparatus and can adjust student programs to fit the needs and desires of individual students. In response to these needs 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 majoring in Honors. The Honors Program is not merely a modification of already existing programs, but a different program with ends and means of its own.

III. Means

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

The major requirements to graduate as a Scholar in the Honors Program are: (a) a minimum of 24 credits in Honors work including 8 credits of colloquia; (b) a Sophomore Honors Portfolio; and (c) a senior thesis and senior examination (with a grade no lower than “B”) in some field of specialization. To major in Honors, students are additionally required to balance coursework in three broad areas of learning through Honors sections or the Honors mode. The colloquia mentioned above are topical and, usually, interdisciplinary discussion courses, one semester in length, on topics chosen according to student and faculty interests. The Honors mode entails an extra credit of work in a regular course so a greater than usual depth and/or breadth of knowledge can be achieved in that course.

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

IV. Advantages

Students in the Honors Program have many opportunities to develop their own ideas and their writing and research skills; they also benefit from close association with faculty and other students who share their intellectual interests. Honors Program course work encourages students...
to think independently, to express their thoughts clearly, and to forge connections among disciplines. Successful completion of the Program is a clear signal to prospective employees and graduate schools that the graduate is a serious, well-prepared, accomplished student.

THE SENIOR HONORS SYSTEM

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

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

The credits in independent study shall total not less than six and not more than fifteen. At the discretion of the department and of the Honors Committee these credits may be either in addition to major requirements or in place of some requirements. Such a study may consist of honors courses, tutorial readings, projects of research, seminars, creative work, a thesis, or any combination of these which the department and the Committee may approve. This study, whatever its nature may be, will appear on the student’s record with the number 499 and the title “Senior Honors.” The study may be either departmental or interdepartmental. To qualify for Senior Honors, the student must receive a grade no lower than a ‘B’ for this work. Theses will be bound and deposited in the University Library. The student will be expected to meet the nominal charge involved.

The student must maintain a GPA of at least 3.2, make satisfactory progress in his or her course of independent study, and submit a report to the supervisor at the end of the first semester of the senior year. At that time, the student, the department, or the Committee may decide to terminate the student’s honors work. At or near the end of the senior year, if the work is continued, the student will take a comprehensive examination. At least one hour of the examination shall be oral, and a member of the Honors Committee shall be present. At the end of his or her senior year the student may be excused from all final examinations given by the major department, if the department so approves.

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

HONOR SOCIETIES

Alpha Eta Rho (1966) is an international aviation fraternity.

Alpha Kappa Delta (1966) is open to all students who have an interest in current social issues and a willingness to discuss feasible solutions and participate in activities which address those issues.

Alpha Lambda Delta (1950) aims to interest freshmen in the pursuit of learning and in high scholastic achievement.

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

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

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

Alpha Tau (1921) is the student organization of industrial technology.

Beta Gamma Sigma (1926) elects to membership a limited number of academically outstanding students from the primary disciplines in Business Administration.

Beta Alpha Psi (1923) elects from junior, senior and graduate students in accounting. Election is based on scholarship and promise in the field.

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

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

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

Epsilon Psi Tau is the international honorary professional fraternity for education in technology.

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

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

Mortal Board (1932) aims to foster the ideal of service and to promote leadership and scholarship.

Omega Delta Epsilon confers distinction for academic excellence in economics.

The Order of the Coif (1925) elects its members from the upper 10 percent of the third-year class in Law School.

Order of Omega (1984) is a society which recognizes service to community and academic achievement among members of the Greek system.

Phi Alpha (1962) elects to membership academically outstanding students of at least junior status who are majoring in social work.

Phi Alpha Delta (1911) is a fraternity in the School of Law.

Phi Alpha Theta (1948) aims to recognize excellence among those enrolled in the study of history.

Phi Beta Kappa (1913) elects to membership a limited number of academically outstanding students from the College of Arts and Sciences.

Phi Beta Lambda (1970) is a national organization for students enrolled in business, office, or business teacher education programs.

Phi Delta Kappa (1924) elects those in the Center for Teaching and Learning on the basis of scholarship, personality, and professional ability.

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

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

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

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 honor society for political science and public administration.

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

Psi Chi is an honorary society in psychology.

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

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


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

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

(National Student) Speech-Language-Hearing Association (1966) for majors in the area of speech pathology and audiology.

Tau Beta Pi (1974) (formerly Sigma Tau) elects to membership a limited number of academically outstanding students from the School of Engineering and Mines.

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

TUITION AND FEES, 1995-96*
(Per semester, 12 or more credits)**

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</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 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 1994-95 totaled $159.00 per semester at UND (and is included in the above table). These include the University Fee, which supports, among other functions, musical organizations, the UND Memorial Union, and intercollegiate athletics, $71.00; health fee, $45.00; student activity fees, allocated by student government for such purposes as concerts and student publications, $20.50; Memorial Union bond retirement, $7.50; and McCannel Hall Renovation, $15.00. 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 rate.

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

OTHER FEES

Application Fee (Undergraduate)..........................$25.00* Payable by all undergraduate students applying for admission.
Application Fee for Graduate Students..................$20.00* Payable by each student registering for 996 (Continuing Enrollment).
Application Fee for Medical Students....................$35.00* Payable at the beginning of the fall semester for the entire year by students who own or operate a motor vehicle on campus.
Auditors Fee
Auditing fees will be 50% of the regular, per hour tuition charge for the same course.

Engineering Laboratory Field
Trip Fee (one semester)................................. as required Payable by each student enrolled in Civil 481 and Mechanical 380.

Engineering Program Fee
A program fee of $150 per semester ($300 per academic year) will be charged to all undergraduate and graduate students in engineering who have completed 60 semester credits of courses which pertain to an engineering program. A program fee of $250 a semester will be assessed to Undergraduate Students in Engineering with less than 60 accumulated credits.

Graduate Student Continuing
Enrollment Fee ............................................$30.00* $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 by 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 to all undergraduate students enrolled in the professional nursing education programs which lead to a Bachelor of Science Degree and eligibility for licensure as a Registered Nurse. A program fee of $250 per semester ($500 per academic year) will be charged to all graduate students admitted to and enrolled in the anesthesia nursing and nurse practitioner tracks of the graduate program in Nursing.

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

Parking Fee ..........................................................30.00** Payable 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 ..................................... 1/2 the regular credit hour fee

*Non-refundable

ESTIMATED YEARLY EXPENSES

The following table gives an estimate of the expenses of a single, undergraduate student residing on campus during the nine month, 1994-1995 college year. Detailed information about the cost of attending the University is available from the Office of Enrollment Services.

<table>
<thead>
<tr>
<th></th>
<th>North Dakota</th>
<th>Minnesota</th>
<th>Contiguous States</th>
<th>Non-resident</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tuition and Fees*</td>
<td>$2,428.00</td>
<td>$2,956.00</td>
<td>$3,484.00</td>
<td>$5,952.00</td>
</tr>
<tr>
<td>Room and Board**</td>
<td>2,730.00</td>
<td>2,730.00</td>
<td>2,730.00</td>
<td>2,730.00</td>
</tr>
<tr>
<td>Books and Supplies</td>
<td>500.00</td>
<td>500.00</td>
<td>500.00</td>
<td>500.00</td>
</tr>
<tr>
<td>Personal Expenses</td>
<td>1,800.00</td>
<td>1,800.00</td>
<td>1,800.00</td>
<td>1,800.00</td>
</tr>
<tr>
<td>Total Estimated Costs</td>
<td>$7,458.00</td>
<td>$7,986.00</td>
<td>$8,514.00</td>
<td>$10,982.00</td>
</tr>
</tbody>
</table>

*Plus matriculation fees ($25.00 one time)
**Costs based on UND residence hall rates (double room and 14 meal contract)

REGULATIONS REGARDING NON-RESIDENT FEES

FEES FOR NON-RESIDENT STUDENTS (Requirements Subject to Change without Notice). Non-resident students seeking to declare residence for tuition purposes must contact the Business Office and file such a request. For purposes of determining residency a resident student is defined by law as follows:

1. A person less than 18 years of age who resides with a parent or guardian who has been a legal resident of North Dakota for twelve months;
2. A person of age eighteen or over who has been a legal resident of North Dakota for twelve months. (Applicant must not have been claimed as a dependent on the parent or guardian’s most recent federal tax return);
3. A dependent whose parent or guardian has been a legal resident of North Dakota for twelve months 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 most recent federal tax return);
4. A person who graduated from a North Dakota high school within sixty-four months prior to registration;
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);
University of North Dakota

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; or
9. Any other person who registers within sixty months after residing in this state for a period of at least thirty-six consecutive months.

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, 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 other North Dakota residency requirements for tuition purposes. Refugee students should contact Business Office for requirements.

Any student may submit an appeal to the UND legal counsel. If they determine the circumstances to justify such action, the UND legal counsel will admit such student as a resident for tuition purposes.

MINNESOTA TUITION RECIPROCITY

Residents of Minnesota and their dependents may attend a North Dakota state institution of higher learning and pay a special tuition rate that is lower than the normal non-resident rate. This rate is determined by averaging the tuition costs of the North Dakota and Minnesota state university systems. All UND students from Minnesota are included. To be certified for reciprocity at UND, Minnesota students must (1) file UND’s standard admission application, and (2) file a reciprocity participation application with the Minnesota Higher Education Coordinating Commission, 901 Capitol Square Building, 550 Cedar Street, St. Paul, MN 55101. Reciprocity forms will be mailed to all Minnesota residents after acceptance. Students who participated in the reciprocity program and have earned credit in the previous 12 months will not have to reapply.

CONTIGUOUS STATES/PROVINCES TUITION, FEES

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

WESTERN UNDERGRADUATE EXCHANGE PROGRAM

The University of North Dakota participates in the Western Undergraduate Exchange (WUE) program. Currently, students may enroll in designated programs at selected institutions in Alaska, Colorado, Hawaii, Idaho, Montana, Nevada, New Mexico, Oregon, South Dakota, Utah, and Wyoming at a special tuition level. For example, those attending the University of North Dakota under the WUE program pay an amount equal to one and one-half times the North Dakota in-state tuition and fees, which in 1993-94 would have totaled $3,290 instead of the normal $5,612 in non-resident tuition and fees for that year.

REFUND OF FEES 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 fees, upon written request, in accordance with the North Dakota State Board of Higher Education policy.

A. Refund for new or transfer students attending the University for the first time who receive Title IV aid. A new or transfer student is defined as any student attending the University for the first time. Any new or transfer student who withdraws from the University shall receive a pro rata refund of tuition and fees. Refunds will be calculated as follows:

<table>
<thead>
<tr>
<th>Week of Classes</th>
<th>Refund Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>1st week</td>
<td>100%</td>
</tr>
<tr>
<td>2nd week</td>
<td>90%</td>
</tr>
<tr>
<td>3rd week</td>
<td>80%</td>
</tr>
<tr>
<td>4th week</td>
<td>70%</td>
</tr>
<tr>
<td>5th week</td>
<td>60%</td>
</tr>
<tr>
<td>6th week</td>
<td>50%</td>
</tr>
<tr>
<td>7th week</td>
<td>40%</td>
</tr>
<tr>
<td>8th week</td>
<td>30%</td>
</tr>
<tr>
<td>9th week</td>
<td>20%</td>
</tr>
<tr>
<td>10th week</td>
<td>10%</td>
</tr>
</tbody>
</table>

B. Refund policy for returning students and first time students not receiving Title IV aid. Any student who withdraws from the University shall receive a refund of tuition and fees. Refunds will be issued according to the following schedule:

<table>
<thead>
<tr>
<th>Week of Classes</th>
<th>Refund Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Zero to fifth class</td>
<td>100%</td>
</tr>
<tr>
<td>Sixth to tenth class</td>
<td>80%</td>
</tr>
<tr>
<td>Eleventh to sixteenth class</td>
<td>60%</td>
</tr>
<tr>
<td>Seventeenth to twenty first class</td>
<td>40%</td>
</tr>
<tr>
<td>Twenty second class</td>
<td>20%</td>
</tr>
</tbody>
</table>

If a student awarded financial aid receives a tuition or housing refund, the refund will be applied to the financial aid, not issued to the student.

2. 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.

3. Any student who is suspended or who withdraws from the University shall, upon written notice, receive full refund for any unused portion of his or her room and board. Unused portion begins with that succeeding week after a student is no longer in school; a student shall be charged for that entire week in which he or she was last in school be it for the entire week or any portion thereof.

4. Such written notice must be given or sent to the Business Office, Twpamley Hall, Box 8203, University Station, Grand Forks, ND 58202. An appeal of a decision may be made by a student in accordance with appeal procedure outlined in the Code of Student Life and the Student Handbook.

REFUND FOR CLASS CHANGES (DROP/ADD)

Students dropping a class during the first seven 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 the courses in which you enroll. Dropping after the first day of class may not affect your academic standing, but it may affect your ability to borrow. 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 Student Financial Aid Office believes the primary responsibility for financing a college education rests with the student and his/her family. UND financial aid is viewed only 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 his/her family is expected to pay, as determined by a standard formula. In determining family contribution, four major sources are considered: (1) parents/spouse income, (2) parents/spouse 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 reserves the right to make the final determination regarding the type(s) and amount of aid awarded, 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. Work-study work experience that will complement the students’ learning gives the University the opportunity to utilize student skills. There are several student employment programs.

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 state-appropriated funds allocated to individual University departments. Financial need is not a requirement.

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

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

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

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

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

**Loans.** Student loan funds can be categorized into two classifications: long and short term loans. Long term loans are generally low interest loans administered by the federal Department of Education. Interest rates, eligibility, repayment terms, deferment, and cancellation provisions vary with the specific loan program. Some of the federal loan programs in which the University of North Dakota participates are: Perkins Loan, Stafford Loan, PLUS, Nursing Student Loan, Primary Care Loan, Health Education Assistance Loan, Student Educational Loan Fund. A more complete listing of private loans is available at the financial aid office.

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

The short-term emergency educational loan program derives its funds from different sources provided primarily by private donations. Short-term loans are to be paid back within 60 days or the end of the semester, whichever comes first. Students are limited to one short-term loan at a time. The availability of these loans may be restricted based on the amount of funds remaining.

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

Past academic excellence and the expectation of continued achievement determine the recipients of more than 1700 undergraduate scholarships totaling over $1,000,000 per year. These vary in amounts up to $2,250 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 $2,250 in scholarship assistance per recipient each year from all University funds including academic departments, the Student Financial Aid Office and the UND Foundation.

Students may be considered for all undergraduate scholarships as well as other forms of financial aid by completing the Free Application for Federal Student Aid. Students interested only in an honor scholarship should complete the Honor Scholarship Application form. Application forms may be requested by contacting the Office of Enrollment Services.

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 financial aid or scholarship application.

UND awards several tuition waivers to broaden the cultural diversity on campus. Cultural diversity for this waiver is defined as individuals who come from historically under-represented groups (African American, American Indian, Asian American, Hispanic American, and the economically disadvantaged). For more information or an application, contact the Student Financial Aid Office.

**Grants.** The largest of the grant programs, the Federal Pell Grant entitlement program, provides grants to those students who meet the eligibility and need criteria established by the U.S. Congress. For the 1994-95 school year, grants range from $400 to $2,300. 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 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 $500 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 1995-96 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 male and female 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 North Dakota National Guardsman presently serving in either the Army Guard or the Air Guard may have up to 75 percent of the tuition fee per academic year waived or receive assistance through the loan repayment program. For information on eligibility requirements, contact your local National Guard unit or the Office of the Adjutant General, P.O. Box 5511, Bismarck, ND 58502-5511.

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 March 15 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 15 days after receiving notice of the award.

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

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

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

Satisfactory Academic Progress for Financial Aid Eligibility. To be eligible to receive financial aid, students must meet the following minimum standards as established by the University: 1) Academic standards: students classified as juniors or seniors, and students who have attended UND for two or more academic terms (4 semesters or more) must have a minimum cumulative grade point average of 2.00. All other undergraduate students who meet the University’s minimum academic standards as defined in the UND Undergraduate Bulletin meet this standard. All students must be eligible to re-enroll in the next term in order to meet this standard. (2) Rate of progress standards — a) students must complete their program of study within the maximum number of attempted credit hours: undergraduate 187, graduate 135, medical 218 and law 135; and b) students must successfully complete 2/3 (67%) 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. Files containing information regarding individual students are not open to the general public under the provisions of the Family Educational Rights and Privacy Act of 1974. The release of such information shall only be made in conformance with the University’s policy as contained in Section 6-3A(1) of the Code of Student Life and the Release of Records Policy, which may be obtained from the Student Financial Aid Office.
University Services

UNIVERSITY HOUSING AND DINING SERVICES

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

Dining Services

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

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

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

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

University Residence Halls

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

Applications. Applications are sent, on request, from the Enrollment Services Office or the Housing Office. Assignments are made in accordance with the established priority system which is determined by the date of the receipt of the $25 nonrefundable application fee. Early application is encouraged.

Room and Board Contract. Residence hall room and board contracts are for the entire academic year (fall and spring semesters) or for the entire summer session. The student will receive a copy of the contract containing cancellation dates and refund policies for the year in which they are applying. The contract is revised annually. Rates will be sent to all students following approval by the State Board of Higher Education. The cost of a double room with a 19-meal board plan was $2,753 for the 1994-95 academic year. Room and board rates are revised annually and are subject to change.

A student vacating his or her assigned quarters before the end of his or her contract 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 blanets, study lamps, towels, bedspreads, and pillows. Bed linen is available on a contract basis or the student may provide their own. Telephone lines are provided; however, the student is required to bring their own phone.

University Apartments

The University maintains several hundred apartments for families and single students along with a lot for privately owned mobile homes. Applications and information about the specific types of apartments and current rates is available from the Housing Office, University of North Dakota, Box 9029, Grand Forks, ND 58202-9029. Rental rates are subject to change. Early application is encouraged due to the high demand for University housing. Assignments are made in accordance with the established priority system which is determined by the date of 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 $212 to $406 for the 1994-95 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 $212 to $575 for the 1994-95 academic year. In most cases, the rent includes heat, water, garbage, and basic cable TV. All family housing apartments are unfurnished. The largest family which can be accommodated in a three bedroom apartment is seven people.

Princeton Mobile Home Park

The University maintains a modern facility for privately owned mobile homes on the north side of the campus. Princeton Mobile Home Park is reserved for either families or students who are classified by the UND Registrar’s Office as senior, graduate level, or 26 years of age or older. The monthly lot rental for the 1994-95 academic year was $115. The leaseholder/application must own the mobile home to be eligible for assignment.

OFF CAMPUS HOUSING

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

FRATERNITY AND SORORITY MEMBERSHIP

Thirteen 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 $1,900 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 potential opportunities for learning about interpersonal relationships, leadership, informal contact with administrators and faculty, and social relationships.

For further information, please contact the Coordinator of Greek Life in the Memorial Union, University of North Dakota, Grand Forks, ND 58202-8136 (777-3667).
Division of Student Affairs Services

Under the direction of the Vice President for Student Affairs, a number of services, programs, and activities are available to assist students. Students needing assistance or information should contact the appropriate office as described below, or may contact the office of the Vice President for Student Affairs, 209 Twamley Hall, phone 777-2724.

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

AFRICAN AMERICAN, ASIAN AMERICAN, AND HISPANIC STUDENT PROGRAMS

Services for African American, Asian American, and Hispanic students are provided at a variety of locations on the UND campus. Career Services is located in room 120, Hyslop Sports Center; computer laboratories are in room 201 of the Memorial Union and rooms 10 and 20 of Upson Hall II; the Financial Aid Office is in room 216, Twamley Hall, and the University Learning Center is in room 201A, Memorial Union.

CAREER SERVICES CENTER
Room 120, Hyslop Sports Center
(temporary location)
Phone 777-3904

Career Services’ goal is to assist students and alumni in planning for and carrying out their job searches. This is accomplished through individual and group assistance in job search techniques, resume/letter writing, and interviewing skills. Career Services encompasses the function of placement in conjunction with Job Service North Dakota. A division of Career Services, Cooperative Education works with employers and academic departments to provide opportunities for students to combine course work with practical, professional employment in their chosen fields.

The Career Services office coordinates activities such as on-campus interviews, hosts annual Career Fairs (Business-Industry-Government-Aviation Fair, Health Occupations Fair, Mock Interview Fair, and the State of North Dakota Teacher Education Fair), provides job referral information to employment openings listed with Job Service, distributes a weekly vacancy list which advertises job openings, and maintains labor market information, and an occupational/employment resource library which houses audiovisual materials, company literature, and computerized job information systems.

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

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

COUNSELING CENTER
127 McCannel Hall
Room 305, Medical Science South Building
(temporary location)
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 305 Medical Science South anytime between 8:00 a.m. and 4:30 p.m., Monday through Friday, or by calling (701) 777-2127. A receptionist will direct your request or inquiry to the appropriate staff person and/or set up an appointment for you.

All Center services are free of charge except where otherwise indicated. All contacts are confidential.

The specific Counseling Center services are as follows:

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

Testing Service. The administration of the College Level Examination Program (CLEP) and numerous graduate or professional school entrance examinations (GRE, GMAT, MCAT, etc.) is done by the Testing Service. In addition, the administration and interpretation of career, self-assessment, or ability inventories is available through the Center. There may be a small charge for some of the tests and assessment instruments.

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

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

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

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

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

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

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

DEAN OF STUDENTS OFFICE
McCannel Hall
Room 2, Medical Science South Building
(temporary location)
Phone 777-2664

The Dean of Students Office seeks to assist students and prospective students in meeting their needs and to serve as a liaison among the diverse populations of student, faculty, staff, the UND community, state, and region. Dean of Students personnel can provide referrals concerning academic/personal/developmental services and programming designed to educate students to share in the responsibility for their educational goals, their communities, and the world. To meet these challenges, the Dean of
Students departments work to create a holistic learning environment that enhances the total experience of UND’s diverse student body.

To create a positive learning and growing environment and assist students in meeting the challenges of this important phase of development, many specific services and programs are coordinated and administered through the Dean of Students office. These include discipline, initiation of new programs, notifications of absence, crisis team coordination, and special circumstances for withdrawal from the University of North Dakota. In addition, the following offices provide services to the University and surrounding community: Disability Support Services, the Erv Bell Thompson Cultural Center, Trio Programs (Student Support Services, Talent Search, Upward Bound, Educational Opportunity Center, McNair Post-Baccalaureate Achievement Program), and Women's Center. Additional details on these areas may be found in this section on Division of Student Affairs Services in this catalog.

DISABILITY SUPPORT SERVICES
Room 115, Medical Science South Building
(accessible entrance at southwest corner of the building)
Phone 777-3425 (Voice or TTY)

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

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

ENROLLMENT SERVICES
(Moved from Student Affairs Division; see page 16)

INTERNATIONAL CENTRE
2908 University Avenue
Phone (701) 777-4231
FAX 777-2415

The UND International Centre features a home and global learning environment that provides opportunities for studying, selecting books from the resource library, attending a variety of international music, viewing satellite news from the various countries, using a computer and laser printer, watching television, playing table tennis and chess, and meeting friends from 54 countries.

Weekly programs include:
- Educational forums, focusing on cultural diversity and the world reality.
- Cultural events, including food, music, artifacts, attire, slides, videos, languages, literature, experiences.
- Celebrations of international holidays, birthdays, graduation, special events, and the annual Feast of Nations.
- Insight Sessions, focusing on oneself, all humankind, and the environment.
- World Coffee Cup, featuring espresso coffee Friday afternoons.

The International Centre Director advises students in areas of academics, housing, banking, purchasing, financial aid, health insurance, library resources, and personal experiences.

The International Centre is open daily from 8 a.m. to 11 p.m. including weekends and holidays. Coffee and tea are always available.

INTERNATIONAL STUDIES OFFICE
314 Cambridge Street
Phone 777-3301

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

To achieve these goals, the Office provides these services:
- Coordinating the International Student Exchange Program (ISEP), through which UND students may study at one of more than 100 schools throughout the world;
- Coordinating the UND-Norway exchange program;
- Providing information on Fulbright grants and other international faculty exchanges and development programs;
- Providing both international and United States students and scholars with immigration information and assistance;
- Selling International Student Identification and Hostelling International cards;
- Advising International Studies majors and minors.

The office is composed of a director of International Academic Affairs, an immigration specialist, and an administrative secretary.

MEMORIAL UNION
Phone 777-3926

The Memorial Union provides a host of services to the University community, including meeting rooms from small to ballroom size, teleconference facilities, Service Center/Copy Stop (check cashing, newspapers, photocopying, fax), Off Campus Student LIFE Center, Craft Center, and Sign and Design Studio. Food service options include: Burger King, the Deli, Espresso Cart, Centennial Dining Room, the Terrace Dining Center, and Campus Catering. Space in the Union for meetings or displays may be reserved by calling Central Scheduling at 777-3928 or by stopping in on first floor. Another service offered at the Union is Info Center, which has information on most University events and services on a walk up or phone in basis (777-4321). The Lifetime Sports Center, located on the ground floor, offers billiards, bowling, electronic darts, ping pong, coin operated games, and television lounges. Outdoor equipment rentals, including canoes, camping equipment, and cross country skis, are also available. Leadership and personal development as well as advising of campus organizations are provided by the Leadership Development Program, Student Organization Center, and Greek Life departments. Also located in the Union are Student Government, Learning Services, the Computer Learning Lab and Terminal Room, and Campus Barbers.

NATIVE AMERICAN PROGRAMS
2419 Second Avenue N.
Phone 777-4291

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

STUDENT FINANCIAL AID OFFICE
Twamley Hall
Phone 777-3121

The Student Financial Aid Office assists students and their families in meeting the costs of higher education by providing the students with financial assistance and by counseling the students and their families on how to attain their educational goals through proper financial planning. The philosophy of the Student Financial Aid Office is that the primary responsibility for financing a college education lies with the student and his/her 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 loans, scholarships, grants, and employment programs. The Student Financial Aid Office maintains a listing of both on- and off-campus part-time jobs. Details and procedures, practices and programs are available from the Student Financial Aid Office and on page xx of this catalog.

STUDENT HEALTH SERVICE
Medical Science South Building, basement (temporary location)
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 a walk-in clinic designed to treat all enrolled students. Spouses of enrolled students may use the Health Service for a minimal per-semester fee. Faculty and staff may be treated under job-related emergency conditions. Medical service, including that for children, is available at the UND Family Practice Center, telephone 780-6800. Appointments for DUI evaluations, alcohol assessments, and other related issues can be scheduled with our Licensed Addiction Counselor. Brochures are provided on various health topics.

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

Students are not charged for office calls. The cost is covered by the per-semester health fee. There is no limit to the number of visits per semester. There is a charge for medications, laboratory and x-ray services, and for special examinations. 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 on the basement floor of Medical Science South building (temporary location until about December, 1996, when a return is expected to facilities in McCannel Hall, which is undergoing refurbishing). Regular school year hours are 8 a.m. to 5 p.m., Monday through Friday. Summer hours are 8 a.m. to 4:30 p.m., Monday through Friday.

OFFICE OF SUBSTANCE ABUSE PREVENTION
Counseling Center
Room 305, Medical Science South Building, (temporary location)
Phone 777-2127

The Office of Substance Abuse Prevention provides information and assistance to students who have questions or concerns related to alcohol or drug use, co-dependent behavior, adult children of alcoholics experiences, or other addictive tendencies. This program is actively involved in organizing, planning, and presenting workshops and activities designed to help individuals make positive and responsible decisions about addictive and high risk behaviors. The Alcohol and Drug Abuse Prevention Team (ADAPT) offers a variety of wellness workshops, facilitated by Peer Assistants, which increase awareness of chemical use and abuse issues. The Office of Substance Abuse Prevention is located in the Counseling Center, 305 Medical Science South.

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

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

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

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

Educational Talent Search. The Educational Talent Search program assists in enabling youth who have academic potential, but may lack adequate information or school preparation to enter, continue, or resume programs of secondary and/or 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 undergraduate students who have completed their sophomore year and who are first generation and low income, or who are from a group underrepresented at the doctoral level of the targeted departments. The McNair Program encourages graduate study 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) Tutoring, (3) Credit courses, (4) Workshops in skill development areas.

The University Learning Center accepts applications for peer tutors in all subject areas throughout the year.
ALUMNI ASSOCIATION AND FOUNDATION
J. Lloyd Stone Alumni Center
Phone 777-2611

The University of North Dakota has a proud tradition of alumni achievement and loyal and dedicated alumni and friend support. Alumni and friend involvement has provided a “margin of excellence” for many of the programs offered by the University of North Dakota. Two private, non-profit organizations, the UND Alumni Association and the UND Foundation, have responsibility for coordinating alumni relations and fund raising programs. Policies for the 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 80,000 graduates and former students. The fund raising programs include an annual sustaining drive, major gift programs, the promotion of UND Foundation giving clubs, and the marketing of deferred giving programs, including life income arrangements for alumni and friends.

In conjunction with the 1983 University of North Dakota Centennial, the Alumni Association and Foundation conducted a Centennial Endowment National Campaign which raised over $26 million in direct, pledged, and deferred gifts. This was followed in 1991-92 with a “Thank You, President Tom Clifford Campaign” which resulted in gifts and commitments exceeding $25 million. The Foundation manages assets in excess of $52 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 1,200 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, the literature of theatre, and the portrayal of past societies as a basis for comprehension of today’s world; and (3) As a public facility to be used by both University and non-university programming groups.

**CAMPUSWIDE INFORMATION SYSTEM (UNDinfo)**

The Campuswide Information System (CWIS) is the University’s menu system through Gopher on the Internet. It contains directories for faculty and students, statistics, news, events, calendars, departmental, sports, alumni and entertainment information, academic catalogs, library holdings, course schedules, handbooks, and much more. UNDinfo is available through Gopher, a menu system on the Internet, by typing undinfo.und.nodak.edu, or through the Worldwide Web by typing http://www.und.nodak.edu, and through online computer services (for America Online, Compuserve, Prodigy, and other online services, call your Computer Service representative for information on accessing UNDinfo).

**UNIVERSITY CHILDREN’S CENTER**

**Bek Hall**

**Phone 777-3947**

The University Children’s Center offers child care to parents who are students or employees at UND and also to parents of the greater Grand Forks community. The Center serves children ages three, four, and five years old. Children who attend Kindergarten in the public school are also served half-days. The Center is open five days a week, 7:30 a.m. to 5:30 p.m., during the UND academic year and summer session. Daily attendance is limited to a full-time equivalency of 48 to 54 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 the lower level of Bek Hall for a tour and visit. Call 777-3947 or write the University Children’s Center, Box 9026, Grand Forks, ND 58202-9026.

**COMPUTER CENTER**

**Upson Hall**

**Phone 777-3171**

The University’s computing resources include an IBM 9672-R31 with 256 megabytes of memory, a Unisys 2200-401 system running the “ODIN” library system, a RS/6000 530/H, and an IBM AS/400. Through state of the art fiber optic technology, the Computer Center in Upson Hall is also linked to the State Higher Education Computer Network mainframes and minis, the Internet, through which individuals can communicate via electronic mail, access databases and other information throughout the world, and use NSF super-computers. On campus networking links the Computer Center facilities with microcomputers and terminals across the campus to provide individuals access to these services. Numerous LANS provide resource and file sharing and microcomputer based electronic mail within departments and across campus. The Computer Center emphasizes convenience and ease of use for students and faculty.

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

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

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

**ENROLLMENT SERVICES**

**Twamley Hall**

**Phone 777-4463**

The Department of Enrollment Services is the central contact point for students from pre-enrollment through the time they declare a major. The primary goal of Enrollment Services is to assist students in building a solid foundation for success at the University of North Dakota. There are two major subdivisions: Admission and Advising and New Student Services.

**ADMISSION**

**Twamley Hall**

**Phone 777-4463**

Enrollment Services/Admission facilitates the enrollment of new students at the University. The primary mission of Admission is to inform, counsel, and assist prospective students. The Office assists students in gaining easy entry to UND, disseminates information about UND programs, and processes admission applications. Additional information on visiting campus may be found on page 3; additional information on admission requirements may be found beginning on page x.

**ADVISING AND NEW STUDENT SERVICES**

**211 Twamley Hall**

**Phone 777-2117**

The Office of Advising and New Student Services assists new students with their academic and personal transition to the University through programs for new freshman 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 Advising and New Student Services coordinates the initial registration for all new freshmen. More information may be found beginning on page xx.

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.
OFFICE OF INSTRUCTIONAL ANALYSIS
Twanley Hall
Phone 777-4358

The office is responsible for UND’s institutional research function, which involves the gathering, synthesizing, analyzing and reporting of data to support University decision-making. It conducts or supervises research assignments of a highly complex or comprehensive nature, including both on-going and special projects; provides leadership in all aspects of institutional research and campus-wide data management; serves as a clearing house for the internal and external reporting of data (including responsibility for periodic publication of an official data directory); and responds to requests for counsel or assistance from other offices. OIA reports to the Vice President for Academic Affairs, with a direct access relationship to the President.

OFFICE OF INSTRUCTIONAL DEVELOPMENT
Twanley Hall
Phone 777-3325

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

CENTER FOR INSTRUCTIONAL AND LEARNING TECHNOLOGIES
Sayre Hall
Phone 777-2129

The Center for Instruction and Learning Technologies is a service organization designed to support the learning resource needs of the Division of Academic Affairs.

There are four service sections within the Center: Classroom Support, Computer Services, Media Production Services, and Faculty Computer Labs.

The Faculty Computer Labs assist faculty who are interested in infusing technology into their courses by supporting exploration, experimentation, and creation of applications in the use of technology to create meaningful innovative learning experiences in the classroom. Scheduled training sessions are offered in the two faculty labs located within the building. Staff members at the center are committed to assisting faculty at all levels of expertise. Resources are provided for the novice, as well as those who wish to explore the latest technology.

Classroom Services provides media support for the classroom, on-site technical support instruction on optimum use of media equipment and repair/maintenance. Some media equipment is available for delivery and retrieval as a service to classroom faculty. Computer Services offers microcomputer and peripheral warranty and post-warranty repair services for approved units. Media Production Services consists of graphics, photography, and video. The three sections provide development and execution of presentations, poster sessions, charts and graphs, transparencies, illustrations and desktop publishing, location and studio photography, film processing/printing, digital imaging, image enhancement, and computer slides. Classroom video recording and on-location video recording are offered in addition to duplication of audio and video tapes.

UND OFFICE OF INTERNATIONAL STUDIES
314 Cambridge
Phone 777-3301

The UND Office of International Studies 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) Provides both international and United States students and scholars with immigration information and assistance; (6) Sells International Student Identification and Hostelling International cards; (7) Advises International Studies majors and minors.

The Office is composed of a director of International Academic Affairs, an immigration specialist, and an administrative secretary.

LEGAL COUNSEL
Room 108, Law School
Phone 777-2104

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

LIBRARIES

Library facilities on the UND campus are collectively known as the University Libraries. The Library system consists of the Chester Fritz Library and four branches, as well as two autonomous libraries affiliated with the professional schools of law and medicine, the Thomson Legal Library and the Harvard E. French Library of the Health Sciences. The holdings of the University Libraries number more than 2.3 million items and 952,500 volumes. Subscriptions are maintained for approximately 8,200 periodicals.

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

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

Reference librarians in the Chester Fritz Library can help library users design research strategies, solve bibliographic problems, and answer factual reference questions. Some of the other specialized services and programs the library offers include: computerized reference searches, individualized guidance to students engaged in special research projects and Interlibrary Loan services.

The University Libraries are participants in a statewide library automation system that provides access to library collections throughout North Dakota, the Region, and the nation.
PERSONNEL SERVICES OFFICE
Twamley Hall
Phone 777-4361

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

Additional information on employment at the University may be obtained from the Office of Personnel Services, Box 8010, University Station, Grand Forks, ND 58202. The Office of Student Financial Aids (see page 20) should be contacted by students seeking part-time employment.

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

One of the main functions of the Office of Research and Program Development (ORPD) is to collect and disseminate information regarding grant programs sponsored by federal agencies, state agencies, foundations, and industrial organizations. Selected items on research programs that may be of interest to UND faculty and research staff are printed in R&D News, the periodic newsletter of ORPD, which is distributed widely throughout the campus. The ORPD staff provide application materials, endeavor to identify potential funding sources, and assist with proposal planning.

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

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

SPEECH, LANGUAGE AND HEARING CLINIC
Montgomery Hall
Phone 777-3232

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 Educational Standards Board 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.

UND RADIO — KFJM-AM/FM
Old Science
Phone 777-2577

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

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

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

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

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

TELEVISION PRODUCTION CENTER
Robertson Hall
Phone 777-4346
Fax 777-4342

The general mission of the Television Production Center is to provide television production services for university clients, program UND Cable Channel 3, and serve as a lab for School of Communication broadcasting curriculum.

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

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

OFFICE OF UNIVERSITY RELATIONS
Twamley Hall
Phone 777-2731

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

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.

WRITING ACROSS THE CURRICULUM
Leonard Hall
Phone 777-3600

The Writing Across the Curriculum program (WAC) 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.

Originally funded through a grant from the Bush Foundation, the WAC program is now integrated into the University as part of the University Writing Program. The program offers free consultation services to students and faculty through the UND Writing Center, sponsors workshops and seminars for faculty in all disciplines, awards small grants to academic units working on curriculum development, and serves as a clearinghouse for information and materials on teaching with writing.

THE UND WRITING CENTER
115 Merrifield Hall
Phone 777-2795

Students at UND will find that they need to be able to write well not only to complete assignments in various courses, but also in their jobs after graduation. Consequently, the University has established a Writing Center to provide opportunities for all students to become better writers.

In the Center, students receive help in brainstorming, organizing, developing, revising, or documenting papers. If students need to brush up on their grammar, they can gain this knowledge at the Writing Center. Assistance is available to undergraduate and graduate students in any type of writing; students who use the Writing Center come from all departments on campus.

Services of the Writing Center are free and on a one-to-one basis. A consultant works with only one student at a time. To obtain help, students simply walk into the Center and if a consultant is free, receive help immediately. Otherwise, the student can make an appointment for another time. Appointments may also be made by phone at 777-2795.

The Center is located in Room 115 of Merrifield Hall and is open Monday to Friday, from 10 a.m. to 4 p.m. during the fall and spring semesters.
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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 enrolled at the University in one of four categories: as regular full-time students; regular part-time students; transient students or auditors. See below for definitions of these classifications. For provisions governing admission to the Law School and medical studies in the Medical School, applicants should consult the respective bulletins of those schools.

Classification of Students

Regular Full-Time Student. 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.

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

Transient Student. 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. Credit earned as a transient student may be applied toward a UND degree if the student qualifies for transfer admission.

Auditor. Students enrolled in university classes as auditors have a status and responsibility in class distinctly different from that of those taking the course for credit. Students wishing to enroll in university classes as auditors must seek and receive the prior consent of the instructor concerned. Anyone enrolling without such consent may be cancelled from the class by the instructor. An auditor is not required to participate in the oral or written work of the class. He or she takes no examinations and receives no credit for the course. He or she is identified to the instructor concerned as an auditor on the official class list. An auditor may not later establish credit in that course by taking a special examination. The course must be repeated in residence to earn credit.

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 admissions criterion. Students 25 years old or older are not required to have test scores. It is recommended that students take the ACT late in their junior year or early in their senior year.

All students who graduate from high school, whether in North Dakota or in any other state, in 1993 or later and are under the age of 23, are required to complete a core curriculum before entering any four-year North Dakota University System Institution.

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

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

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

The Admissions Committee may deny applicants who meet the core curriculum requirements but are evaluated to be high risk candidates for success at UND due to a low ACT composite score or a low SAT combined score, or a low high school grade point average.

Students who have not had the required courses are encouraged to enroll in any of North Dakota’s two-year colleges, which include Bismarck State College, North Dakota State College of Science, NDSU-Bottineau, UND-Lake Region and UND-Williston. Upon successful completion of 24 transferable 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 Admissions Office to acquire the international student application form.

International Students applying for undergraduate admission and all students whose first language is not English are required to earn a score of at least 525 on the Test of English as a Foreign Language to be considered for admission. The International Student Office provides assistance and counseling to students from countries other than the United States. See page 58. International students should write to the International Student Adviser as well as to the Office of Admissions.

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

Students who are currently attending high school may be allowed to enroll in University courses as special students with permission of the Associate Director of Admission 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 Admissions Office from SAT in Princeton, NJ, in lieu of the ACT. The University prefers the ACT report since it provides information, in addition to test results, which is helpful in counseling students. It is to the student’s advantage to take the test at the earliest possible test date during the senior year or the latter part of the junior year. Test scores are required for admission, as well as for evaluating applications for loans and scholarships.

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

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

Advanced Placement. A student from a high school which offers college-level courses through the College Entrance Examination Board Advanced Placement Program may be given University credit and/or advanced standing in individual subjects. This may be especially desirable if he or she wishes to proceed to the next higher level. Under this plan the student takes an advanced placement examination given at his or her school by the College Board. These examinations are scored by the College Board and are forwarded to the college of the student’s choice. The amount of credit given will then be determined by the department best qualified to evaluate the material. Students with special preparation in academic areas (foreign language, etc.) are urged to take advantage of the Special Examinations for credit available in selected disciplines. See page 31.

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

Note to students intending to enroll in mathematics courses: Students planning to take entry-level mathematics courses at UND (Math 102*, 103, 104, 105, 204, 208, 211) shall be enrolled in their beginning mathematics courses only after taking a math placement test or receiving a sufficiently high score on the ACT Mathematics test. Students who have received college mathematics credit need not take the placement exam. Ask your adviser, or contact the mathematics department, concerning time and place of this test.

The mathematics placement tests are used for placement purposes only. Passing these tests does NOT grant credit. Credit for Math 103 and/or Math 105 without taking the course(s) is available only through CLEP examinations. Three different placement exams are used. Which exam will be taken is based upon ACT Math scores. Placement test results will determine beginning placement in Intermediate Algebra (Math 102), College Algebra (Math 103), Finite Math (Math 104), Trigonometry (Math 105), Survey of Calculus (Math 204), Discrete Mathematics (Math 208), Calculus I (Math 211) or Math for Elementary School Teachers (Math 277). *Math 102 credit will not count toward graduation.

Credit by Examination Through CLEP. CLEP stands for College-Level Examination Program of the College Board. It is a national program that offers the opportunity for a student to obtain recognition for college-level achievement based on intensive reading in a particular field, adult school courses, correspondence courses, television or radio courses, courses on tape, or other means of formal or informal preparation. UND accepts credit on CLEP subject examinations only. Additional information regarding CLEP is found on page 31.

Enrollment in the University. All students will be enrolled, based on their declared major, in one of UND’s academic colleges. Students who have an “undecided” major will receive assistance from the Office of Advising and New Student Services. Once a student declares a major, they will be enrolled in the appropriate academic college. Enrollment in an academic college does not guarantee admission to the college or specific academic programs. (For more information regarding additional requirements for admission to colleges and programs, see the listings beginning on page 35).

How to Apply: 1. The Application for Admission form may be obtained from The Office of Enrollment Services, Box 8135 University Station, University of North Dakota, Grand Forks, ND 58202.

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

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

4. Each applicant must have the Medical Examination Form completed by his or her family physician. This form is mailed to each accepted student and the completed medical form 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.

Providing applicants meet all the admission requirements, completed applications received from applicants after the deadlines may be considered for admission to the University by the Associate Director of Admission and the Director of Enrollment Services.

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 must request that official transcripts of their records at each institution attended be sent directly from the registrar of that institution to the Admissions Office. Also applicants who have attended other colleges and universities but have not earned 24 semester hours of credit must request that their high school record and official copy of their ACT or SAT results be forwarded to the Admissions Office.

An application will not be considered until all transcripts and official ACT or SAT results for students who will not have 24 acceptable transfer credits toward a degree program, have been received by the Admissions Office.

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, Center for Aerospace Sciences, the Center for Teaching and Learning, the College for Human Resources Development, the College of Fine Arts and Communication, the School of Engineering and Mines, the College of Nursing, and the School of Medicine (Physical Therapy and Medical Technology). 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 Advising and New Student Services.
University of North Dakota

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 Admissions Office 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 Records and Registration 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 to register is granted, the student is placed on scholarship probation.

International students applying for transfer admission from United States colleges must, in addition to the application for admission, complete a foreign student advisor reference form and a certification of finances form. The TOEFL (Test of English as a Foreign Language), with a score of 525 for undergraduate students, is required for all students whose native language is not English.

Eligibility. A transfer student must be in good academic standing and be eligible to return to any college or university attended. The transfer student is not at liberty to disregard any part of his or her previous college record. Former students of other institutions may not enter as new freshmen on the basis of secondary school records. Violation of this regulation will be regarded as a serious offense and may result in the student’s dismissal from the University.

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

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

Transfer Credit. In general, students may transfer credit to the University for any courses successfully completed at regionally accredited colleges and universities, providing (a) the courses were included in the college catalog, (b) the courses do or would receive credit if offered at the University, and (c) the credits are acceptable at the college or university from which they were earned.

Students pursuing degrees in vocational education (Business Education, Marketing Education, Home Economics Education or Industrial Technology Education), or in such programs as Airway Science-Aviation Maintenance Management; Community Dietetics; or Medical Technology 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 Coordinating Council for vocational education majors or the respective departments for other majors. 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 completed in residence 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 Admissions Office 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 Admissions Office, Box 8135 University Station, 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. 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.

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

Readmission of Former Undergraduate Students

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

The completed Readmission Form should be returned to the Admissions 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.
Undergraduate Academic Information

INTRODUCTION AND BACKGROUND

This section of the catalog summarizes many of the academic policies and procedures which will apply to the student during his or her undergraduate years at UND. Particularly important are the passages beginning on page 27 describing the University’s general graduation requirements. Since institutional policies may change between catalog publication dates, students are encouraged to consult with their academic adviser whenever appropriate. Students with questions also should feel free to 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 Advising and New Student 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 25-31; (2) requirements of the UND college or school granting the student’s degree, which are summarized on pages 35-55; and (3) the requirements of the student’s major department or program area, which are summarized on pages 59-156.

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 59.

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 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 designed both for general education and for academic specialization. This dual objective — non-specialized and specialized education — ideally is reciprocal and inclusive. Each kind of education is expected to inform and enrich the other and to contribute to those special qualities and abilities we have come to expect of university graduates.

While the directions and purposes of specialized programs usually are clear, the directions and purposes of general education have often been left undefined. For this reason, the General Education Review 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 decisions, (2) the ability to communicate effectively, (3) intellectual curiosity and creativity, (4) a continuing commitment to learning, (5) a capacity and interest in serving others, (6) a sense of responsibility both to specific communities and to a culturally pluralistic world, and (7) greater personal satisfaction through access to the larger social, political, economic, scientific, and aesthetic culture.

The specific goals have been organized into two sets. The first set is not tied directly to any particular discipline and gives attention to integration around such abilities as critical thinking, effective communication, creative thinking, recognizing relationships and understanding values. 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.

II. Disciplinary Abilities

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

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

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

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

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

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

Mathematics
General education in mathematics should help students to understand and use mathematics as:
1. an intellectual discipline concerned with such considerations as quantity and space and their relationships.
2. a method of analyzing problems with logic and precision;
3. a way to communicate and interpret information provided by others; and
4. a continually developing tool, useful for describing and explaining phenomena.

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

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

The Natural and Physical Sciences

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

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

Technology

Throughout history humans have sought to apply their scientific knowledge in ways that enhance material culture, enlarge their capacity to produce goods and services, and defend physically their territorial and ideological borders. This application of scientific knowledge is what is commonly referred to as technology. Technology is visible everywhere and has brought enormous material benefits as well as increasingly complex social and environmental problems. The need to understand the tensions and conflicts that arise over the uses and consequences of technology is as critical as the necessity of making human 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 of 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 the joys that come from personal expression. Thus it is appropriate to provide within related general education courses both opportunities to participate actively in the humanities and arts as creators — as writers, painters, musicians or actors — and as audience in art exhibitions, performances, lectures and discussions.

Conclusion

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

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

THE NORTH DAKOTA UNIVERSITY SYSTEM TRANSFER AGREEMENT

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

UND coursework generally acceptable at other NDUS schools as general education courses are designated on the list that follows (e.g. ND-ENGL). Please direct questions about the NDUS Transfer Agreement to the UND Director of Records or the Registrar at another NDUS institution.

UNIVERSITY GRADUATION REQUIREMENTS

A minimum of 125 semester hours of credit is required for a baccalaureate degree. Transfer students are required to complete a minimum of 60 credits at four-year institutions. The last 30 credits must be institutional credit. The following pages describe the requirements which must be met by all students seeking the baccalaureate degree. These include the General Education requirements in (I) English Composition, (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.

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 modifications in the General Education requirements for engineering students—see page 45. The General Education requirements may be satisfied by:

1. Successful completion of classwork acceptable for that area, as specified below, or

2. Achievement of the minimum score required for credit in College-Level Examination Program (CLEP) subject examinations.

I. English Composition

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<tr>
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</tr>
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<td>Engl 209</td>
<td>Technical and Business Writing (ND ENGL)</td>
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II. Social Sciences

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<td>Introduction to Anthropology (ND SS)</td>
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<td>Anthropology</td>
<td>Anth 171</td>
<td>Introduction to Cultural Anthropology (ND SS)</td>
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<tr>
<td>Anthropology</td>
<td>Anth 172</td>
<td>Introduction to Archaeology and World History (ND SS)</td>
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<td>Anth 371</td>
<td>Cultural Dynamics</td>
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<td>Anth 374</td>
<td>Old World Prehistory</td>
<td>(3)</td>
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<td>Anth 375</td>
<td>North American Indians (ND SS)</td>
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III. Arts and Humanities

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<td>Comm 100</td>
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<td>Communication</td>
<td>Comm 300</td>
<td>Communication and Society</td>
<td>(3)</td>
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<tr>
<td>Criminal Justice Studies</td>
<td>CJS 251</td>
<td>Introduction to Criminal Justice Studies (ND SS)</td>
<td>(3)</td>
</tr>
<tr>
<td>Economics</td>
<td>Econ 105</td>
<td>Elements of Economics (ND SS)</td>
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<td>Econ 201</td>
<td>Principles of Microeconomics (ND SS)</td>
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<td>Geology</td>
<td>Geog 151</td>
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<td>Geog 161</td>
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<td>Geology</td>
<td>Geog 262</td>
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<td>Geology</td>
<td>Geog 264</td>
<td>Conservation of Resources (ND SS)</td>
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<td>Honors</td>
<td>Hon 102</td>
<td>Inquiry in the Social Sciences</td>
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<td>Honors</td>
<td>Hon 292</td>
<td>Colloquium in the Social Sciences</td>
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<td>Honors</td>
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Indian Studies

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<tr>
<td>IS 130</td>
<td>Contemporary Plains Indian Culture (ND SS)</td>
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<td>IS 231</td>
<td>Traditional Plains Indian Culture (ND SS)</td>
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IV. Political Science

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<tbody>
<tr>
<td>Polsci 101</td>
<td>American Government I (ND SS)</td>
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<tr>
<td>Polsci 102</td>
<td>American Government II (ND SS)</td>
<td>(3)</td>
</tr>
<tr>
<td>Polsci 220</td>
<td>International Politics (ND SS)</td>
<td>(3)</td>
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<tr>
<td>Polsci 225</td>
<td>Comparative Politics (ND SS)</td>
<td>(3)</td>
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<td>Polsci 231</td>
<td>Politics of Public Administration (ND SS)</td>
<td>(3)</td>
</tr>
<tr>
<td>Polsci 305</td>
<td>American Constitution-Governmental Power</td>
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<tr>
<td>Polsci 306</td>
<td>American Constitution-Civil Liberties</td>
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<tr>
<td>Polsci 309</td>
<td>The Legislative and Executive Processes</td>
<td>(3)</td>
</tr>
<tr>
<td>Polsci 318</td>
<td>American Political Thought</td>
<td>(3)</td>
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<td>Polsci 320</td>
<td>Foreign Politics</td>
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<td>Polsci 323</td>
<td>Issues in Comparative Politics</td>
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<td>Polsci 405</td>
<td>Political Behavior</td>
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<td>Polsci 406</td>
<td>Problems in State and Local Government</td>
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<td>Polsci 432</td>
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V. Psychology

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<td>Psy 251</td>
<td>Introduction to Personality (ND SS)</td>
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<td>Psy 361</td>
<td>Social Psychology (ND SS)</td>
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<td>Psy 370</td>
<td>Abnormal Psychology (ND SS)</td>
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VI. Sociology

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<tr>
<td>Soc 102</td>
<td>Social Problems (ND SS)</td>
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<td>Soc 250</td>
<td>Diversity in America (ND SS)</td>
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<td>Soc 252</td>
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<td>Soc 253</td>
<td>Juvenile Delinquency (ND SS)</td>
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<td>Soc 301</td>
<td>Basic Sociological Theory (ND SS)</td>
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<td>Soc 331</td>
<td>Rural Sociology (ND SS)</td>
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<td>Soc 335</td>
<td>The Family (ND SS)</td>
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<td>Soc 340</td>
<td>Sociology of Gender and Sex Roles (ND SS)</td>
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<td>Soc 352</td>
<td>Aging (ND SS)</td>
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<td>Soc 353</td>
<td>Death and Dying (ND SS)</td>
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<td>Soc 354</td>
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<td>Soc 355</td>
<td>Drugs and Society (ND SS)</td>
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<td>Soc 407</td>
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<td>Soc 430</td>
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<td>Soc 431</td>
<td>Organizations and Behavior</td>
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<td>Soc 436</td>
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<td>Soc 450</td>
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VII. Business

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<td>Bus 101</td>
<td>Business Law</td>
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<td>Bus 201</td>
<td>Principles of Accounting</td>
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<td>Bus 202</td>
<td>Managerial Accounting</td>
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<td>Bus 301</td>
<td>Marketing Management</td>
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<td>Bus 311</td>
<td>Operations Management</td>
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<td>Bus 321</td>
<td>Human Resources Management</td>
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<td>Bus 331</td>
<td>Financial Management</td>
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<td>Bus 341</td>
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VIII. Fine Arts

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IX. History

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<tbody>
<tr>
<td>Hist 101</td>
<td>Western Civilization to 1500 (ND Hist)</td>
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<tr>
<td>Hist 102</td>
<td>Western Civilization since 1500 (ND Hist)</td>
<td>(3)</td>
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<tr>
<td>Hist 103</td>
<td>United States to 1877 (ND Hist)</td>
<td>(3)</td>
</tr>
<tr>
<td>Hist 104</td>
<td>United States since 1877 (ND Hist)</td>
<td>(3)</td>
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<tr>
<td>Hist 106</td>
<td>Middle Eastern Civilization from Islam to Present (ND Hist)</td>
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Undergraduate Academic Information
Hist 204 . . . . Canada to 1867 (ND:Hist) . . . . . . . . . . . . . . . . . . . . . . .(3)
Hist 210 . . . . The United States: Military History (ND:Hist) . . . . . . .(3)
Hist 214 . . . . Latin America to 1825 (ND:Hist) . . . . . . . . . . . . . . . . . .(3)
Hist 215 . . . . Latin America: The National
. . . . . . . . . . . Experience since 1825 (ND:Hist) . . . . . . . . . . . . . . . . . .(3)
Hist 220 . . . . History of North Dakota (ND:Hist) . . . . . . . . . . . . . . . . .(3)
Hist 221 . . . . The Scandinavian Countries since 1500 (ND:Hist) . . . . .(3)
Hist 325 . . . . The United States: The Early Frontier . . . . . . . . . . . . . . .(3)
Hist 326 . . . . The United States: Western Frontier . . . . . . . . . . . . . . . .(3)
Hist 331 . . . . The United States: Social and Cultural, 20th Century . . .(3)
Hist 332 . . . . Women in American History . . . . . . . . . . . . . . . . . . . . . .(3)
Hist 343 . . . . Ancient Greece . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . .(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 416 . . . . Russia to 1855 . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . .(3)
Hist 417 . . . . Russia since 1855 . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . .(3)
Honors
Hon 101 . . . . Inquiry in the Humanities . . . . . . . . . . . . . . . . . . . . . . . .(3)
Hon 291 . . . . Colloquium in the Humanities . . . . . . . . . . . . . . . . . . .(2-4)
Hon 391 . . . . Advanced Colloquium in the Humanities . . . . . . . . . .(2-4)
Humanities
Hum 101 . . . Introduction to Humanities (ND:Hum) . . . . . . . . . . . . . .(4)
Hum 102 . . . Introduction to Humanities (ND:Hum) . . . . . . . . . . . . . .(4)
Indian Studies
IS 121 . . . . . Introduction to Indian Studies. . . . . . . . . . . . . . . . . . . . ..(3)
IS 255 . . . . . Survey of Native American Art (ND:Hum) . . . . . . . . . .(3)
IS 345 . . . . . Contemporary American Indian Issues . . . . . . . . . . . . . .(3)
Industrial Technology
**IT 322 . . . . . Fundamentals of Photography . . . . . . . . . . . . . . . . . . . . .(2)
Languages
C 101 . . . . . . First-Year College Latin (ND:Hum). . . . . . . . . . . . . . . . .(4)
C 102 . . . . . . First-Year College Latin (ND:Hum) . . . . . . . . . . . . . . . .(4)
C 201 . . . . . . Second-Year College Latin (ND:Hum) . . . . . . . . . . . . . .(4)
C 202 . . . . . . Second-Year College Latin (ND:Hum) . . . . . . . . . . . . . .(4)
C 251 . . . . . . Introduction to Greek (ND:Hum) . . . . . . . . . . . . . . . . . .(4)
C 252 . . . . . . Introduction to Greek (ND:Hum) . . . . . . . . . . . . . . . . . .(4)
C 301 . . . . . . Latin Prose (ND:Hum) . . . . . . . . . . . . . . . . . . . . . . . . . . .(3)
C 351 . . . . . . Greek Prose and Poetry (ND:Hum) . . . . . . . . . . . . . . . . .(4)
C 352 . . . . . . Greek Poetry: Homer (ND:Hum) . . . . . . . . . . . . . . . . . .(4)
F 101 . . . . . . Beginning French (ND:Hum) . . . . . . . . . . . . . . . . . . . . .(4)
F 102 . . . . . . Beginning French (ND:Hum) . . . . . . . . . . . . . . . . . . . . .(4)
F 103 . . . . . . Accelerated Beginning French (ND:Hum) . . . . . . . . . . .(8)
F 201 . . . . . . Second-Year French (ND:Hum) . . . . . . . . . . . . . . . . . . .(4)
F 202 . . . . . . Second-Year French (ND:Hum) . . . . . . . . . . . . . . . . . . .(4)
F 301 . . . . . . Third-Year French (ND:Hum) . . . . . . . . . . . . . . . . . . . . .(3)
F 302 . . . . . . Third-Year French (ND:Hum) . . . . . . . . . . . . . . . . . . . . .(3)
F 305 . . . . . . French Conversation and Culture (ND:Hum) . . . . . . . . .(2)
F 306 . . . . . . French Conversation and Culture (ND:Hum) . . . . . . . . .(2)
F 371 . . . . . . History of French Literature (ND:Hum) . . . . . . . . . . . . .(3)
F 372 . . . . . . History of French Literature (ND:Hum) . . . . . . . . . . . . .(3)
G 101 . . . . . . Beginning German (ND:Hum) . . . . . . . . . . . . . . . . . . . .(4)
G 102 . . . . . . Beginning German (ND:Hum) . . . . . . . . . . . . . . . . . . . .(4)
G 103 . . . . . . Accelerated Beginning German (ND:Hum) . . . . . . . . . .(6)
G 201 . . . . . . Second-Year German (ND:Hum) . . . . . . . . . . . . . . . . . .(4)
G 202 . . . . . . Second-Year German (ND:Hum) . . . . . . . . . . . . . . . . . .(4)
G 301 . . . . . . Introduction to German Literature (ND:Hum) . . . . . . . .(2)
G 302 . . . . . . Introduction to German Literature (ND:Hum) . . . . . . . .(2)
G 305 . . . . . . German Composition and Conversation (ND:Hum) . . . .(2)
G 306 . . . . . . German Composition and Conversation (ND:Hum) . . . .(2)
G 312 . . . . . . German Civilization (Kulturkunde) (ND:Hum) . . . . . . .(3)
I 101 . . . . . . Beginning Italian (ND:Hum) . . . . . . . . . . . . . . . . . . . . . .(4)
I 102 . . . . . . Beginning Italian (ND:Hum) . . . . . . . . . . . . . . . . . . . . . .(4)
N 101 . . . . . . Beginning Norwegian (ND:Hum) . . . . . . . . . . . . . . . . . .(4)
N 102 . . . . . . Beginning Norwegian (ND:Hum) . . . . . . . . . . . . . . . . . .(4)
N 201 . . . . . . Second-Year Norwegian (ND:Hum) . . . . . . . . . . . . . . . .(4)
N 202 . . . . . . Second-Year Norwegian (ND:Hum) . . . . . . . . . . . . . . . .(4)
N 301 . . . . . . Advanced Norwegian (ND:Hum) . . . . . . . . . . . . . . . . . .(3)
N 302 . . . . . . Advanced Norwegian (ND:Hum) . . . . . . . . . . . . . . . . . .(3)
R 101 . . . . . . Beginning Russian (ND:Hum) . . . . . . . . . . . . . . . . . . . . .4)
R 102 . . . . . . Beginning Russian (ND:Hum) . . . . . . . . . . . . . . . . . . . . .(4)
R 201 . . . . . . Second-Year Russian (ND:Hum) . . . . . . . . . . . . . . . . . .(4)
R 202 . . . . . . Second-Year Russian (ND:Hum) . . . . . . . . . . . . . . . . . .(4)
R 301 . . . . . . Third-Year Russian (ND:Hum) . . . . . . . . . . . . . . . . . . . .(3)
R 302 . . . . . . Third-Year Russian (ND:Hum) . . . . . . . . . . . . . . . . . . ..(3)
R 305 . . . . . . Russian Reading and Composition (ND:Hum) . . . . . . . .(2)
R 306 . . . . . . Russian Reading and Composition (ND:Hum) . . . . . . . .(2)
S 101 . . . . . . Beginning Spanish (ND:Hum) . . . . . . . . . . . . . . . . . . . . .(4)
S 102 . . . . . . Beginning Spanish (ND:Hum) . . . . . . . . . . . . . . . . . . . . .(4)
S 103 . . . . . . Accelerated Beginning Spanish (ND:Hum) . . . . . . . . . .(6)


S 201 . . . . . . Second-Year Spanish (ND:Hum) . . . . . . . . . . . . . . . . . .(4)
S 202 . . . . . . Second-Year Spanish (ND:Hum) . . . . . . . . . . . . . . . . . .(4)
Lang 331 . . . Foreign Literature in Translation (ND:Hum) . . . . . . . .(1-3)
Music
Mus 100
** Mus 105
Mus 108
Mus 109
Mus 220
Mus 226
Mus 227
** Mus 260
** Mus 261
** Mus 262
** Mus 263
** Mus 264
** Mus 265
** Mus 269
** Mus 270
** Mus 271
** Mus 272
** Mus 273
** Mus 274
** Mus 275
** Mus 276
** Mus 279

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Introduction to the Understanding of Music (ND:Hum) .(3)
Individual Lessons for Non-Majors (ND:FA) . . . . . . . . .(1)
Fundamentals of Music (ND:Hum) . . . . . . . . . . . . . . . . .(3)
Creative Music (ND:Hum) . . . . . . . . . . . . . . . . . . . . . . .(3)
Music in America (ND:Hum) . . . . . . . . . . . . . . . . . . . . .(3)
Rock Music and Pop Culture (ND:Hum) . . . . . . . . . . . .(3)
Popular and Classical Music of the World (ND:Hum) . .(3)
Concert Choir (ND:FA) . . . . . . . . . . . . . . . . . . . . . . . . . .(1)
University Chamber Chorale (ND:FA) . . . . . . . . . . . . . .(1)
UND Community Chorus (ND:FA) . . . . . . . . . . . . . . . .(1)
Varsity Bards (ND:FA) . . . . . . . . . . . . . . . . . . . . . . . . . .(1)
Women’s Chorus (ND:FA) . . . . . . . . . . . . . . . . . . . . . . .(1)
Jazz Choir (ND:FA) . . . . . . . . . . . . . . . . . . . . . . . . . . . . .(1)
Opera Project (ND:FA) . . . . . . . . . . . . . . . . . . . . . . . . . .(1)
Wind Ensemble (ND:FA) . . . . . . . . . . . . . . . . . . . . . . . .(1)
University Band (ND:FA) . . . . . . . . . . . . . . . . . . . . . . . .(1)
Marching Band (ND:FA) . . . . . . . . . . . . . . . . . . . . . . . . .(1)
Instrumental Jazz Ensemble (ND:FA) . . . . . . . . . . . . . . .(1)
Symphony Orchestra (ND:FA) . . . . . . . . . . . . . . . . . . . .(1)
University Chamber Orchestra (ND:FA) . . . . . . . . . . . . .(1)
Collegium Musicum (ND:FA) . . . . . . . . . . . . . . . . . . .(1-4)
Chamber Music Groups (ND:FA) . . . . . . . . . . . . . . . . . .(1)

Philosophy
Phil 101
Phil 150
Phil 210
Phil 300
Phil 301
Phil 302
Phil 303
Phil 304
Phil 309
Phil 310
Phil 320
Phil 330

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Introduction to Philosophy (ND:Hum) . . . . . . . . . . . . . .(3)
Introduction to Logic & Scientific Method (ND:Hum) . .(3)
Contemporary Moral Issues (ND:Hum) . . . . . . . . . . . . .(3)
Classical Greek and Hellenistic Philosophy (ND:Hum) .(3)
Medieval Philosophy (ND:Hum) . . . . . . . . . . . . . . . . . . .(3)
Renaissance and Enlightenment (ND:Hum) . . . . . . . . . .(3)
Kant and the Nineteenth Century (ND:Hum) . . . . . . . . .(3)
Twentieth Century Philosophy (ND:Hum) . . . . . . . . . . .(3)
American Philosophy (ND:Hum) . . . . . . . . . . . . . . . . . .(3)
Ethics: Right and Wrong? Good and Evil . . . . . . . . . . . .(3)
Metaphysics: What Is Real? (ND:Hum) . . . . . . . . . . . . .(3)
Epistemology: What Can We Know and
How Can We Know It? (ND:Hum) . . . . .(3)
Aesthetics: What is Beauty? (ND:Hum) . . . . . . . . . . . . .(3)
Ethics in Engineering and Science (ND:Hum) . . . . . . . .(3)
Ethics in Heatlh Care (ND:Hum) . . . . . . . . . . . . . . . . . . .(3)
Ethics in Business and Public
Administration (ND:Hum) . . . . . . . . . . . . . . . . . . . . . . .(3)
Philosophic Themes (ND:Hum) . . . . . . . . . . . . . . . . . .(1-3)
Philosophy of Human Nature (ND:Hum) . . . . . . . . . . . .(3)

Phil 340 . . . .
Phil 370 . . . .
Phil 372 . . . .
Phil 373 . . . .
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Phil 395 . . . .
Phil 408 . . . .

Political Science
PSci 311 . . . Development of Political Thought I . . . . . . . . . . . . . . . .(3)
PSci 312 . . . Development of Political Thought II . . . . . . . . . . . . . . . .(3)
Religion
Rel 101
Rel 102
Rel 103
Rel 109
Rel 110
Rel 120
Rel 203
Rel 227
Rel 237
Rel 247
Rel 250
Rel 301
Rel 305
Rel 342
Rel 345
Rel 423

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Introduction to Religion (West) (ND:Hum) . . . . . . . . . .(3)
Introduction to Religion (East) (ND:Hum) . . . . . . . . . . .(3)
Introduction to the New Testament (ND:Hum) . . . . . . . .(3)
Introduction to the Old Testament. (ND:Hum) . . . . . . . .(3)
Contemporary Religious Writers (ND:Hum) . . . . . . . . .(3)
Religion in America (ND:Hum) . . . . . . . . . . . . . . . . . . .(3)
World Religions (ND:Hum) . . . . . . . . . . . . . . . . . . . . . .(3)
Catholic Christianity (ND:Hum) . . . . . . . . . . . . . . . . . . .(3)
Protestant Christianity (ND:Hum) . . . . . . . . . . . . . . . . . .(3)
Introduction to Judaism (ND:Hum) . . . . . . . . . . . . . . . ..(3)
East and West in Religions (ND:Hum) . . . . . . . . . . . . . .(3)
Life and Religion of Paul (ND:Hum) . . . . . . . . . . . . . . .(3)
Mysticism (ND:Hum) . . . . . . . . . . . . . . . . . . . . . . . . . . .(3)
Religious Ethics (ND:Hum) . . . . . . . . . . . . . . . . . . . . . . .(3)
Death and Dying (ND:Hum) . . . . . . . . . . . . . . . . . . . . . .(2)
Psychology of Religion (ND:Hum) . . . . . . . . . . . . . . . . .(3)

Theatre Arts
TA 121 . . . .
TA 130 . . . .
**TA 200 . . . .
TA 223 . . . .
**TA 225 . . . .
**TA 227 . . . .
**TA 229 . . . .
TA 250 . . . .
TA 330 . . . .
TA 422 . . . .
TA 423 . . . .
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Introduction to Theatre Arts (ND:Hum) . . . . . . . . . . . . .(3)
The Art and Craft of Theatre (ND:Hum) . . . . . . . . . . . . .(3)
Rehearsal and Performance (ND:FA) . . . . . . . . . . . . . . .(1)
Beginning Oral Interpretation (ND:Hum) . . . . . . . . . . . .(3)
Stagecrafts I (ND:FA) . . . . . . . . . . . . . . . . . . . . . . . . . . .(3)
Acting I (ND:FA) . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . .(3)
Creative Dramatics (ND:FA) . . . . . . . . . . . . . . . . . . . . . .(3)
Readings in Dramatic Literature (ND:Hum) . . . . . . . . . .(2)
Contemporary Theatre (ND:Hum) . . . . . . . . . . . . . . . . . .(3)
American Theatre History . . . . . . . . . . . . . . . . . . . . . . . .(3)
History of the Theatre: Classical Medieval
and Renaissance . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . .(3)

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

**Anthropology**
- Anth 170: Introduction to Biological Anthropology (3)

**Biology**
- **Biol 100 & 100L**: Principles of Biology (with lab) (ND:LABSC) (4)
- **Biol 101 & 101L**: Introduction to Biology (with lab) (ND:LABSC) (4)
- **Biol 102 & 102L**: Introduction to Biology (with lab) (ND:LABSC) (4)
- **Biol 235**: Human Environment (ND:Sci) (2)
- **Biol 240**: Wildlife Conservation (ND:Sci) (2)
- **Biol 250**: Human Sexuality (ND:Sci) (3)
- **Biol 251**: Plants and People (ND:Sci) (3)

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

**Computer Science**
- **CSci 101 & 101L**: Introduction to Computers (only counts for GER if taken with lab simultaneously) (ND:COMPSIC) (3)
- **CSci 110**: Computer Programming I (3)
- **CSci 111**: Computer Programming II (3)
- **CSci 160**: Computer Science I (ND:COMPSIC) (4)
- **CSci 161**: Computer Science II (ND:COMPSIC) (4)
- **CSci 260**: Programming Languages (ND:COMPSIC) (3)
- **CSci 289**: Social Implications of Computer Technology (ND:COMPSIC) (3)

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

**Family and Consumer Science**
- FCS 240: Fundamentals of Nutrition (3)

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

**Geology**
- Geol 100: Earth Science (ND:Sci) (4)
- **Geol 101**: Introduction to Geology (ND:LABSC) (3)
- Geol 101 L: Introduction to Geology Lab (ND:LABSC) (1)
- **Geol 102**: The Earth Through Time (ND:LABSC) (3)
- Geol 102 L: The Earth Through Time Lab (ND:LABSC) (1)

**Psychology**
- Psy 241: Introduction to Statistics (4)

**Sociology**
- Soc 326: Sociological Statistics (3)

**Space Studies**
- SpSt 200: Introduction to Space Studies (ND:Sci) (3)
- SpSt 420: Space Science and Exploration (ND:Sci) (3)
- SpSt 430: Earth System Science (ND:Sci) (3)

**V. 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.

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

**VII. 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.)
VIII. 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.

IX. 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 Academic Dean.

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

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

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

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

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

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

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 combina-
tion of course learning and practical work experience provides an innov-
ative and comprehensive education.

Students spend from 3-9 months on Cooperative Education assign-
ment. Academic credit is granted by the participating academic depart-
ment 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 stu-
dents 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 adviser before changing the registration. Students should be aware
that all drops after the first day of class could affect their ability to
have financial aid in future terms. The last day to drop a course without
a grade for all students is on the Friday five weeks preceding Reading
and Review Day each semester. (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 on the first 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 end of the fifth week of
instruction (except during Summer Session). 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 with-
drawal within the first five days from commencement of university
instruction. The Registrar will delete from the class rolls the names of
students received and mail to the current local address a revised class
schedule to each student dropped from a course in this manner.

Not all instructors follow this policy since it is not mandatory.
Students, therefore, are strongly advised not to assume that they have
been dropped from a course. Students should review their registration
status in a course in question with the Office of Records.

WITHDRAWAL FROM UNIVERSITY

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

The last day a student may cancel registration without grades is the
Friday five weeks preceding Reading and Review Day. (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 Dean of Students 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 con-
sidered 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
adviser.

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 his/her adviser
and the dean of the college in which the student is enrolled.

THE GRADING SYSTEM

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

<table>
<thead>
<tr>
<th>LETTER GRADE</th>
<th>EXPLANATION</th>
<th>GRADE PTS. PER SEM. HR.</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>Marked Excellence</td>
<td>4</td>
</tr>
<tr>
<td>B</td>
<td>Superior</td>
<td>3</td>
</tr>
<tr>
<td>C</td>
<td>Average</td>
<td>2</td>
</tr>
<tr>
<td>D</td>
<td>Passing but low</td>
<td>1</td>
</tr>
<tr>
<td>F</td>
<td>Failure</td>
<td>0</td>
</tr>
<tr>
<td>I</td>
<td>Incomplete</td>
<td>—</td>
</tr>
<tr>
<td>S</td>
<td>Satisfactory</td>
<td>—</td>
</tr>
<tr>
<td>U</td>
<td>Unsatisfactory</td>
<td>—</td>
</tr>
<tr>
<td>W</td>
<td>Withdrawn</td>
<td>—</td>
</tr>
<tr>
<td>CR</td>
<td>Credit Received</td>
<td>—</td>
</tr>
<tr>
<td>CD</td>
<td>Credit Deferred</td>
<td>—</td>
</tr>
<tr>
<td>CW</td>
<td>Credit 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>
</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 examina-
tion 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 stu-
dent fails to complete the assigned work within the allowed time peri-
on. An “I”, Incomplete, in a course taken for undergraduate credit
must be completed during the first four weeks of the succeeding semes-
ter that the student is enrolled in institutional credit. An Administrative
Procedures Committee petition for an extension of time of an incom-
plete may be submitted to the Office of Records by a student with the
approval of the instructor of the course and the dean of the college
offering the course. An “I” once recorded may be removed or convert-
ed 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 permis-
sion 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
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 Records 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 adviser. Without this approval, both grades will be recorded on the student’s permanent record, with the last grade being marked as duplication and not being counted in the student’s GPA. If a course repetition is taken for traditional A through F letter grading, the last grade achieved in the course will be used in calculating the student’s grade point average. Repeating an approved course with S-U grading will eliminate the effects of previous credits from the student’s GPA if the achieved result is an S, but repetition which results in a U will leave the effects of the earlier grade intact.

RAISING A “D” GRADE

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

GRADE FORGIVENESS

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

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

DEFICIENCY REPORTS

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

SEMESTER GRADE REPORTS

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

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

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 neces-
A student is expected to show, both within and outside of the University, respect for law and order, personal honor, and the rights of others. To further strengthen the sense of community at the University of North Dakota, we affirm the following: (1) That everyone be allowed to work, learn, and live in a safe, caring environment; (2) That everyone learn about, understand, appreciate, and respect varied cultures; (3) That everyone matters; (4) That all individuals be respected and treated with dignity and civility; (5) That everyone continue to share in the responsibility of making UND a better place. Within the University, the student is subject to specific policies, rules and regulations promulgated by student governing groups, student-faculty committees, University Senate and the State Board of Higher Education. The student is subject to civil law and civil authority. It is taken for granted when a student enters the University that he/she has an earnest purpose. This presumption in the student’s favor continues until, by neglect of duty or by inappropriate behavior, he/she brings his/her status into question. Cases involving student violations of academic or non-academic regulations may be judged by student conduct committees, the Student Relations Committee, or by the Dean of Students Office. Adjudication will incorporate both substantive due process, i.e., fair and equitable treatment, and appropriate procedural due process.

The Code of Student Life, available from the Vice President for Student Affairs, and the Dean of Students Office, outlines the rights and responsibilities and expected levels of conduct of citizens in the University community. The purpose of the rules outlined is to prevent abuse of the rights of others and to maintain an atmosphere in the University community appropriate for an institution of higher education. Materials included will be helpful to student organizations and to members of the University community to gain a better understanding of responsibilities of various boards and committees, and to understand student rights and responsibilities. Section 3 in the Code covers academic concerns (grievances and standards) and section 2 covers student conduct regulations and procedures.

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

SCHOLASTIC HONESTY

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

A. Cheating on a test includes, but is not restricted to:

1. Copying from another student’s test.
2. Possessing or using material during a test not authorized by the person giving the test.
3. Collaborating with or seeking aid from another student during a test without authority.
4. Knowingly using, buying, selling, stealing, transporting, or soliciting in whole or in part the contents of an unadministered test.
5. Substituting for another student or permitting another student to substitute for oneself to take a test.
6. Bribery another person to obtain an unadministered test or information about an unadministered test.

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

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

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

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

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

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

The Office of Advising and New Student Services

HISTORY AND SCOPE

The Office of Advising and New Student 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 Advising and New Student 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 nine colleges and schools which offer undergraduate degrees. These include the Center for Aerospace Sciences, College of Arts and Sciences, the Center for Teaching and Learning, the School of Engineering and Mines, the College of Nursing, the College of Fine Arts, the College for Human Resources Development, and the School of Medicine.

Some undecided students may return to the Office of Advising and New Student 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 high school transcript are forwarded to the Office of Advising and New Student Services. The Office of Advising and New Student Services has the responsibility for housing the records of all undecided students and for assigning each to an appropriate academic adviser. All students who have not decided on a major should meet with their adviser on a regular basis and should consult with their adviser preceding enrollment in classes each term.

TRANSFER TO A DEGREE COLLEGE

When a student decides upon an academic major, the records of the student are advanced to a four-year, degree-granting college.

To advance records, the student must call or go to the office of the college which grants the degree the student wishes to pursue. The new college will request records from Advising and New Student Services.

PROGRAM PLANNING

In most cases the University recommends that a student’s first year be devoted to broad preparation for later specialization. This is particularly important for the undecided student, who may wish to test his or her capacities and interests in various directions before making a final decision about a major field of concentration.

Many new students devote much of their first year of coursework to satisfying the University’s general education requirements, which must be completed by all undergraduate students no matter which school or college they eventually enter to become degree candidates. The general education requirements form a core of learning that the University sees as necessary for a complete liberal education. These requirements include a minimum of six credit hours in English compo-

sition; twelve hours in mathematics, science and technology; nine hours in social sciences and twelve hours in arts and humanities. See pages 27-31 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 59.

D. J. ROBERTSON AWARD

The D. J. Robertson Academic Award is presented each spring and fall by the Office of Advising and New Student 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.

SUMMER REGISTRATION PROGRAM

The Office of Advising and New Student Services conducts a special summer registration program each year to allow incoming freshmen to arrange their fall semester class schedules. This procedure allows each student to obtain individual attention from faculty advisers. Students accepted for admission to the University are invited to participate in the Summer Registration 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 Advising and New Student Services.

SUMMER SESSION

The Summer Session is administered by the Dean of Outreach Programs. See page 56 for information on summer programs.
The Center for Aerospace Sciences

John D. Odegard, Dean

MISSION AND HISTORY

The principal mission of the Center for Aerospace Sciences is to preserve, create, and disseminate knowledge and to demonstrate the principled use of knowledge for and about aerospace, meteorology, and computer science. In consort with other units of the University of North Dakota, it is committed to providing a comprehensive, high quality, relevant education for students preparing for careers in these fields. Always at the forefront of technology, the Center has earned national acclaim for its achievements in collegiate aviation education and atmospheric research. In just a few years, the Center has received a steady stream of multi-million dollar research contracts and attracted students from every state and at least a dozen foreign countries.

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

In 1992, the Center’s aviation degree programs became the first in the nation accredited by the Council on Aviation Accreditation.

SCOPE

In the aviation industry, the rate of change is rapid and relentless. New aircraft and air traffic control technology are profoundly affecting the way the industry does business. Increased air travel and pending pilot shortages are just two of the industry’s major challenges today. The result is a demand for high-caliber professionals to handle an infinitely greater range and complexity of responsibilities. These are the employment trends the Center’s aviation programs are designed to meet.

The Center’s research faculty in the Atmospheric Sciences Department are working on federally funded projects to modernize the nation’s aging weather surveillance system and to develop early warning systems for aircraft icing and wind shear. Their research takes them across the Great Plains to the Rockies, indeed across the globe, on a variety of both basic and applied atmospheric studies. Digital Doppler radar, a customized Cessna Citation II research jet, and a mobile computer lab are among the research tools used for these meteorological fact-finding missions. They are developing new ways of gathering, analyzing, and presenting weather information for the special needs of different professions including aviation and agriculture.

An interdisciplinary space studies program, the nation’s first, takes a look at the broad area of activities beyond Earth’s atmosphere and the use of extraterrestrial resources in space development. In addition to presenting the current and future technology needs, the program examines the social, political, economic, and legal issues of this new human experience. Both an undergraduate minor and a Master’s degree in space studies are available.

Because of the space studies program, NASA has designated the University of North Dakota as the state’s Space Grant College. This designation makes the university eligible for funds to conduct space related projects and programs including an outreach program to elementary and secondary schools around the state to encourage students to study math and science.

The Center also operates the Scientific Computing Center, a facility that supports the high performance computing needs of the college for research, academic, and administrative functions. The Scientific Computing Center operates a variety of mainframe and mini-computers, as well as a Cray supercomputer.

Working in consort, the Center’s Atmospheric Sciences Department, Space Studies Department, and Scientific Computing Center engage in multi-disciplinary research as the Earth System Science Institute. Pooling the unique perspectives of these varied sciences, and calling upon faculty scientists from other university departments, the Institute works to better understand the earth’s complex environment and provide practical tools for agriculture generated from this research.

Computers are transforming the aerospace industry. To meet this challenge, the Department of Computer Science became a part of the Center in 1982. Since then, the undergraduate degree in computer science has positioned the Center for a leadership role in driving computational technology to solve space-age problems.

The Center for Aerospace Sciences is the home of a unique distance learning facility called the AeroSpace Network. Funded by the Federal Aviation Administration, it provides telecommunications production facilities to produce aviation classes and related educational materials and the facilities to transmit them to other schools and FAA sites around the country via two-way interactive satellite links. Classes are transmitted live daily from UND aviation classrooms to other universities and colleges across the United States.

Future program development at the Center will include instructional technology, artificial intelligence, and global weather information. In addition, advanced degrees are being developed for aviation and meteorology.

FACILITIES

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

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

At Mark Andrews International Airport, the Center operates a modern flight training facility with a fleet of 86 aircraft including jets, turboprops and helicopters. Aviation students fly more than 90,000 flight hours in pursuit of their undergraduate aviation degrees. A new five-story office building with deli/cafeteria and two new hangars are among the recent additions to the newly expanded facility. Two new FAA facilities — a 90-foot air traffic control tower and an automated flight service station — are located within a short walking distance. A high-speed fiber optic link provides access to the Center’s digital computer systems for dispatching, billing, student records, and weather data. A shuttle bus is available to transport students to and from the campus and flight operations.

ADMISSION

All students enrolled in the University who wish to be admitted to the Center for Aerospace Sciences are advised during their freshman
year to follow the suggested curriculum leading to the desired degree (see departmental listings). To be eligible for admission to programs within the Center for Aerospace Sciences, the student must have completed at least twenty-four hours of credit and must have earned a minimum Grade Point Average (GPA) of 2.50.

**DEGREES AND REQUIREMENTS FOR GRADUATION**

The Degree of Bachelor of Science in Aeronautics, Bachelor of Science in Airway Science, or Bachelor of Science in Meteorological Studies is conferred upon a student who successfully fulfills the following requirements:

1. Complete the University’s General Education Requirements (see pages 27-31)
2. Earn a minimum Grade Point Average of 2.50 in all courses taken. (Note: transfer students must not only earn a minimum cumulative GPA of 2.50, but must also earn a minimum 2.50 average in work completed at the University of North Dakota.)
3. Complete the curriculum for the major as outlined in the departmental listings.
4. Make formal application to the Registrar for the degree sought within four weeks of the beginning of the semester of expected graduation.

The Department of Aviation and the College of Business and Public Administration also award the degree of Bachelor of Business Administration with major in Aviation Management or Airport Management upon completion of curriculum outlined under specific departmental listings on page 63.

The Department of Computer Science and the College of Arts and Sciences award the degree of Bachelor of Science with major in Computer Science upon completion of curriculum outlined on page 89. At least 12 credits of Computer Science courses may also be completed.

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

**FLIGHT TRAINING**

The following certificates and ratings are currently offered for college credit: private, commercial, instrument (both airplane and rotorcraft), multi-engine, seaplane, certified flight instructor (airplane, instrument multi-engine and rotorcraft), ground instructor (basic, advanced and instrument), air transport pilot (single-engine, multi-engine and Cessna Citation), type ratings (Cessna Citation, Beechcraft 1900, and Beechjet 400).

**Helicopter Flight Training.** The Center offers a full range of helicopter ratings in piston and turbine powered helicopters to all students. In addition, in cooperation with the U.S. Army ROTC Cadet Scholarship Program, the Center offers helicopter training for selected ROTC cadets enrolled in four-year aviation degree programs. Two, three, and four year scholarships pay for flight training, tuition, and books.

**OTHER PROGRAMS**

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

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

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

**Executive-In-Residence.** The Center brings to campus an impressive number of visiting aviation officials each year as guest lecturers for classes and special seminars. The input of these professionals contributes significantly to keeping students and faculty abreast of new developments in the aerospace industry.

**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 Center sponsors a 4-day Aviation Career Education Academy for North Dakota high school students.

**STUDENT ORGANIZATIONS**


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

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

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

**Student Air Traffic Control Association** provides opportunities for women students to learn more about their chosen profession and participate in a variety of aviation-related activities. Workshops and guest speakers are arranged throughout the year to help prepare students for the job market.

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

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

**Association for Computing Machinery.** As the student branch of the National Association for Computing Machinery, this organization sponsors such events as computer programming contests, computer demonstrations, and tutorial programs. Weekly meetings with guest speakers and field trips provide valuable insight into the computer industry.
American Meteorological Society. The Lake Agassiz Student Chapter of the American Meteorological Society seeks to promote advancement and understanding of meteorology. This effort includes sponsoring community awareness seminars on severe weather and natural hazards. Other group activities include monthly meetings with guest speakers and field trips to weather services in Winnipeg and Minneapolis.

SERVICE

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

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

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

The College of Arts and Sciences

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 Wittmer 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.

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

As a faculty of Arts and Sciences, the College structurally includes at present 14 academic departments: Anthropology, Biology, Chemistry, Communication Disorders, English Languages and Literature, Geography, History, Indian Studies, Mathematics, Modern and Classical Languages, Philosophy and Religion, Physics, Psychology, and Sociology. The coordinator of the Honors Program and the coordinator and faculty of the Humanities and Integrated Studies Program are also members of the College’s faculty. The faculty of departments structurally located in other colleges — Communication, Computer Science, Economics, Geology, Music, Political Science, Theatre Arts and Visual Arts — are regularly consulted on an associate faculty basis, since the disciplines of those departments are historically associated with the liberal arts. Many of the liberal arts faculty are involved in various ways in the work of the Center for Teaching and Learning.

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 applicable field of study within the traditionally broad spectrum of the liberal arts, except that beginning in 1995, students in Communication and the Fine Arts fields enroll in the College of Fine Arts and Communication. The College also enrolls some “unclassified” students who already have a bachelor’s degree but wish to pursue further studies without formally registering in the Graduate School, and accepts auditors and special students.

The College is a member of the Council of Colleges of Arts and Sciences, the American Conference of Academic Deans, the Association of American Colleges and Universities, and the Mississippi Valley Deans’ Association.

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; 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, earth science, geography, natural science, physical science, and physics). In Psychology and Computer Sciences there are separate requirements for the B.A. and B.S. Students in Mathematics may choose either degree, as may students with both science and non-science majors.

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

**DEGREE REQUIREMENTS**

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

I. University Graduation Requirements. (applicable to all undergraduates) See pages 27-31.

II. Language Requirements. Generally for a degree from the College of Arts and Sciences a student must establish proficiency in a foreign language equivalent to that attained at the end of the fourth semester course in college (202 at this university, except for Greek, in which two courses at the 300 level are required to achieve the equivalent proficiency.) This is known as Level IV proficiency. Certain programs, however, admit variations in this requirement, and students should consult the specific requirements of particular programs and departments. The language requirement, if any, and options are listed for each major under the heading, “Required in other departments.” Any student doubtful about what his major will be is advised to establish language proficiency through coursework or other means as early as possible. For certain majors and concentrations, particular languages are preferred.

III. The Major or Concentration. Majors, basically a minimum of 30 credit hours in a single field, are offered in a variety of subjects. Interdepartmental majors, or related fields concentrations, are more limited in number. The requirements for both may be found in the departmental and interdepartmental listings beginning on page 59. Students should note particularly the requirements not only of the majors and concentrations, but, where appropriate, the accompanying requisites in other departments. In the Major (or concentration) students must have a grade point average of at least 2.00 by graduation.

**Majors Available in the College**

<table>
<thead>
<tr>
<th>Anthropology</th>
<th>History</th>
</tr>
</thead>
<tbody>
<tr>
<td>Applied Physics</td>
<td>Latin Studies</td>
</tr>
<tr>
<td>Biology</td>
<td>Mathematics</td>
</tr>
<tr>
<td>Chemistry</td>
<td>Norwegian</td>
</tr>
<tr>
<td>Communication Disorders</td>
<td>Philosophy</td>
</tr>
<tr>
<td>Computer Science</td>
<td>Physics</td>
</tr>
<tr>
<td>Economics</td>
<td>Political Science</td>
</tr>
<tr>
<td>English</td>
<td>Psychology</td>
</tr>
<tr>
<td>Fisheries and Wildlife Biology</td>
<td>Religion</td>
</tr>
<tr>
<td>French</td>
<td>Sociology</td>
</tr>
<tr>
<td>Geography</td>
<td>Spanish</td>
</tr>
<tr>
<td>Geology</td>
<td></td>
</tr>
<tr>
<td>German</td>
<td></td>
</tr>
</tbody>
</table>

**Related Fields Concentrations**

<table>
<thead>
<tr>
<th>American Studies</th>
<th>Peace Studies</th>
</tr>
</thead>
<tbody>
<tr>
<td>Earth Science</td>
<td>Physical Science</td>
</tr>
<tr>
<td>Humanities</td>
<td>Russian Studies</td>
</tr>
<tr>
<td>International Studies</td>
<td>Social Science</td>
</tr>
<tr>
<td>Natural Science</td>
<td></td>
</tr>
</tbody>
</table>

**Other Available Majors and Concentrations.** In addition to the majors and concentrations listed above, students may also present other related fields concentrations with the approval of the Dean and the departments involved.

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

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

**Teacher Certification Preparation.** To prepare to teach in secondary schools, students must meet requirements set by the Center for Teaching and Learning. In addition, the candidate must have a major or concentration in a “teaching field” as listed in the same section. The major courses required under the B.S. Ed. degree must be completed as part of the major. Students wishing professional certification should, as soon as possible, seek advisement from, and admission to, the Center for Teaching and Learning as well as A&S. To be accepted for Student Teaching, applicants must have a 2.75 Grade Point Average (GPA) in their major and a 2.50 GPA in all work attempted up to the time of application.

**Law School Preparation.** The University of North Dakota School of Law, in common with others, strongly recommends as preparation for legal studies the B.A. or B.S. with a broad, liberal education rather than specialized or technical training. For more specific expectations and entrance requirements, students should consult the Bulletin of the School of Law. Majors in the humanities and social sciences are appropriate. See also the Law School listing on page 50.

**Medical School Preparation.** Like law schools, medical schools generally require a B.A. or B.S. No particular major is preferred, but a broad, liberal education is expected. In addition, the candidate should fit into his or her program the following courses: Chemistry 105-106; Chemistry 305-306; Biology 101-102; and Physics 203-204. Calculus and other selected courses in Biology are also recommended. Because tomorrow’s physician not only must be accomplished in medicine, but also concerned with the social problems of people and must be a leader in civic and community affairs, he/she needs to have a liberal education encompassing in some depth the natural sciences, the social and behavioral sciences, and the arts and the humanities. The student must therefore select a curriculum with these goals in mind. See also the School of Medicine listing on page 50.

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

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

**PRE-PROFESSIONAL PROGRAMS**

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

**Pre-Dental**

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

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

Sophomore Year

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Phys 101, 102</td>
<td>Introductory College Physics</td>
<td>(8)</td>
</tr>
<tr>
<td>Chem 203, 204</td>
<td>General Physics</td>
<td>(8)</td>
</tr>
<tr>
<td>Chem 305, 306</td>
<td>Organic Chemistry</td>
<td>(10)</td>
</tr>
<tr>
<td>Psy 101</td>
<td>Introduction to Psychology</td>
<td>(3)</td>
</tr>
<tr>
<td>Elective</td>
<td>(literature, Latin words, history, science, etc.)</td>
<td>(3)</td>
</tr>
</tbody>
</table>

Pre-Mortuary Science

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

Freshman Year

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Engl 101, 102</td>
<td>Composition I and II</td>
<td>(6)</td>
</tr>
<tr>
<td>Biol 101, 102</td>
<td>Introduction to Biology</td>
<td>(8)</td>
</tr>
<tr>
<td>Math 101</td>
<td>College Algebra</td>
<td>(3)</td>
</tr>
<tr>
<td>Elective</td>
<td></td>
<td>(3)</td>
</tr>
</tbody>
</table>

Sophomore Year

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chem 105, 106</td>
<td>General Chemistry and Qual. Analysis</td>
<td>(8)</td>
</tr>
<tr>
<td>Anat 204</td>
<td>Anatomy for Paramedical Personnel</td>
<td>(3-5)</td>
</tr>
<tr>
<td>Soc 101</td>
<td>Introduction to Sociology</td>
<td>(3)</td>
</tr>
<tr>
<td>Acc 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.

Freshman Year

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Engl 101, 102</td>
<td>Composition I and II</td>
<td>(6)</td>
</tr>
<tr>
<td>Math 101</td>
<td>College Algebra</td>
<td>(3)</td>
</tr>
<tr>
<td>Math 105</td>
<td>Trigonometry</td>
<td>(2)</td>
</tr>
<tr>
<td>Biol 101, 102</td>
<td>Introduction to Biology</td>
<td>(8)</td>
</tr>
<tr>
<td>Elective</td>
<td>Humanities, Social Science, or Elective</td>
<td>(6-8)</td>
</tr>
</tbody>
</table>

Sophomore Year

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Engl 209</td>
<td>Technical &amp; Business Writing (elective)</td>
<td>(3)</td>
</tr>
<tr>
<td>Chem 105, 106</td>
<td>General Chemistry and Qual. Analysis</td>
<td>(8)</td>
</tr>
<tr>
<td>Phys 203, 204</td>
<td>General Physics</td>
<td>(8)</td>
</tr>
<tr>
<td>Psy 101</td>
<td>Introduction to Psychology</td>
<td>(3)</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. Arts and Sciences 250 is a non-departmental course listing, under which students may earn credit for special “on-demand” courses, seminars, etc. Students or faculty members who wish to propose a special course under this number should consult the Dean’s Office.

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

SPECIAL FACILITIES AND SERVICES

Three research institutes, the Institute for Ecological Studies, the Institute for Remote Sensing, and the Social Science Research Institute, are lodged in the college. In addition, through its various departments, the College of Arts and Sciences provides a variety of special services and facilities such as the Psychological Services Center (Psychology Department); the Speech, Language, and Hearing Clinic (Department of Communication Disorders); the Center for the Study of Cultural and Social Change (Sociology Department); and the U.S. Weather Bureau Observation Station and Astronomy Observatory (Geography Department). In addition, all departments of the College engage in general and specialized research.
The College of Business and Public Administration
W. Fred Lawrence, Dean

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

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

1. Offering accredited undergraduate programs of overall high quality in general and public accounting, airport management, aviation management, business economics, banking and financial economics, financial management, information management, management, and marketing.
2. Offering an accredited Master of Business Administration program of overall high quality in conjunction with the Graduate School.
3. Offering an undergraduate public administration program of overall high quality and, in conjunction with the Graduate School, a graduate public administration program of overall high quality.
4. Offering undergraduate industrial technology programs of overall high quality and, in conjunction with the Graduate School, a graduate industrial technology program of overall high quality.
5. Offering high quality undergraduate political science and economics programs in conjunction with the College of Arts and Sciences and, in conjunction with the College of Arts and Sciences and the Graduate School, a graduate political science program of overall high quality.
6. Offering high quality undergraduate and graduate business education programs in conjunction with the Center for Teaching and Learning and the Graduate School, respectively.
7. Engaging in ongoing evaluation of program and course offerings.
8. Engaging in research and scholarly activity for the benefit of students, and for contribution of new knowledge to the State, region, and nation.
9. Providing economic development assistance to the State and region.
10. Providing educational opportunities, consistent with quality and resource considerations, throughout the State for those who cannot come to the campus.

CURRICULA IN THE COLLEGE OF BUSINESS AND PUBLIC ADMINISTRATION
Nine groups of courses are offered in the College of Business and Public Administration which lead to the degree of Bachelor of Business Administration. They include: Accounting, Aviation Management, Airport 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 59. 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 73) and the College of Arts and Sciences offers minor programs in languages, including some (e.g., French) that have an orientation in business.

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

Business: A student pursuing a degree program in business is admitted to the College as a Pre-Business student. In order to be admitted to a program leading to the Bachelor of Business Administration or the Bachelor of Accountancy degrees, a student must have:
1. Satisfactorily completed the specified freshman/sophomore Pre-Business courses.
2. Earned at least a 2.50 overall GPA in all courses taken.
3. Earned at least a 2.40 GPA in the Pre-Business Core courses (Acct 200 & 201; BVED 217; Econ 201, 202 & 210) included in the group of specified Pre-Business courses.

Public Administration: A student pursuing a degree in public administration is admitted to the College as a Pre-Public Administration student. In order to be admitted to a program leading to the Bachelor of Science in Public Administration degree a student must have:
1. Satisfactorily completed at least 60 semester hours.
2. Earned at least a 2.50 GPA in the required Pre-Public Administration Core (refer to page 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:

<table>
<thead>
<tr>
<th>Freshman Year</th>
</tr>
</thead>
<tbody>
<tr>
<td>Engl 101 Composition I (3)</td>
</tr>
<tr>
<td>Engl 102 Composition II (3)</td>
</tr>
<tr>
<td>or Engl 209 Technical &amp; Business Writing (3)</td>
</tr>
<tr>
<td>Math 104 Finite Math (3)</td>
</tr>
<tr>
<td>Math 204 Survey of Calculus (3)</td>
</tr>
<tr>
<td>Psci 101 American Government I (3)</td>
</tr>
<tr>
<td>Comm 161 Fundamentals of Public Speaking (3)</td>
</tr>
<tr>
<td>*Psy 101 Intro to Psychology (3)</td>
</tr>
<tr>
<td>or Soc 101 Intro to Sociology (3)</td>
</tr>
<tr>
<td>or Anth 171 Intro to Cultural Anthropology (3)</td>
</tr>
<tr>
<td>*Arts &amp; Humanities Elective (See page xx) (6)</td>
</tr>
<tr>
<td>*Free Elective (See notes below) (3)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Sophomore Year</th>
</tr>
</thead>
<tbody>
<tr>
<td>Econ 201 Principles of Macroeconomics (3)</td>
</tr>
<tr>
<td>Econ 202 Principles of Microeconomics (3)</td>
</tr>
<tr>
<td>Econ 303 Money and Banking (3)</td>
</tr>
<tr>
<td>Acct 200 Elements of Accounting I (3)</td>
</tr>
<tr>
<td>Acct 201 Elements of Accounting II (3)</td>
</tr>
<tr>
<td>Econ 210 Intro to Business and Economic Statistics (3)</td>
</tr>
<tr>
<td>Lab Science (See page xx) (4)</td>
</tr>
<tr>
<td>BVED 217 Fundamentals of Management Information Systems (4)</td>
</tr>
<tr>
<td>*Arts &amp; Humanities Elective (See page xx) (6)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Students desiring to major in Airport Management or Aviation Management must: take Meteorology 110 for laboratory science requirement, take two semesters of</td>
</tr>
</tbody>
</table>
work completed at the University of North Dakota that applies toward a degree. (Transfer students must also earn at least a 2.50 GPA in all courses offered at the University of North Dakota.) Full lower division transfer credit will be granted for all courses equivalent to those specified for the freshman and sophomore years at the University of North Dakota.

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

DEGREES AND REQUIREMENTS FOR GRADUATION

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

All candidates for degrees offered by the College of Business and Public Administration must complete the University’s General Graduation Requirements (see pages 27-31), and complete the curriculum for at least one major in the College.

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

1. Be admitted to a business major offered by the College of Business and Public Administration.
2. Earn a minimum 2.50 GPA in all courses that apply toward the degree. (Transfer students must also earn at least a 2.50 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 2.20 overall 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 at least a 2.50 overall and 2.50 in the Pre-Public Administration Core to be admitted and must earn a minimum 2.50 GPA in all courses taken. (Transfer students must also earn at least a 2.50 GPA in all work completed at the University of North Dakota.)
3. Earn a minimum 2.50 GPA in public administration courses required for the major.
4. Earn a minimum 2.50 GPA in UND public administration courses required for the major.

PROGRAMS BEYOND THE CLASSROOM

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

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

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

GRADUATE EDUCATION

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

FACILITIES

Gamble Hall, an attractive and well equipped building completed in 1968, is the home for students and faculty of the College of Business and Public Administration. Teaching is enhanced through the use of modern instructional equipment including four microcomputer labora-
The continued development of North Dakota and the country requires skilled and well-trained engineers and industrial leaders. The School of Engineering and Mines provides a broad education, coupled with strong technical training, that prepares new graduates to successfully fill important positions, both technical and non-technical, in government and industry. Engineering education provides a broad background for successful accomplishment in many diverse fields in our technological society.
engineering students listed on page 45. 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.

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, civil 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 will 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 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 minimum Grade Point Average (GPA) of 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 105 or 151 and 161</td>
</tr>
<tr>
<td>English Composition</td>
<td>6</td>
<td>Engl 101 and 209 or 102</td>
</tr>
<tr>
<td>Calculus</td>
<td>12</td>
<td>Math 211 and 212 and 213</td>
</tr>
<tr>
<td>General Physics (calculus-based)</td>
<td>8</td>
<td>Phys 205 and 206</td>
</tr>
</tbody>
</table>

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

3. At least four engineering science courses or acceptable equivalents prescribed by each admitting department.

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 working experience while seeing practical applications of the subjects in their academic studies. In addition, students can increase their understanding of career choices available in their professional fields while gaining valuable experience.

**GENERAL CURRICULUM IN ENGINEERING FIRST AND SECOND YEARS**

The first year of the general curriculum permits a student to continue in any engineering degree program with little modification to his/her departmental program. Students who complete the third or the fourth semester of the general curriculum are required to modify their programs from those listed by their department but can, by proper scheduling, complete their degree requirements at the end of eight full semesters. Students who have not decided upon an engineering department should take the course of studies outlined in the general curriculum until they have made a departmental choice, at which time they should obtain departmental counseling on their academic program.

**FRESHMAN YEAR**

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

**SOPHOMORE YEAR**

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

Outlines for all four-year curricula are found in the Courses of Instruction section of the catalog beginning on page 59. 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 General Education Requirements for Engineering students are modified from the requirements given on pages 27-31.

1. **English Composition**
   6 semester hours minimum required. (No change)

**II. Social Sciences**

Courses must be taken in a minimum of 2 departments.
At least 5 semester hours must be in one department.
9 semester hours minimum required.

A. **Economics** 201 (3 hours). **Required.**
B. **Select at least 6 semester hours from the following list:**
   Anthropology 170, 171, 371, 374, 375, 377
   Geography 151, 152, 161, 262, 354
   Economics 202
   Political Science 101, 102, 220, 225, 305, 306, 309, 318, 400, 404, 405, 432
   Psychology 101, 251, 360, 361
   Sociology 101, 102, 301, 331, 335, 340, 361, 407, 431
   Social Work 358

**III. Arts and Humanities**

Courses must be taken in a minimum of 3 departments.
At least 5 semester hours must be in one department.
12 semester hours minimum required.

A. **Philosophy** 370 (3 hours). **Required.**
B. **Select at least 6 semester hours from the following list:**
   Fine Arts 150
   History 101, 102, 103, 104, 106, 204, 210, 214, 215, 220, 231, 325, 326, 330, 331, 332, 343, 405, 406, 416, 417
   Languages (continued) 130
   Languages 201, 202, 251, 252, 301, 302, 351, 352, 357, 358
   Music 100
   Philosophy 101, 210, 300, 301, 302, 303, 309, 340, 395, 408
   Political Science 311, 312
   Religion 101, 102, 103, 109, 110, 120, 203, 227, 237, 247, 250, 301, 305, 342, 345, 423
   Theatre Arts 121, 250, 422, 423, 424
   Visual Arts 110, 210, 211
   *No more than 2 credits are allowed for Hist 300 for GER.*
   Honors 101
   Languages 201, 202, 251, 252, 301, 302, 351, 352, 357, 358
   Languages 201, 202, 301, 302, 305, 306, 312
   Languages 201, 202, 301, 302, 305, 306
   S 201 202
   Lang 331
   Music 100
   Philosophy 101, 210, 300, 301, 302, 303, 309, 340, 395, 408
   Political Science 311, 312
   Religion 101, 102, 103, 109, 110, 120, 203, 227, 237, 247, 250, 301, 305, 342, 345, 423
   Theatre Arts 121, 250, 422, 423, 424
   Visual Arts 110, 210, 211
   *Select remaining credits from the University Arts and Humanities Requirements given on page 28.*

IV. **Mathematics, Science, and Technology**

12 semester hours minimum required. (No change)

Exceptions to the requirements are possible only by petition approval of the student’s adviser, department chair, and dean and will be permitted for well-justified reasons of validated importance to the student’s academic program.

It is recommended that engineering students, in consultation with their academic advisers, plan meaningful course sequences to meet their University General Education 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;
University of North Dakota

2. Have completed a minimum of 36 semester credits of approved engineering courses;
3. Have demonstrated the academic achievement necessary to pursue advanced study in engineering by attaining a GPA of at least 2.50 for all previous work.

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

STUDENT ORGANIZATIONS

Student Societies. There are student chapters of each of the following professional and technical societies: American Institute of Chemical Engineers (AIChE), American Institute of Mining Engineers (AIME), American Society of Civil Engineers (ASCE), American Society of Engineering Management (ASEM), American Society of Mechanical Engineers (ASME), Association of Undergraduate Geologists, Institute of Electrical and Electronics Engineers (IEEE), IEEE Computer Society, the National Association of Collegiate Entrepreneurs (ACE), the Society of Manufacturing Engineers (SME) and the Society of Women Engineers (SWE).

Honor Societies. Eta Kappa Nu, Sigma Gamma Epsilon, and Tau Beta Pi are engineering honor societies whose purpose is to recognize excellence in the scholarship.

Engineers’ Student Council. The Engineers’ Council of the University of North Dakota, founded in 1920, is a student organization representing all departments of the School of Engineering and Mines. Engineers’ Council, as a student chapter of the National Society of Professional Engineers (NSPE), is open to all engineering students. Its membership includes the vice president and one member of the student chapters of AIChE, AIME, ASCE, ASEM, ASME, IEEE and SWE; the vice presidents of Eta Kappa Nu, Sigma Gamma Epsilon, and Tau Beta Pi; the engineering student senator; and the editor of The North Dakota Engineer II.

UND SCHOOL OF ENGINEERING AND MINES FOUNDATION

The School of Engineering and Mines (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. To support technology commercialization around the world, the Foundation administers Environmental and Energy Research International, Ltd., based in Hong Kong and the Technology Transfer Office in Europe located in Recklinghausen, Germany.

The 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. Through its international offices, the Foundation identifies technologies in other parts of the world that can be supported and nurtured by the School for introduction into the U.S. market via regional companies. In addition, these offices adapt technologies developed within the School for market application around the world.

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 8103, University Station, Grand Forks, ND 58202.

DEVELOPMENT OFFICE

The mission of the School of Engineering and Mines’ Development Office is to expand the School’s interaction with the engineering and industrial community, to generate non-state appropriated financial resources for the School, and to coordinate the activities of the School’s Advisory Council. Much of the activity of the Office is dedicated to encouraging and supporting those activities of the School that contribute to the economic development of North Dakota. This involves providing technical support services for the manufacturing and engineering community in the region.

The Development Office prepares grant applications for laboratory equipment enhancement, identifies corporate academic support programs, and maintains a network of corporate contacts. The School’s Advisory Council consists of over 100 alumni and friends of the School who assist in student placement, corporate equipment grants and research opportunities, student design projects, and commercialization of the School’s research products. In this capacity, the Development Office serves as the School’s linkage with the UND SEM Foundation.

For further information, contact the UND SEM Development Office at Box 8103, University Station, Grand Forks, ND, 58202.

The Center for Innovation and Business Development provides business and technical support services to entrepreneurs, inventors, and small manufacturers to foster “homegrown” ventures, or expansion and diversification of existing companies. This is accomplished by mobilizing and utilizing the human resources within the School of Engineering and Mines (including student employment and project opportunities) and the College of Business at the University of North Dakota as well as networking with other institutions of higher learning, professionals in economic development, private consultants, and the Center’s 34-member Advisory Council.

The Center sponsors the UND chapter of the National Association of Collegiate Entrepreneurs (ACE). The mission of ACE is to promote and enhance opportunities for students interested in entrepreneurial pursuits.

STUDENT INSTRUCTION AND RESEARCH IN COOPERATION WITH THE ENERGY AND ENVIRONMENTAL RESEARCH CENTER

Graduate and undergraduate students in appropriate departments of the University can participate in the research programs of the UND Energy and Environmental Research Center. Student part-time employment is available. The Center’s programs involve research into the properties and utilization of low-rank coals, mine-site restoration and reclamation and a variety of hydrogeological, waste management, geological and geochemical research.

Academic work is provided through the regular graduate offerings of the University departments. Research is performed at the Center or in the academic unit, under cooperative supervision of faculty and Center staff.
The College of Fine Arts and Communication

Bruce C. Jacobsen, Dean

SCOPE AND MISSION

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

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

FACILITIES

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

DEGREES

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

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

ADMISSION

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

DEGREE REQUIREMENTS

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

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

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

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

Graduate Studies: The departments of Music, Theatre Arts, Visual Arts, and School of Communication offer, through the Graduate School, programs leading to the Master of Arts in Theatre Arts and in Communication, Master of Music, and the Master of Fine Arts in Visual Arts.

The Master of Music degree offers specialization in music education, performance or pedagogy (voice, piano), and composition. In addition, music also may be selected as an Area of Concentration in the Teacher Education program for the Doctor of Education, or as a Minor in the Teacher Education program for the Doctor of Philosophy degree.

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

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

The Master of Arts in Communication is offered through the School of Communication.
The Graduate School
Harvey R. Knull, 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 (50 programs) graduate program in the region. A number of unique facilities and support resources augment the instructional and research program.

Each year approximately 400 new students enroll for degrees in the Graduate School, and approximately 270 students receive master’s degrees and 40 students receive doctoral degrees. In addition, the Graduate School and the Division of Continuing Education offer an extensive program of off-campus graduate work.

DEGREES GRANTED

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

GRADUATE PROGRAMS

The University offers work leading to the doctorate in 16 fields. Forty-eight 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- and 900-series numbers are graduate courses and are normally open only to graduate students. All courses listed in the Graduate School Section of this Catalog carry graduate credit. Courses numbered over 300 in the Undergraduate section of this Catalog may, in certain instances, carry graduate credit toward a cognate area.

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

ADDITIONAL INFORMATION

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

GRADUATE PROGRAMS AND DEGREES

<table>
<thead>
<tr>
<th>Program</th>
<th>Degrees Available</th>
</tr>
</thead>
<tbody>
<tr>
<td>Anatomy and Cell Biology</td>
<td>MS, Ph.D.</td>
</tr>
<tr>
<td>Art (See Visual Arts)</td>
<td>MS, Ph.D.</td>
</tr>
<tr>
<td>Biochemistry and Molecular Biology</td>
<td>MS, D.A., Ph.D.</td>
</tr>
<tr>
<td>Biology</td>
<td>MS, Ph.D.</td>
</tr>
<tr>
<td>Business Administration</td>
<td>MBA</td>
</tr>
<tr>
<td>Business Education</td>
<td>MS</td>
</tr>
<tr>
<td>Chemical Engineering</td>
<td>MS, M.Eng.</td>
</tr>
<tr>
<td>Chemistry</td>
<td>MS, Ph.D.</td>
</tr>
<tr>
<td>Child Study and Education</td>
<td>MS</td>
</tr>
<tr>
<td>Civil Engineering</td>
<td>M.Eng.</td>
</tr>
<tr>
<td>Communication</td>
<td>MA</td>
</tr>
<tr>
<td>Communication Disorders (See Speech Pathology)</td>
<td>MS</td>
</tr>
<tr>
<td>Computer Science</td>
<td>MA</td>
</tr>
<tr>
<td>Counseling</td>
<td>MA</td>
</tr>
<tr>
<td>Counseling Psychology</td>
<td>Ph.D.</td>
</tr>
<tr>
<td>Education — General Studies</td>
<td>MS</td>
</tr>
<tr>
<td>Education Research Methodologies</td>
<td>MS</td>
</tr>
<tr>
<td>Educational Administration</td>
<td>MS, Ph.D.</td>
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<tr>
<td>Ed.D., Ph.D.</td>
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<tr>
<td>Electrical Engineering</td>
<td>MS, M.Eng.</td>
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<tr>
<td>Elementary Education</td>
<td>MS, M.Ed.</td>
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<tr>
<td>Energy Engineering</td>
<td>Ph.D.</td>
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<tr>
<td>English Language and Literature</td>
<td>MA, M.Ed., Ph.D.</td>
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<tr>
<td>Geography</td>
<td>MA</td>
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<tr>
<td>Geology</td>
<td>MA, MS, Ph.D.</td>
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<tr>
<td>History</td>
<td>MA, DA</td>
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<tr>
<td>Industrial Technology</td>
<td>MS</td>
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<tr>
<td>Linguistics</td>
<td>MA</td>
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<tr>
<td>Mathematics</td>
<td>MS, M.Ed.</td>
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<tr>
<td>Mechanical Engineering</td>
<td>MS, M.Eng.</td>
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<tr>
<td>Medical Technology</td>
<td>MS</td>
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<tr>
<td>Microbiology and Immunology</td>
<td>MS, Ph.D.</td>
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<tr>
<td>Music</td>
<td>MM</td>
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<tr>
<td>Nursing</td>
<td>MS</td>
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<tr>
<td>Pharmacology and Toxicology</td>
<td>MS, Ph.D.</td>
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<tr>
<td>Physical Education</td>
<td>MS</td>
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<tr>
<td>Physical Therapy</td>
<td>MPT</td>
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<tr>
<td>Physics</td>
<td>MS, Ph.D.</td>
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<tr>
<td>Physiology</td>
<td>MS, Ph.D.</td>
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<tr>
<td>Political Science</td>
<td>MA</td>
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<tr>
<td>Psychology</td>
<td>MA, Ph.D.</td>
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<tr>
<td>Public Administration</td>
<td>MPA</td>
</tr>
<tr>
<td>Reading Education</td>
<td>MS, M.Ed.</td>
</tr>
<tr>
<td>Research Methodologies</td>
<td>MS, M.Ed.</td>
</tr>
<tr>
<td>Secondary Education (see Education-General Studies)</td>
<td>MS</td>
</tr>
<tr>
<td>Social Work</td>
<td>MSW</td>
</tr>
<tr>
<td>Sociology</td>
<td>MA</td>
</tr>
<tr>
<td>Space Studies</td>
<td>MA</td>
</tr>
<tr>
<td>Special Education</td>
<td>MS, M.Ed.</td>
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<tr>
<td>Speech (See Communication)</td>
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<tr>
<td>Speech-Language Pathology</td>
<td>MS, M.Ed.</td>
</tr>
<tr>
<td>Teaching and Learning</td>
<td>Ed.D., Ph.D.</td>
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<tr>
<td>Theatre Arts</td>
<td>MA</td>
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<tr>
<td>Visual Arts</td>
<td>MFA</td>
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<tr>
<td>Vocational Education</td>
<td>MS</td>
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</tbody>
</table>

*Non-thesis option is available.  
1 Non-thesis degree only.*
The College for Human Resources Development

Sue Schmitt, Dean

HISTORY AND ORGANIZATION

The College for Human Resources Development (HRD), established in 1972, includes faculty and students who are concerned with the enhancement and realization of human potential. The College consists of the following academic departments: Counseling; Family and Consumer Sciences; Health, Physical Education and Recreation; Occupational Therapy; and Social Work. In addition, other colleges work cooperatively with the College for Human Resources Development in offering coursework and other educational experiences for students.

MISSION

The mission of the College is to prepare students for careers in human service professions including teaching. To achieve this purpose, most departments offer a variety of educational programs within their own areas of specialization, cooperate in team teaching efforts, make joint use of existing courses, create new interdisciplinary coursework, and offer person-to-person opportunities in practicum, field work, internship and co-op experiences.

In addition to offering instructional programs, the College strives to play an important role in facilitating and coordinating the University’s service and research functions in human development fields. For example, specific areas in which the faculty and students apply their education include: services to persons with physical and mental disabilities, family development services, programs and services to minority groups, recreational programs, marriage and personal counseling, and career guidance programs. Faculty members in the College are also engaged in research efforts supported by the University, state and federal grants, and other funding sources.

ADMISSION

Admission to the College for Human Resources Development may occur at the time a student is admitted to the University if the student has declared a pre-major or major in the College.

All students must satisfy any special program admission requirements established by the department in which the student plans to major. Students should contact the chairperson of the department and departmental listings to determine admission policies and procedures.

DEGREES

The following baccalaureate degrees are conferred upon HRD students who complete the prescribed courses of study in their major and who satisfy the degree requirements of the University and of the College for Human Resources Development: B.S. in Physical Education; B.S. in Recreation and Leisure Services; B.S. in Family and Consumer Sciences; Coordinated Program in Dietetics; B.S. in Occupational Therapy; and B.S. in Social Work.

It is also possible for a student to major in an HRD department and pursue a degree in another college. Students should consult the departmental listings to determine if the department in which they plan to major offers degree programs in other colleges.

DEGREE REQUIREMENTS

The following are degree requirements for students enrolled in the College for Human Resources Development.

1. Completion of all coursework required by the department in which the student majors.
2. Completion of University graduation requirements. See pages 27-31.
3. Completion of a minimum of 40 semester credits in coursework outside the College for Human Resources Development.
4. A minimum of 2.20 Grade Point Average (GPA) in all work taken and, in the case of transfer students, a minimum of 2.20 GPA in all UND work.

SPECIAL PROGRAMS

Teacher Certification. The Department of Health, Physical Education and Recreation offers a program to prepare students for careers as public school teachers. To qualify for a certificate to teach, students must satisfy the requirements established by the State Department of Public Instruction. This may be accomplished by completing the necessary departmental and teacher education course requirements.

Two options are available to qualify for teacher certification. (1) A student may pursue the Bachelor of Science in Education degree in choosing this option, the student must enroll as a degree student in the Center for Teaching and Learning and satisfy the graduation requirements of the Center. (2) The student may pursue the professional degree field (Bachelor of Science in Physical Education) and also complete required teacher education coursework offered by the Center for Teaching and Learning.

Students choosing the second option must enroll for degrees in the College for Human Resources Development and complete the admission and teacher education program requirement of the Center for Teaching and Learning. This option is available for those who wish to pursue the professional degree in the major rather than the professional degree in education, and still qualify for teacher certification.

Cooperative Education. The college 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.

Graduate Studies. The Departments of Counseling; Health, Physical Education and Recreation; and Social Work offer graduate coursework leading to a master’s degree. In addition, the Department of Counseling offers a graduate program leading to the Doctor of Philosophy degree in Counseling Psychology. Students interested in graduate study should consult the graduate section of the catalog for descriptions of these degree programs.

The College for Human Resources Development sponsors interdisciplinary minors in Chemical Use/Abuse Awareness, Health Education, Rehabilitation Services, and Gerontology (see detailed listings under the Departments of Health, Physical Education and Recreation and Social Work).

*The University of North Dakota collegiate restructuring will affect the College for Human Resources Development and the departments currently housed within the college.
The School of Law

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 on 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 1994-95 entering class had an average undergraduate Grade Point Average (GPA) of 3.20 and an average LSAT score of 154. The deadline for applications and all supporting documentations is April 1 of the spring preceding entry.

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 application 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 receive the permission of the Dean of the School of Law and the instructor of the particular course. No credit in the School of Law will be given for these classes, however.

LIBRARY

The Thormodsgard Law Library of the School of Law has more than 230,000 volumes, including 100,000 microform volumes and over 2,400 serial subscriptions. The facility is a research library designed to serve the legal resource needs of the students and faculty of the School of Law and of the University. In addition, the law library serves the practicing bar and citizens throughout the state of North Dakota and the northern plains region. The library subscribes to LEXIS® and WESTLAW® computer assisted legal research services.

ADDITIONAL INFORMATION

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

The School of Medicine

HISTORY AND MISSION

The School of Medicine was established in 1905 as a biomedical science school offering the first two years of education leading to the M.D. degree. In 1973, legislative action approved a four-year curriculum and authorized the granting of the doctor of medicine degree. As an interim plan, the curriculum known as the 2:1:1 plan was instituted, consisting of the freshman and sophomore years at UND, the junior year at the University of Minnesota School of Medicine or Mayo Medical School, and the final year back in North Dakota for elective rotations at community hospitals and clinics within the state. The 1981 Legislature authorized the teaching of the third year in North Dakota, thus providing for a complete, in-state medical education program.

The primary purpose of the School of Medicine is to provide qualified students with thorough training in the medical sciences. Although the curriculum has been developed with an emphasis on primary care, students are prepared to enter any specialized, post-M.D. residency training program. The School of Medicine also offers accredited undergraduate degrees in the allied health fields of athletic training, medical technology and cytotechnology; a graduate degree in physical therapy, and a certificate through its Physician Assistant Program. Graduate degrees in anatomy and cell biology, biochemistry and molecular biology, microbiology and immunology, pathology (medical technology), pharmacology and toxicology, and physiology are offered as well as post-M.D. residency training programs in internal medicine, family medicine, psychiatry and general surgery and a one-year transitional program.

The School of Medicine is fully accredited by the Liaison Committee on Medical Education of the American Medical Association and the Association of American Medical Colleges.
Departments in the school, many of which do not offer undergraduate courses, include anatomy and cell biology, biochemistry and molecular biology, community medicine and rural health, family medicine, internal medicine, microbiology and immunology, neuroscience, obstetrics and gynecology, pathology, pediatrics, physical therapy, physiology, pharmacology and toxicology, radiology and surgery. The statewide educational program of the school is coordinated through clinical campuses based at Grand Forks, Fargo, Bismarck, and Minot.

The School of Medicine issues a catalog biennially containing information on application, registration, fees, admissions, standards of scholarship and courses. Interested students may write for the catalog or for other information to the Office of Student Affairs and Admissions, School of Medicine, University of North Dakota, P.O. Box 9037, Grand Forks, ND 58202-9037.

**SUGGESTED UNDERGRADUATE COURSES FOR STUDENTS PLANNING TO STUDY MEDICINE**

Four years of college preparation are recommended for students wishing to enter the University of North Dakota School of Medicine, although a degree is not a requirement. The student is free to select a major in any area of interest, but must include the following mandatory credits:

<table>
<thead>
<tr>
<th>Minimum Semester Hours</th>
<th>Subject</th>
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</thead>
<tbody>
<tr>
<td>Chemistry</td>
<td>16</td>
</tr>
<tr>
<td>Inorganic and Quantative</td>
<td>8</td>
</tr>
<tr>
<td>Organic</td>
<td>8</td>
</tr>
<tr>
<td>Biology</td>
<td>8</td>
</tr>
<tr>
<td>Physics</td>
<td>8</td>
</tr>
<tr>
<td>Psychology/Sociology</td>
<td>3</td>
</tr>
<tr>
<td>Language Arts (English, Speech, etc.)</td>
<td>6</td>
</tr>
<tr>
<td>College Algebra</td>
<td>3</td>
</tr>
</tbody>
</table>

The University of North Dakota School of Medicine recommends that students take elective courses that include subjects of liberal arts value such as humanities, economics, psychology and sociology so that the student’s educational experience will be broad and well-rounded. Computer literacy is also highly recommended. Students are urged to see their advisers regularly.

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

**INDIANS INTO MEDICINE PROGRAM**

The INMED Program was adopted in 1973 to serve American Indians in an eight-state region. Through a comprehensive recruitment program, INMED seeks to identify and encourage students with an aptitude for, and an interest in health careers. This recruitment begins as early as the junior high level. The program is committed to preparing professionals in all related health care fields. Each year the School of Medicine allocates places in its first-year medical class to qualified American Indian students.

**UNDERGRADUATE PROGRAMS**

The following three undergraduate degree programs in allied health fields are administered by the School of Medicine. See also the departmental listings which begin on page 59.

**Athletic Training**

Students can pursue a bachelor of science degree in Athletic Training under the direction of the Division of Sports Medicine, Department of Family Medicine. This four-year degree is designed to prepare entry level athletic training professionals. The academic program is currently appraised by the NATA Professional Education Committee. 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.

**CytoTechnology**

The Department of Pathology offers a four-year degree-granting program leading to the bachelor of science in cytoTechnology. The program has been fully approved by the AMA Board of Schools since 1967 and became a degree-granting program in 1975. Applications are available from the cytoTechnology program director in the Department of Pathology, and must be submitted by Jan. 1 for the senior year program beginning the following Fall semester.

**Medical Technology**

A four-year academic program leading to the degree of bachelor of science in medical technology was first instituted in 1949. Students enroll in the University College for the freshman year and are advised by instructors from the medical technology curriculum. At the beginning of the sophomore year students transfer to the School of Medicine where the program is supervised by the director and associate director of medical technology in the Department of Pathology.

**SCHOOL OF MEDICINE FACILITIES**

Construction of two major additions have been completed recently, the Edwin C. James Medical Research Facility and the Karl Christian Wold, M.D. Bio-Information Learning Resources Center. With the completion of these building projects, the facilities of the UND School of Medicine will be located at one site.

**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 Mar. 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.

**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 the USDA Human Nutrition Research Center.

**IRELAND RESEARCH LABORATORY**

Basic science research efforts at the Ireland Research Laboratory are devoted entirely to biomedical research and to graduate education in the medical sciences. The laboratory began as one room in the Medical School in 1953 as a result of a bequest of the late Guy L. Ireland. In 1958 the first floor was constructed with a gift from Mrs. Bertha Ireland as a memorial to her husband, a grant from the National Institutes of Health, and an appropriation from the North Dakota Medical Center. Additional grants from the National Cancer Institute and funds from the Medical Center provided for the construction of four additional floors in the early 1960s.
The College of Nursing
Elizabeth G. Nichols, Dean

MISSION
The mission of the College of Nursing is to serve society through teaching, scholarship, research, and service in nursing and health care. Within a comprehensive university environment, the College provides education for beginning professional nursing practice at the baccalaureate level and for advanced nursing practice at the master’s degree level. The College is committed to fostering critical thinking and intellectual inquiry in a caring environment which assumes a positive regard for others and which affirmatively supports and promotes diversity. Students are encouraged to be self-directed and participatory learners and to commit themselves to learning as a life-long process which is essential to meeting the needs of society in a constantly changing environment. Education in nursing at the baccalaureate level prepares nurse generalists for the provision of comprehensive nursing and health care characterized by a holistic, caring, collaborative, professional approach. Education in nursing at the master’s degree level builds upon the baccalaureate and prepares advanced nurse clinicians in specialized areas of nursing for leadership roles in nursing practice, education, and administration. As the only state-assisted institution in North Dakota authorized to offer graduate education in nursing, the College has a distinctive responsibility to provide distance learning opportunities for access to the master’s degree program.

The college 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.

PHILOSOPHY
The foundation of all College activities is scholarship in nursing and health care, broadly defined to include teaching, discovery (e.g., research), and application (e.g., service).

The discipline of nursing is concerned with principles and laws governing the health of persons, the processes by which changes in health are effected, and the patterning of human behavior in interaction with environment during critical life events and normal life events.

Diagnosis and treatment of human responses to actual or potential health problems comprises the professional practice of nursing. The hallmark of professional nursing is the caring, thoughtful application of the knowledge of the discipline in accordance with recognized standards of practice. Nurses collaborate with recipients of nursing care and others to promote, protect, maintain, and restore the health of individuals, families, and communities.

Health may reflect absence of clinical signs and symptoms, flexibility in response to environmental challenge, capacity to assume and carry out social roles, or general well-being and self-realization. Disease refers to identifiable pathological processes whereas illness refers to the human experience of disease. Health and illness may coexist. The health of individuals, families, and communities is influenced by perception, adaptation, and function.

Persons are unique, complex, and evolving holistic beings. Persons exist independently, interdependently, and interdependently within the environment.

The environment is dynamic, complex and multidimensional, and includes natural, economic, industrial, cultural, social, historical, and political factors. All conditions, circumstances, and influences affecting the development, behavior, and health of persons (individuals, families, groups, or communities) make up the environment.

The social environment includes groups whose members have developed patterns of relationships through communication with one another. It includes group functions within the context of the family and other communities. The group functions of society affect and are affected by individuals.

Nursing education at the baccalaureate level includes a liberal education in the arts, sciences, and behavioral disciplines as well as study of the discipline of nursing and its application in professional practice. Classroom and clinical learning, which incorporate theoretical formulations, intellectual inquiry and research, coupled with life experience, provide opportunity to develop critical thinking skills essential to the generalist in nursing. Graduate education in nursing builds on basic professional nursing education and prepares graduates who apply the knowledge of the discipline in specialized nursing situations.

Learning is the acquisition of knowledge, skills, and attitudes. Learning is the responsibility of the student and is enhanced by active involvement and a readiness to obtain new knowledge.

Teaching is a process designed to facilitate learning. It involves the guidance and encouragement of students in the development of independent intellectual inquiry and self-direction in learning.

CURRICULUM OBJECTIVES
The Graduate:
1. Integrates the caring, collaborative, professional approach into a variety of nursing roles.
2. Synthesizes knowledge and research from the arts, sciences, and nursing as a basis for rural and urban nursing practice.
3. Employs intellectual inquiry in the problem-solving and decision-making inherent in nursing.
4. Communicates effectively.
5. Incorporates cultural, social, economic and environmental factors into nursing practice.
6. Applies the nursing process in providing holistic, comprehensive care in a variety of nursing situations to promote, maintain, and restore optimal health throughout all stages of human development.
7. Provides leadership in collaboration with colleagues and clients in the management of evolving health care.
8. Evaluates nursing practice of self and others in relation to competence, accountability, and professional development.

ADMISSION TO THE NURSING MAJOR
Students who wish to pursue a degree in Nursing must apply to the University to be admitted as Pre-Nursing majors in the College of Nursing.

Admission to the Nursing Program. All persons enrolled who wish to apply for admission to the Nursing Program are advised to follow the suggested curriculum leading to the Bachelor of Science in Nursing (see page 135). Since the College of Nursing tries to reflect current trends in the nursing profession, there may be on-going changes in the curriculum.

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 biochemi-
istry, 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 understanding as to who the applicant is. The College will award additional points for a student who previously qualified for admission within the last two years. College Level Examination Program (CLEP) subject exam results will be accepted according to the current University policy.

The Nursing program admits students once a year to fill the fall and spring classes. In the event of vacancies for the spring classes, a December/January review will be held. The application deadline is April 1 for Fall admission and November 1 for Spring admission (only if vacancies exist).

The number of students admitted is determined by the availability of faculty and clinical facilities. Selection is made on the basis of academic record and submission of the required essay (contact the College of Nursing Director of Student Affairs or your 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 31). Equivalency of courses (e.g., sciences) on other campuses with those at UND should be verified by contacting the College of Nursing as early as possible.

Admission of Transfer Students. Students seeking to transfer to the College of Nursing from other accredited institutions are advised to correspond with the College of Nursing before applying for admission to the University of North Dakota. Because of the number of applicants, students cannot be guaranteed admission to the Nursing Program. All qualified students are considered on merit.

Transfer students who plan to enter the Nursing Program must fulfill the same minimum prerequisite requirements as students seeking admission from other units of the University of North Dakota. The dates for submission of the application and consideration of applicants are the same for all students.

Registered Nurses (RNs) and Licensed Practical Nurses (LPNs), RNs and LPNs interested in pursuing a bachelors degree are considered for admission as transfer students. An upper division RN/BSN completion track which builds upon previous learning is available for part-time or full-time students. Further information concerning the progression of the RN/ LPN student can be obtained by contacting the College of Nursing. Transcripts of previous academic work must be submitted as part of the application to the University and to the Nursing Program.

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

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, 135.
2. A minimum of 129 semester hours.
3. A minimum grade point average of 2.50 overall.

ACADEMIC REQUIREMENTS DURING ENROLLMENT IN THE NURSING PROGRAM

1. A 2.50 overall is required each semester for progression to the next semester of sophomore, junior, or senior nursing courses.
2. A student must attain a letter grade of at least a “C” in each of the courses required in the undergraduate nursing curriculum, including all the nursing, science and support courses, to progress to the next semester of nursing courses and for graduation within the College of Nursing.
3. The following verifications are required annually of sophomore, junior, and senior students for admission to nursing classes, labs, and clinicals:
   a. current CPR certification by the American Red Cross or American Heart Association in Basic Life Support;
   b. negative tuberculin skin tests or, if positive, a negative chest x-ray; and
   c. current medical/hospitalization insurance or certify assumption of full responsibility for health costs incurred.
   d. A hepatitis B vaccine series.
   e. proof of immunity to measles (Rubella)
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.

PROGRESSION

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.

PROBATION AND DISMISSAL

A student who does not meet the academic requirements of the Nursing program is placed on probation. If, at the end of probation, criteria for resolution of the probationary standing are not met, the student is dismissed from the Nursing program. Continuation in the Nursing program will then require reapplication.

The Nursing program also reserves the right to place 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 of Nursing and are available in the College of Nursing Student Handbook.

EXPENSES

Students in the Nursing program are responsible for regular University fees and for board, room and other maintenance costs throughout the four years. A pin, uniform, watch, thermometer, stethoscope, sphygmomanometer, and pen light are required for clinical courses. An additional program fee will be charged each semester. Additional expenses related to graduation and licensure occur during the senior year. 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 Nursing and Community Health Nursing, is necessary. Affiliation expenses of $80 to $100 can be expected for mental health nursing. There will be expenses associated with laboratory tests required for the protection of the student and client (e.g., TB skin test).

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.

GRADUATE STUDIES

The College of Nursing offers graduate coursework leading to a Master of Science degree in Nursing. Students interested in graduate study may contact the director of graduate studies in the College of Nursing or consult the Graduate School section of this Catalog for further information.
University of North Dakota

The Center for Teaching and Learning

Mary Harris, Dean

HISTORY AND MISSION

The University of North Dakota has offered teacher education programs since its founding in 1883. The Center for Teaching and Learning is a comprehensive, accredited, undergraduate and graduate school of education. Organized in 1972 to support a broader view of education, it seeks to serve preservice and inservice teachers, administrators and other education personnel with intensive, intellectually challenging, integrated programs of study.

The Center strives to model the kind of educational environment it is promoting in elementary 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 Center provide for personalized learning.

The Center for Teaching and Learning is a service institution for elementary and secondary schools, colleges and communities in North Dakota and the Upper Midwest. The Center is particularly committed to active community participation in the formation of goals and policy at all levels of education, to Indian communities in their efforts to improve education, and to classroom teachers and administrators committed to continue their personal and professional learning.

Teacher education programs of 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 Center offers degree programs at the undergraduate level in the preparation of elementary, middle/junior high school 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:

- Business Education
- English
- Foreign Language
- French
- German
- Spanish
- Geography
- Industrial Technology
- Marketing Education
- Mathematics
- Music
- Physical Education
- Science
- Social Science
- Combined Social Science
- Science major
- Biology
- Biological and Physical Science
- Chemistry
- Earth Science
- Physical Science
- Physics
- Speech
- Visual Arts

The appropriate sequences of courses and experiences for these majors are outlined in the Center for Teaching and Learning sections of this catalog and under the specific Program Areas offering the majors. (See the listings beginning on page 75.) Minors may be taken in a wide variety of University departments including special education. Faculty advisers can assist students in selecting a minor field of study.

At the graduate level, preparation programs exist for teachers, administrators, and other specialized educational personnel in local school districts and institutions of higher education. Current graduate level programs include: child study and education, elementary education, educational administration, general studies in education, reading education, research methodologies, special education, and teaching and learning. Those who complete a graduate degree program and/or sixth-year specialist diploma in educational administration meet the qualifications for administrative certification in North Dakota, Minnesota and most other states.

ADMISSION TO TEACHER EDUCATION

Regardless of the college in which their degree is being earned, students intending to become teachers must apply to Teacher Education. Students apply for admission after completion of 45 semester hours, normally while enrolled in an entry level course: CTL 330 for elementary; CTL 350 for middle level/junior high; and CTL 215 in the secondary programs. Students transferring an entry level course from another institution may apply in the first semester at the University of North Dakota. Application materials are available in the Office of the Dean, Center for Teaching and Learning.

Regular admission to Teacher Education requires a minimum GPA of 2.50, completion of written statements which convey commitment, experience, and interests appropriate to becoming a teacher and ability to express oneself clearly and effectively. A personal interview may be part of the application process.

Applications are screened by committees after the first Friday in October and in February each year. Notification of admission is generally made in 20 working days.

Acceptance to Elementary Education is on a competitive basis, with consideration given to overall and general education grade point average, writing skill, evidence of commitment to teaching. The Elementary Education admission process will be concurrent with CTL’s admission process (see above). The faculty reserves the right to place on professional probation or to cancel the registration of any student in Elementary Education whose performance in the classroom or field settings is unsatisfactory.

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 students and faculty opportunities to discuss what it means to grow as a teacher and learner and to recognize growth and development.

Writing is an important means by which teachers communicate. Most courses in the Center for Teaching and Learning require considerable writing. Effective use of writing in many situations is considered necessary for successful completion of the program and is part of the portfolio assessment.

ADMISSION TO STUDENT TEACHING

Student teaching is part of all programs in the Center for Teaching and Learning. Each student teaching placement requires work and planning on the part of the faculty, the cooperating faculty in the schools, and the student. Application for student teaching is made for a spring semester placement by the preceding October 1 and for a fall placement by the preceding February 15. Late applicants cannot be guaranteed placement in their preferred semester. Acceptance for student teaching requires that students in Elementary Education and its dual majors and in Middle Level/Junior High Education complete each course in Teacher Education through Applied Methods (TEAM) with a minimum grade of C. Satisfactorily complete a field experience, earn a minimum overall GPA of 2.50 based on at least 76 hours of work, and have the recommendation of the faculty in the area(s) of student teaching. Admission to student teaching in secondary education requires that the student have completed or be enrolled in the courses of the major and in the professional education component with an overall GPA of at least 2.50 and a GPA of at least 2.75 in the major coursework completed at the time of application, and have the recommendation of the secondary faculty and advisor. Student teacher placement in the area of social science may be limited by availability of cooperating teachers.
GRADUATION AND TEACHER CERTIFICATION

Students who complete undergraduate programs in the Center for Teaching and Learning are awarded the degree Bachelor of Science in Education. The Bachelor’s degree is granted after successful completion of a minimum of 125 semester hours and successful completion of the General Education and specific requirements of the teacher education program to which the student was admitted. Specific requirements include successful completion of Student Teaching and the recommendation of the faculty through the continuous assessment process of the program to which the student was admitted. Candidates for degrees must make formal application to the Registrar for the degree sought within four weeks of the beginning of the semester of expected graduation.

Students who complete an undergraduate program in the Center, receive a Bachelor of Science GPA of at least 2.50 and are eligible for certification to teach in North Dakota. Students apply for certification by completing forms which are available in the Office of the Dean. The application process should be completed prior to graduation.

ELEMENTARY EDUCATION

The Elementary Education major has six main parts: General Education, Area of Concentration, Introductory Elementary Education Courses, TEAM, Advanced Elementary Education Courses, and Student Teaching.

General Education

General Education requirements for the Elementary Education major exceed and are more specific than those of the University because of the wide variety of subjects with which an elementary teacher must be familiar. Each student entering Elementary Education must complete 6 semester hours of English Composition; 12 hours in the Social Sciences including Psychology 251 or Home Economics 252 and 9 additional hours from selected areas; 15 hours in the Arts and Humanities from three departments to include 9 hours in at least two departments to include English, History, or Humanities I and II, 3 hours from designated areas, and 3 hours selected from the University General Education Requirements; and 12 hours in Mathematics, Science, and Technology from at least two departments to include 4 hours of a laboratory science and 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 in Mathematics 211. The complete program of a student must include coursework in biological, physical, and earth science. Lists of courses which meet the requirements appear on pages 27-31.

Area of Concentration

Beyond breadth of knowledge in many disciplines, an elementary teacher needs to acquire depth in a content field to which other learnings may be related. The Area of Concentration requires 15 or more semester hours in one of the following areas: Bilingual Education/ESL, English, history, fine arts, social science (anthropology, political science, geography as a social science, or economics), mathematics, science, a single foreign language, Indian Studies, Women Studies, psychology, sociology, special education, early childhood education, physical education, or interdisciplinary studies. Except in science, social science, fine arts, or foreign language, 9 of the 15 hours must be above the 100 level. Students who have a combined major use the dual major as an Area of Concentration.

Introductory Courses

Introductory and Advanced Elementary Education Courses are classified according to whether they are taken before or after TEAM. Four courses (12 semester hours) may be taken before TEAM; they include: CTL 330 Introduction to Teaching and Learning, Math 277 Mathematics for Elementary School Teachers, CTL 410 Communication: Children’s or Young Adult Literature, and CTL 315 Education of Exceptional Students.

TEAM

Teacher Education through Applied Methods (TEAM) is a 14-hour block of co-requisite courses taken in one semester. Entry into TEAM requires completion of the General Education requirements of the program, CTL 330 Math 277, and admission to Teacher Education. TEAM includes a field experience in a classroom.

Advanced Courses

Advanced Elementary Education Courses have TEAM as a prerequisite. They enable the student to gain the specialized knowledge that elementary teachers apply to help children learn. Advanced courses include CTL 410 Communication: Primary, Intermediate or Corrective Reading, CTL 430 Human Relations: Classroom Management, CTL 301 Seminar: Physical Education and Health for the Elementary Teacher, CTL 315 Education of the Exceptional Student, CTL 430 Multicultural Education, and CTL 420 Creative Expression: Fine Arts methods courses.

Student Teaching

Student Teaching is required for a minimum of 10 weeks and may be completed any semester after TEAM. Sixteen semester hours of Student Teaching is normally taken in the 24 hour. A maximum of 24 hours in CTL 487 Student Teaching and CTL 486 Field Experience may be elected in a program. Entry into Elementary Student Teaching requires satisfactory completion of each course in TEAM, satisfactory completion of a field experience, an overall GPA of at least 2.50, and the recommendation from the Elementary Education faculty. Students earning a D or F in a TEAM course must repeat the course or an alternative experience agreed to by the faculty.

EARLY CHILDHOOD EDUCATION

The Early Childhood/Elementary Education combined major is designed to provide the student an opportunity to integrate theory and practice in the education of young children. The Early Childhood Education curriculum includes coursework and learning experiences in the following areas: knowledge of the field of early childhood education; knowledge of young children; and knowledge of methods and materials for working with young children and their families. The student is expected to work closely with advisers in order to coordinate the coursework and experiences offered in the Early Childhood Education Program with those offered in the Elementary Education Program.

Field experiences are an integral and regular part of the curriculum. The University Children’s Center serves as the major training site for students in Early Childhood Education and is the site for pre-kindergarten student teaching. Field experiences are also available in local kindergartens, child care centers, and in other pre-school environments.

In addition to elementary teacher certification, students completing the combined major are eligible for an endorsement in Early Childhood Education and, upon completion of student teaching in kindergarten, an endorsement for kindergarten teaching.

MIDDLE/JUNIOR HIGH SCHOOL EDUCATION

The Middle/Junior High School program is for students preparing to teach in a self-contained classroom or a departmentalized setting with young adolescents in grades 5 through 8. The program reflects the growing national recognition that students in the middle years are best served by programs that are personalized and responsive to their developmental needs. The Middle/Junior High School program reflects a commitment to new directions in education by providing: clinical experiences in self-contained classroom and departmentalized settings, subject area concentrations that allow students to prepare for interdisciplinary teaching and learning, general education with many options, a student-centered approach responsive to individual differences among students, specific attention to the developmental needs of young adolescents.

The Middle/Junior High School program requires completion of the General Education Requirements of the University, 45 hours of subject matter coursework in two of the areas that are part of the Middle/Junior High School curriculum, 45 hours of professional coursework that includes TEAM, and 16 weeks of student teaching in two settings.
Summer Session

SCOPE

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

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

SUMMER SESSION STUDENT BODY

Summer course offerings are for everyone, from juniors in high school to senior citizens. During the Summer Session, courses are offered for students who have completed their junior year in high school and wish to get an early start toward earning college credit. Other typical groups of students found on campus during the summer include: teachers working toward advanced degrees, students from other colleges, freshman students beginning their academic courses, adults updating their educational backgrounds, professionals wishing to work toward certification, and students wishing to accelerate completion of their degree programs.

TWELVE-WEEK SUMMER SESSION

The twelve-week Summer Session allows students to register for a wide variety of courses which meet for various lengths of time during the Summer Session. Some courses meet for twelve weeks while others meet for six weeks. In some instances courses may be taught in sequence. For instance, Spanish 101 may be offered during the first six weeks and Spanish 102 may be offered during the second six weeks of the twelve-week Summer Session.

Along with the twelve- and six-week courses, some courses will be one, two, four, and eight weeks in length. Normally, a student will not be allowed to enroll in more than 15 semester hours during the twelve-week Summer Session.

Summer Session Deadlines

Deadlines — such as last day to drop a full-term course, last day to drop a part-term course, last day to change to and from S/U grading, last day to apply for graduation, last day to change from and to audit, and last day to drop a course or withdraw from the institution — are calculated by using time guidelines which are proportionate to those established for the academic year (fall and spring) semester.

Specific dates are provided in the Summer Session Time Schedule of Classes.

CLASSIFICATION OF SUMMER SESSION STUDENTS

FULL-TIME UNDERGRADUATE STUDENT. A full-time Summer Session undergraduate student is one who has been admitted to the University and is enrolled in a minimum of nine credit hours during the twelve-week Summer Session.

PART-TIME UNDERGRADUATE STUDENT. A part-time Summer Session undergraduate student is one who has been admitted to the University and is enrolled for fewer than nine hours of credit during the twelve-week Summer Session. A student must be enrolled in a minimum of one semester hour to be within this part-time classification.

ADDITIONAL INFORMATION

The Summer Session is administered by the Dean of Outreach Programs. For detailed information on the summer program, students should consult the Summer Session Bulletin/Time Schedule of Classes, which is published in the spring of each academic year, or contact the Summer Session Office, University of North Dakota, P.O. Box 9021, Grand Forks, ND 58202-9021.
The Division of Continuing Education

Robert Boyd, Dean

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

In 1968 the name of the General Extension Division was changed to the Division of Continuing Education. In order to more adequately describe the duties assigned to the Dean of Continuing Education, the title was changed to Dean of Outreach Programs in 1978, but the name of the Division remained unchanged.

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

The manner in which “extension” is provided varies according to situation and need. The Division administers the following: correspondence study, educational television courses, extension courses, conferences, seminars, workshops, Summer Session, Learning After Hours, a Resident Center at the Grand Forks and Minot Air Force Bases and Extended Graduate Degree Programs at the UND Graduate Center at Bismarck and other locations in the state.

DEPARTMENT OF ACADEMIC PROGRAMS

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

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

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

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

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

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

The Center for Aerospace Sciences and the Division of Continuing Education offer a Master of Science in Space Studies degree at the Grand Forks Air Force Base. Students may apply for admission to the program following the graduate school admission procedures.

Further information on the Learning After Hours Programs at the Grand Forks Air Force Base and on the University campus may be obtained by contacting the Division of Continuing Education, University of North Dakota, Box 9021, Grand Forks, ND 58202-9021 or by calling (701) 777-2661 or the toll-free number 1-800-342-8230.

Correspondence Study
Correspondence Study offers more than 80 courses from 25 UND departments. Both credit and non-credit college level courses are available. 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) 777-3044 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.

Courses available by Correspondence Study are:

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

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

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

Chemical Engineering
- 201 Stoichiometry, 3 credits

Computer Science
- 101 Introduction to Computers, 2 credits
- 101 Introduction to Computers Laboratory, 1 credit
- 110 Computer Programming I, 3 credits

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

Engineering
- 101 Introduction to Engineering and Design, 2 credits
- 102 Descriptive Geometry, 2 credits

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

Fine Arts
- 150 Introduction to Fine Arts, 3 credits

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

History
- 101 Western Civilization to 1500, 3 credits
- 102 Western Civilization since 1500, 3 credits
- 103 United States to 1877, 3 credits
- 104 United States since 1877, 3 credits
University of North Dakota

Home Economics
240 Fundamentals of Nutrition, 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
101 Beginning French, 4 credits
201 Second-Year French, 4 credits
German
101 Beginning German, 4 credits
201 Second-Year German, 4 credits
Norwegian
101 Beginning Norwegian, 4 credits
201 Second-Year Norwegian, 4 credits
Spanish
101 Beginning Spanish, 4 credits
201 Second-Year Spanish, 4 credits
Management
305 Managerial Concepts, 3 credits
Mathematics
102 Intermediate Algebra, (Does not count towards graduation at UND) 3 credits
103 College Algebra, 3 credits
104 Finite Mathematics, 3 credits
105 Trigonometry, 2 credits
208 Discrete Mathematics, 3 credits
211 Calculus I, 4 credits
212 Calculus II, 4 credits
213 Calculus III, 4 credits
Music
100 Introduction to the Understanding of Music, 3 credits
Occupational Therapy
200 Introduction to Occupational Therapy, 2 credits
205 Medical Terminology, 1 credit
Pharmacology and Toxicology
304 Human Pharmacology, 3 credits
410 Drugs Subject to Abuse, 2 credits
Philosophy and Religion
Phil 210 Contemporary Moral Issues, 3 credits
Rel 101 Introduction to Religion (West), 3 credits
Rel 203 World Religions, 3 credits
Rel 345 Death and Dying, 2 credits
Psychology
101 Introduction to Psychology, 3 credits
241 Introduction to Statistics, 4 credits
251 Developmental Psychology, 4 credits
355 Adolescence and Aging, 3 credits
360 Introduction to Personality, 3 credits
370 Abnormal Psychology, 3 credits
Sociology
101 Introduction to Sociology, 3 credits
102 Social Problems, 2 credits
331 Rural Sociology, 3 credits
335 The Family, 3 credits
352 Aging, 3 credits
353 Sociology of Death and Dying, 3 credits
361 Social Psychology, 4 credits
Visual Arts
120 Introduction to Drawing and Color Materials, 3 credits
391 Special Topics: Visual Thinking, 3 credits
Non Credit Courses
Food Service and Nutrition
Basic Nutrition Principles for Dietary Supervisors, 4.8 Continuing Education Units (CEUs)
Clinical Applications of Nutrition for Dietary Supervisors, 4.8 Continuing Education Units
Dietary Managers Course, 27 Continuing Education Units
Menu Planning for Health Care Facilities, 7 Continuing Education Units
Nutrition and Aging, 3.5 Continuing Education Units
School Food Service, 4.2 Continuing Education Units
Mathematics
Math 100, A Refresher Course in Mathematics, 5.4 Continuing Education Units
Real Estate
Mortgage Analysis Concepts and Techniques, .7 Continuing Education Units
The Appraisal Process, .7 Continuing Education Units
Real Estate Brokerage Liability, .7 Continuing Education Units
Closing Real Estate Transactions, .7 Continuing Education Units
Real Estate Finance, 3.6 Continuing Education Units
Real Estate Investment, 3.6 Continuing Education Units
Real Estate Appraisal, 3.6 Continuing Education Units
Real Property Management, 3.6 Continuing Education Units
North Dakota Principles of Real Estate, Pre-licensure Course, presented on the North Dakota Interactive Video Network, 3.6 Continuing Education Units

Regularly enrolled University students may enroll in the Division’s extension or correspondence study courses upon providing written approval from the Dean of their college. All matters pertaining to registration and credit are handled through the Division of Continuing Education.

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

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

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

General Information for Bismarck/Mandan Area

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

DEPARTMENT OF PROFESSIONAL AND COMMUNITY PROGRAMS

Conferences, non-credit correspondence courses, public seminars, in-house professional development programs and summer camps for young people are all examples of programs sponsored by the Department of Professional and Community Programs. Most programs at UND are designed to meet the professional development needs of people working in both public and private sector organizations. Others bring young people to the UND campus or meet the personal development needs of area residents.

Office of Conference Services

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

Office of Correspondence Programs (Non Credit)

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

Office of Management Development

The Office of Management Development offers management supervisory, and professional development seminars. These seminars are offered to the public or presented to a private audience at a business location. To ensure the success of these seminars, program leaders are selected from the faculty and staff at UND, professional consultants and trainers, and area business professionals. For more information, call (701) 777-3633 or 1-800-342-8230.
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 enrolling 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

(Account)

H. Wilde (Chair), Beard, Bostrom, Carlson, Ellingson, Hansen, Harmeson, Hillner, Loyland, Medalen, Ness, Wacker and Wambsgans

College of Business and Public Administration

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

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

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

Course Numbers

Courses numbered in the 100s are intended primarily for freshmen; in the 200s for sophomores; in the 300s for juniors; in the 400s for seniors and in the 500s for graduates.

The numbers 199, 299, 399 and 499 are reserved for Honors Program Courses.

Credit

All academic units are expressed in terms of the credit, which represents one class period of lecture or two hours of laboratory for each of the weeks that constitute a semester.

Frequency of Offerings

The following symbols at the end of the course description indicate when and how often a class is usually available for registration.

F usually every Fall semester
S usually every Spring semester
SS usually every Summer session
F/2 usually every other Fall semester
S/2 usually every other Spring semester

BACHELOR OF ACCOUNTANCY

Required 125 hours including:

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

II. College of Business and Public Administration Requirements, see page 41 and including:

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Name</th>
<th>Credit</th>
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</thead>
<tbody>
<tr>
<td>Acct 200</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</td>
<td>(4)</td>
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<tr>
<td>Econ 201</td>
<td>Principles of Microeconomics</td>
<td>(3)</td>
</tr>
<tr>
<td>Econ 202</td>
<td>Principles of Macroeconomics</td>
<td>(3)</td>
</tr>
<tr>
<td>Econ 210</td>
<td>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>
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<td>Math 104</td>
<td>Finite Mathematics</td>
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<tr>
<td>Math 204</td>
<td>Survey of Calculus</td>
<td>(3)</td>
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<td>Mgmt 300</td>
<td>Principles of Management</td>
<td>(3)</td>
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<td>Mgmt 301</td>
<td>Production Management</td>
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<td>Fin 310</td>
<td>Principles of Financial Management</td>
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<td>Problems in Financial Management</td>
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<td>Mktg 301</td>
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<td>PsSci 101</td>
<td>American Government I</td>
<td>(3)</td>
</tr>
<tr>
<td>Comn 101</td>
<td>Fundamentals of Public Speaking</td>
<td>(3)</td>
</tr>
</tbody>
</table>

One course selected from the following:

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Name</th>
<th>Credit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Acct 412</td>
<td>Advanced Accounting</td>
<td>(3)</td>
</tr>
<tr>
<td>Acct 405</td>
<td>Auditing</td>
<td>(3)</td>
</tr>
<tr>
<td>Acct 411</td>
<td>Business Income Taxation</td>
<td>(3)</td>
</tr>
</tbody>
</table>

Two courses selected from the following:

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Name</th>
<th>Credit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Acct 306</td>
<td>Cost Accounting II</td>
<td>(3)</td>
</tr>
<tr>
<td>Acct 312</td>
<td>Fund Accounting</td>
<td>(3)</td>
</tr>
<tr>
<td>Acct 403</td>
<td>Contemporary Accounting Theory</td>
<td>(3)</td>
</tr>
<tr>
<td>Acct 406</td>
<td>Auditing Problems</td>
<td>(3)</td>
</tr>
<tr>
<td>Acct 410</td>
<td>Federal Individual Income Tax</td>
<td>(3)</td>
</tr>
<tr>
<td>Acct 412</td>
<td>Advanced Tax</td>
<td>(3)</td>
</tr>
<tr>
<td>Acct 416</td>
<td>Advanced Business Tax</td>
<td>(3)</td>
</tr>
</tbody>
</table>
University of North Dakota

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

B.B.A. WITH MAJOR IN ACCOUNTING

Required 125 hours including:

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

II. College of Business and Public Administration Requirements, see page 41 and including:

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</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>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>Elementary 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 204</td>
<td>Survey of Calculus</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>(2)</td>
</tr>
<tr>
<td>Fin 310L</td>
<td>Problems in Financial Management</td>
<td>(1)</td>
</tr>
<tr>
<td>Mgmt 478</td>
<td>Strategic Management</td>
<td>(3)</td>
</tr>
<tr>
<td>Mrkt 301</td>
<td>Principles of Marketing</td>
<td>(3)</td>
</tr>
<tr>
<td>PSci 101</td>
<td>American Government I</td>
<td>(3)</td>
</tr>
<tr>
<td>Comm 161</td>
<td>Fundamentals of Public Speaking</td>
<td>(3)</td>
</tr>
</tbody>
</table>

One course selected from the following:

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

III. The following Major Requirements:

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</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 305</td>
<td>Cost Accounting I.</td>
<td>(3)</td>
</tr>
<tr>
<td>Acct 309</td>
<td>Accounting Information Systems.</td>
<td>(3)</td>
</tr>
<tr>
<td>Acct 405</td>
<td>Auditing</td>
<td>(3)</td>
</tr>
<tr>
<td>Acct 411</td>
<td>Business Income Taxation</td>
<td>(3)</td>
</tr>
</tbody>
</table>

At least three courses selected from the following:

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Acct 306</td>
<td>Cost Accounting II</td>
<td>(3)</td>
</tr>
<tr>
<td>Acct 312</td>
<td>Fund Accounting</td>
<td>(3)</td>
</tr>
<tr>
<td>Acct 316</td>
<td>Business Law</td>
<td>(3)</td>
</tr>
<tr>
<td>Acct 401</td>
<td>Advanced Accounting</td>
<td>(3)</td>
</tr>
<tr>
<td>Acct 403</td>
<td>Contemporary Accounting Theory</td>
<td>(3)</td>
</tr>
<tr>
<td>Acct 406</td>
<td>Auditing Problems</td>
<td>(3)</td>
</tr>
<tr>
<td>Acct 410</td>
<td>Federal Individual Income Tax</td>
<td>(3)</td>
</tr>
<tr>
<td>Acct 412</td>
<td>Advanced Tax</td>
<td>(3)</td>
</tr>
<tr>
<td>Acct 416</td>
<td>Advanced Business Law</td>
<td>(3)</td>
</tr>
<tr>
<td>BVED 320</td>
<td>Business Communications</td>
<td>(3)</td>
</tr>
</tbody>
</table>

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

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

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

THE CERTIFIED PUBLIC ACCOUNTANT EXAMINATION

According to North Dakota law and State Board of Accountancy regulations, students are currently eligible to sit for the Uniform Certified Public Accountant Examination with a bachelor’s degree that includes at least 30 hours of accounting and business law. After December 31, 1999, “year 2000,” individuals need a degree and at least 150 total semester hours to be eligible for this examination. As of this writing, those 150 hours must include at least 24 hours of accounting and 24 hours of other business courses.

The B.Acc. program meets the current and year 2000 requirements for accounting, business law and business courses. With careful planning and course selection, the current B.B.A. may also be structured to meet both current and year 2000 requirements. Please note that neither program meets the 150 hour requirement. Students interested in becoming CPAs should be prepared to either extend their undergraduate program by an additional 25 credit hours or to continue their study at the graduate level. At this time, the most likely graduate alternative would be the Master of Business Administration (MBA).

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

Courses

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

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

207. Managerial Accounting. 2 credits. Prerequisite: Acct 201 or Acct 295. The application of accounting concepts and techniques to managerial problems of planning, control and decision making. Not for non-accounting majors only. F,S

218. Computer Applications in Business. 2 credits. Prerequisite: BVED 217. Pre requisite or Corequisite: Acct 201. The fundamentals of digital computer programming using electronic spreadsheets with special emphasis on business applications. F,S

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

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


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

306. Cost Accounting II. 3 credits. Prerequisite: Acct 305, Econ 210. Analytical applications of accounting information for product costing, financial reporting, 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 208. Financial accounting, control, and reporting for governmental and not-for-profit entities. F,S

337. Cooperative Education, 1 to 8 credits. may be repeated to a total of 12 credits. Prerequisites: Acct 301, 305; minimum 2.7 GPA overall; approval of the Director of Accounting Cooperative Education. On the job compensated work experience in various areas of Accounting. S-U grading 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. Prerequisite: 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. Uniform transfer tax, trusts and estates, other contemporary topics as appropriate, and techniques of tax research. 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

416. Advanced Business Law. 3 credits. Prerequisite: Acct 316. Advanced topics and contemporary issues in business law including ethics, legal representation in business, and the impact of selected governmental regulations on businesses. F,S
American Studies

Thomas Howard (History) and Robert Lewis (English), Coordinators

The American Studies related-fields concentration is designed to introduce the student to the cultural and intellectual heritage of the United States.

The concentration offers students a wide range of courses that are coordinated by their advisors, and the programs of study are individually determined according to the student’s backgrounds, preparation, needs, and interests. Students should plan to study American history, literature, philosophy, and political and economic theory. Cognate courses in American culture in related fields, such as fine arts, are also encouraged. The field of American Studies offers excellent preparation for careers in professions such as law, medicine, teaching, the ministry, government service, social work, writing, publishing, and areas of business where other than a narrow specialization is required. Graduates may expect to achieve a broad liberal education that is also coherent and purposeful. And the bachelor’s degree may be terminal or an excellent stepping-stone to graduate or professional study in many fields. Students who desire to become certified public school teachers may satisfy CTL requirements in one field, such as social sciences or English, and be well qualified as a teacher of several subjects. For those who plan to enter graduate work, History 440 is strongly recommended.

Each student’s program will be devised by the student and the coordinators. In the Freshman year, students ordinarily take History 103 and 104, English Composition I and II, levels I and II of a language other than English, and two semesters of introductory courses in the social sciences (e.g., American Government I and II) or humanities (e.g., courses in Philosophy or Religious Studies). During the second semester of the Freshman year or as soon thereafter as the student decides to concentrate in American Studies, he/she should consult with the coordinator in order to plan future work.

College of Arts and Sciences

B.A. WITH MAJOR IN AMERICAN STUDIES

Required 125 hours including:
I. General Education Requirements, see pages 27-31.
II. The Following Curriculum:

36 hours, including:

Hist 103  United States to 1877  (3)
Hist 104  United States since 1877  (3)
Engl 303, 304  Survey of American Literature I and II  (6)
Electives as approved and as described above  (24)
At least 18 hours must be upper level work.

Language requirement: Level IV proficiency in a language other than English.

Anatomy and Cell Biology

(Anat)

E. Carlson (Chair), Hunt, Keck, McCormack, J. C. Oberpriller, J.O. Oberpriller, Olson, Rada, Rieke, Ruit, and Thompson

Courses

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

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

490. 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 for one or more students. F.S SS

Anthropology

(Anth)

J. Williams (Chair), Lang, Leach and Schneider

College of Arts and Sciences

An undergraduate major in anthropology can serve as the nucleus for a general liberal arts education, or as the prerequisite for a graduate education that will qualify a person for positions in (1) college and university teaching; (2) research, and (3) administrative and applied positions in government and museums. American anthropology is divided into four main sub-areas—archaeology, cultural anthropology, linguistics, and physical anthropology. Undergraduate training includes work in all four areas. Anthropology at UND is especially strong in archaeology and most students have an opportunity to work on archaeological excavations or in the laboratory. Both a major and a minor are offered in anthropology.

B.A. WITH A MAJOR IN ANTHROPOLOGY

Required 125 hours including:
I. General Education Requirements. see pages 27-31.
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 Anthropology)
Anth 371  Cultural Dynamics  (3)
Anth 372  Culture Theory  (3)
Anth 373  Linguistic Analysis  (3)
Anth 374  Methodology in Anthropology  (3)
Anth 375  Field Techniques in Archaeology  (1-6)
Anth 376  Physical Anthropology Method and Theory  (3)

Electives  (12)

Required in other departments:
A concentration in a single supplementary field other than anthropology is also required of all anthropology majors. This concentration may be met in two ways: (1) a language proficiency of level IV in a modern foreign language; or (2) 20 credit hours, at least 9 of which must be numbered 300 or above, in any single subject matter taught at this university.

MINOR IN ANTHROPOLOGY

Required 21 hours, including:

Anth 170  Introduction to Biological Anthropology  (3)
Anth 171  Introduction to Cultural Anthropology  (3)
Anth 172  Introduction to Archaeology and World Prehistory  (3)
Anth 200  Archaeology Laboratory Methods  (3)
Anth 350  Ethnographic Methods  (3)
Anth 371  Cultural Dynamics  (3)
Anth 372  Culture Theory  (3)
Anth 378  Physical Anthropology Method and Theory  (3)
Anth 380  Field Techniques in Archaeology  (1-6)
Anth 388  Method and Theory in Archaeology  (3)

Electives in Anthropology  (9)

Courses

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

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

61
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 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

200. Archaeology Laboratory Methods, 3 credits. Prerequisites: Anth 170, 171 or 172. An introduction to the techniques and methods employed by non-western peoples to construct tools and artifacts. Includes practical application. F

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

370. Language and Culture, 3 credits. Prerequisites: Anth 170, 171, or 172 or consent of instructor. Fundamentals of modern linguistics; utility of linguistic concepts of culture analysis; interaction of language with other cultural subsystems. S

371. Cultural Dynamics, 3 credits. Prerequisite: Anth 171. An examination of the problems, theories and consequences of cultural change. S

372. Culture Theory, 3 credits. Prerequisite: Anth 171. An overview of the ideas and approaches that have played a role in the development of anthropological studies of societies and cultures. Focus on the contributions of major figures in anthropology, in the past and at present, as well as current issues within the discipline. Once every 3 semesters.

373. Indians of Latin America, 3 credits. Prerequisites: Anth 171 or consent of instructor. Examination of traditional and modern Indian cultures of Latin America. Focus on the adaptation to cultural change, the impact of world economy and resource exploitation on indigenous peoples. Every third semester.

374. Old World Prehistory, 3 credits. Prerequisites: Anth 172 or consent of instructor. The origins and development of human culture in Africa, Asia, and Europe from the lower stone age to the beginning of farming communities. Major archaeological sites will be critically examined and an interdisciplinary approach will be stressed. F/S

375. North American Indians, 3 credits. Prerequisite: Anth 171 or consent of instructor. Origins and nature of cultures in America north of Mexico. Study of 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. Field trip to area reservation when possible. F

376. The Aztec, Maya and Inca, 3 credits. Prerequisite: Anth 172. An examination of the high civilizations of Latin America with focus on the Aztec, Maya and Incas. Every third semester.

377. North American Archeology, 3 credits. Prerequisites: Anth 172 or consent of instructor. Early man and the development of American Indian cultures from the Arctic to the Rio Grande. S

378. Physical Anthropology Method and Theory, 3 credits. Prerequisite: Anth 170. A discussion of current theoretical arguments within the field of physical anthropology and the techniques used to examine them. S

379. Culture Area Studies, 3 credits. May be repeated to maximum of 6 credits. Prerequisites: Anth 170 or 171 or consent of instructor. A survey of peoples and cultures of selected areas. Selections based upon staff and student interest. F,S

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

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

410. Historic Preservation, 3 credits. A detailed examination of the concept of historic preservation in the United States. Various processes for completing historic preservation programs are presented.

424. Plains Prehistory, 3 credits. Prerequisites: Anth 377 or consent of instructor. An overview of the prehistoric cultures of the Plains region from the Paleo Indians to the beginning of the Historic period.

426. Lithic Technology, 3 credits. Prerequisites: Anth 172 or consent of instructor. Focus on the central issues and questions posed by the new scholarship on women, and introduction to the techniques and methods employed by non-western peoples to construct tools and artifacts and the basis for analyzing such materials in the archeological record.

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

445. 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

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

497. Readings in Anthropology, 1-5 credits. Prerequisites: Anth 170, 171, or 172 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

Applied Physics

(see Physics)

Arts and Sciences

(A & S)

The College of Arts and Sciences offers a limited number of non-departmental courses. Arts and Sciences 250 and 290 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 250 or 290 should present their proposals in writing 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, 4 credits. An introduction to the study of women as subjects of scholarly inquiry, with emphasis on assessments of women’s contributions to Western culture. The course will provide an interdisciplinary focus 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

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

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

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

Lovelace (Chair), Bergstrom, Bridewell, DeRemer, Jackson, Jensen, Karim, Lindseth, McLean, Mead, Odegard, Robertson, Wagner and Zahradka

The Department of Aviation offers eight different four-year degree options in three major categories: Business, Aeronautics and Airway Science. 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, Flight Education or Air Traffic Control. The Bachelor of Science in Airway Science may be earned in Electronic Systems or Aviation Maintenance Management. The Aeronautics and Airway Science degrees are granted by the Center for Aerospace Sciences.

A special program is available for advanced students interested in becoming weather modification pilots. The University of North Dakota, with the cooperation of the U.S. Bureau of Reclamation and the North Dakota Weather Modification Board, conducts classes in the ground and air technology of cloud modification. Classes are taught by leading research scientists and engineers from throughout the nation. The program provides for internships in which the professional pilots are selected to fly cloud modification missions during the summer.

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

A Cooperative Education program is offered by the Department of Aviation, which encourages students to obtain on-the-job experience while continuing their academic education. Semester cooperative internships are available offering opportunities at major airports, general aviation manufacturers, FAA air traffic control towers, airlines, and weather modification research operational contractors. Students can earn additional college credits through the cooperative internship program and at the same time obtain valuable on-the-job experience necessary to supplement their formal education.

Career services include the UND Career Planning and Placement Center, the Center for Aerospace Science’s Resource Center, and an industry and alumni career database, which is maintained by CAS. In addition, representatives of aviation industries, the Federal Aviation Administration, Transport Canada and airlines come to UND for career fairs and interviewing sessions.

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

AVIATION DEPARTMENTAL POLICIES

Flight costs are not included in tuition or fees. They are determined on an hourly basis for aircraft and flight instruction, and are in addition to tuition, fees and any other incidental expenses which are normally charged during registration.

Students enrolling in flight courses are required to deposit money into their flight accounts on a regular basis to cover their flight costs. Deposits should be in at least $500 increments. Students will not be permitted to fly if their minimum balance drops below $200. Students are encouraged to have a known source of income prior to enrolling in any flight training-related curriculum.

Aviation students are required to regularly attend all academic aviation classes in accordance with the intent and spirit of the policy set forth by the University of North Dakota. Attendance is mandatory with respect to satisfying ground school requirements as established by the Federal Aviation Administration Part 141, Appendix A—paragraph 2, and Appendix D—paragraph 2. Failure to meet these attendance requirements will disqualify the student for FAA pilot certification.

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

TRANSFER OF PILOT RATINGS

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

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

TRANSFER OF COLLEGE CREDIT/RATINGS

Aviation and related courses from other colleges and universities do not automatically transfer to UND. All Aviation transfer courses, flight or non-flight, are reviewed by the Aviation Department for transferability. It is the responsibility of the student to initiate a review process of transfer courses.

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

FLIGHT POLICIES

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

MEDICAL CERTIFICATES

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

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

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

DRUG POLICY

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

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

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

PROGRAM DESCRIPTIONS

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

The Airport Management curriculum is offered to those students seeking employment in administrative positions with companies in and related to the groundside activities of the aviation industry. All aspects of general aviation, air carrier, and the total aviation industry will be studied in-depth with sufficient flexibility in courses to allow the student to concentrate in a particular area of the industry such as general aviation operations, airline management, airport administration, or corporate aviation management. Requires a private pilot certificate.

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

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

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

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

The Electronic Systems curriculum qualifies the student as an electronics technician and provides the management skills and baccalaureate degree necessary for a career in management of electronics technicians, for job opportunities with the FAA or in the avionics industry. Requires a private pilot certificate.

The Aviation Maintenance Management curriculum gives the best possible opportunity in this field. It combines the airframe and power-plant mechanic’s license with a baccalaureate degree, emphasizing management and administration. Requires a private pilot certificate.

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

Required: 125 hours, including:


II. College of Business and Public Administration Requirements, page 41.

III. The following curriculum:

PRE-BUSINESS CURRICULUM

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Acct 200</td>
<td>Elements of Accounting I</td>
<td>(3)</td>
</tr>
<tr>
<td>Acct 201</td>
<td>Elements of Accounting II</td>
<td>(3)</td>
</tr>
<tr>
<td>BVED 217</td>
<td>Fundamentals of Management</td>
<td>(3)</td>
</tr>
<tr>
<td>Comm 161</td>
<td>Fundamentals of Public Speaking</td>
<td>(3)</td>
</tr>
<tr>
<td>CsCs 110</td>
<td>Computer Programming I</td>
<td>(3)</td>
</tr>
<tr>
<td>Econ 201</td>
<td>Principles of Microeconomics</td>
<td>(3)</td>
</tr>
<tr>
<td>Econ 202</td>
<td>Principles of Macroeconomics</td>
<td>(3)</td>
</tr>
<tr>
<td>Econ 210</td>
<td>Intro to Business and Economic Statistics</td>
<td>(3)</td>
</tr>
<tr>
<td>Engl 101</td>
<td>Composition I</td>
<td>(3)</td>
</tr>
<tr>
<td>Engl 209</td>
<td>Technical and Business Writing</td>
<td>(3)</td>
</tr>
<tr>
<td>Lang 101</td>
<td>Foreign Language</td>
<td>(4)</td>
</tr>
<tr>
<td>Math 104</td>
<td>Finite Mathematics</td>
<td>(3)</td>
</tr>
<tr>
<td>Math 204</td>
<td>Survey of Calculus</td>
<td>(3)</td>
</tr>
<tr>
<td>Meteor 100</td>
<td>Meteorology I (Lab Science)</td>
<td>(4)</td>
</tr>
<tr>
<td>Psci 101</td>
<td>American Government I</td>
<td>(3)</td>
</tr>
<tr>
<td>Arts and Humanities (in at least two departments other than Language)</td>
<td>(4)</td>
<td></td>
</tr>
</tbody>
</table>

One of the following:

Arth 171 | Cultural Anthropology | (3) |

Pey 101 | Introduction to Psychology | (3) |

Soc 101 | Introduction to Sociology | (3) |

AVIATION COURSES

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Avit 102</td>
<td>Introduction to Aviation</td>
<td>(5)</td>
</tr>
<tr>
<td>Avit 104</td>
<td>Aviation History</td>
<td>(3)</td>
</tr>
<tr>
<td>Avit 251</td>
<td>Aircraft Systems and Instruments</td>
<td>(3)</td>
</tr>
<tr>
<td>Avit 252</td>
<td>Basic Attitude Instrument Flying</td>
<td>(3)</td>
</tr>
<tr>
<td>Avit 302</td>
<td>Air Transportation</td>
<td>(3)</td>
</tr>
<tr>
<td>Avit 303</td>
<td>Introduction to Air Traffic Control</td>
<td>(2)</td>
</tr>
<tr>
<td>Avit 308</td>
<td>Aviation Safety</td>
<td>(3)</td>
</tr>
<tr>
<td>Avit 353</td>
<td>Information Systems</td>
<td>(3)</td>
</tr>
<tr>
<td>Avit 354</td>
<td>IFR Regulations and Procedures</td>
<td>(3)</td>
</tr>
<tr>
<td>Avit 355</td>
<td>Multi-Engine Systems and Procedures</td>
<td>(2)</td>
</tr>
<tr>
<td>Avit 403</td>
<td>Aerospace Law</td>
<td>(3)</td>
</tr>
<tr>
<td>Avit 231</td>
<td>Aviation Meteorology</td>
<td>(4)</td>
</tr>
</tbody>
</table>

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) |

ADVANCED BUSINESS COURSES

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
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</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>(2)</td>
</tr>
<tr>
<td>Fin 310L</td>
<td>Problems in Financial Management</td>
<td>(1)</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 301</td>
<td>Principles of Marketing</td>
<td>(3)</td>
</tr>
</tbody>
</table>

Plus electives to total 125 credits.

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

Required: 125 hours, including:


II. College of Business and Public Administration Requirements, page 41.

III. The following curriculum:

PRE-BUSINESS CURRICULUM

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
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<td>Fundamentals of Management</td>
<td>(3)</td>
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<tr>
<td>Comm 161</td>
<td>Fundamentals of Public Speaking</td>
<td>(3)</td>
</tr>
<tr>
<td>CsCs 110</td>
<td>Computer Programming I</td>
<td>(3)</td>
</tr>
<tr>
<td>Econ 201</td>
<td>Principles of Microeconomics</td>
<td>(3)</td>
</tr>
<tr>
<td>Econ 202</td>
<td>Principles of Macroeconomics</td>
<td>(3)</td>
</tr>
<tr>
<td>Econ 210</td>
<td>Intro to Business and Economic Statistics</td>
<td>(3)</td>
</tr>
</tbody>
</table>
Aviation

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

Required: 125 hours, including:


II. Center for Aerospace Sciences Requirements, page 37.

III. The following curriculum:

GENERAL EDUCATION COURSES

Comm 161 ................................ Fundamentals of Public Speaking ...................(3)
CSci 110 ............................... Computer Programming I ...........................(3)
Econ 201 ............................... Principles of Microeconomics ......................(3)
Engl 101 ............................... Composition I ............................................(3)
Engl 209 ............................... Technical and Business Writing .................(3)
History Elective (see available courses, page xx) ...........................................
Lang 101 ............................... Foreign Language .........................................(4)
Lang 102 ............................... Foreign Language .........................................(4)
Math 204 ............................... Survey of Calculus .....................................(3)
Mgmt 110 ............................... Meteorology I ................................................(4)
Arts & Humanities (other than language or history) ...........................................
Math, Science and Technology ...........................................................................(2)
Social Science ....................................................................................................(3)

One of the following:

Comm 171 ............................... Cultural Anthropology ..................................(3)
Psy 101 ................................. Introduction to Psychology .................................(3)
Soc 101 ................................. Introduction to Sociology ................................(3)

AVIATION COURSES

Avit 102 ............................... Introduction to Aviation .......................................(5)
Avit 104 ............................... Aviation History ...............................................(3)
Avit 250 ............................... Human Facets ......................................................(2)
Avit 251 ............................... Aircraft Systems and Instruments ....................(3)
Avit 252 ............................... Basic Attitude Instrument Flying ....................(3)
Avit 302 ............................... Air Transportation ................................................(3)
Avit 303 ............................... Introduction to Air Traffic Control .................(2)
Avit 308 ............................... Aviation Safety ....................................................(3)
Avit 309 ............................... Flight Physiology ...................................................(3)
Avit 327 ............................... Gas Turbine Engines ........................................(4)
Avit 335 ............................... Air Transport Regulations .................................(2)
Avit 353 ............................... Aerodynamics—Airplanes .............................(3)
Avit 354 ............................... IFR Regulations and Procedures .......................(3)
Avit 355 ............................... Multi-Engine Systems and Procedures ...........(2)
Avit 403 ............................... Aerospace Law ..................................................(3)
Avit 411 ............................... International and Long-range Navigation ..........(3)
Avit 421 ............................... Advanced Aeronodynamics ...........................(3)
Avit 428 ............................... Transport Category Aircraft Systems .............(4)
Avit 430 ............................... Crew Resource Management ...........................(2)

One of the following pairs of courses:

Avit 405 ............................... Airline Operations and Management ..........(3)
Avit 429 ............................... Turboprop Operations ................................(4)
Avit 407 ............................... General Aviation Operations and Management ..(3)
Avit 409 ............................... Advanced Aircraft Operations ......................(3)

OTHER REQUIREMENTS

BVED 320 ............................... Business Communication .............................(3)
Mgmt 231 ............................... Aviation Meteorology I .................................(4)
Mgmt 331 ............................... Aviation Meteorology II .................................(4)

Plus electives total 125 credits.

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

Required: 125 hours, including:


II. Center for Aerospace Sciences Requirements, page 37.

III. The following curriculum:

GENERAL EDUCATION COURSES

Comm 161 ............................... Fundamentals of Public Speaking ...................(3)
CSci 110 ............................... Computer Programming I ...........................(3)
Econ 201 ............................... Principles of Microeconomics ......................(3)
Engl 101 ............................... Composition I ............................................(3)
Engl 209 ............................... Technical and Business Writing .................(3)
History Elective (see available courses, page xx) ...........................................
Lang 101 ............................... Foreign Language .........................................(4)
Lang 102 ............................... Foreign Language .........................................(4)
Math 204 ............................... Survey of Calculus .....................................(3)
Mgmt 110 ............................... Meteorology I ................................................(4)
Arts & Humanities (other than Language or History) ...........................................
Math, Science and Technology ...........................................................................(2)
Social Science ....................................................................................................(3)

One of the following:

Comm 171 ............................... Cultural Anthropology ..................................(3)
Psy 101 ................................. Introduction to Psychology .................................(3)
Soc 101 ................................. Introduction to Sociology ................................(3)

AVIATION COURSES

Avit 102 ............................... Introduction to Aviation .......................................(5)
Avit 104 ............................... Aviation History ...............................................(3)
Avit 250 ............................... Human Facets ......................................................(2)
Avit 251 ............................... Aircraft Systems and Instruments ....................(3)
Avit 252 ............................... Basic Attitude Instrument Flying ....................(3)
Avit 302 ............................... Air Transportation ................................................(3)
Avit 303 ............................... Introduction to Air Traffic Control .................(2)
Avit 308 ............................... Aviation Safety ....................................................(3)
Avit 309 ............................... Flight Physiology ...................................................(3)
Avit 327 ............................... Gas Turbine Engines ........................................(4)
Avit 335 ............................... Air Transport Regulations .................................(2)
Avit 353 ............................... Aerodynamics—Airplanes .............................(3)
Avit 354 ............................... IFR Regulations and Procedures .......................(3)
Avit 355 ............................... Multi-Engine Systems and Procedures ...........(2)
Avit 403 ............................... Aerospace Law ..................................................(3)
Avit 411 ............................... International and Long-range Navigation ..........(3)
Avit 421 ............................... Advanced Aeronodynamics ...........................(3)
Avit 428 ............................... Transport Category Aircraft Systems .............(4)
Avit 430 ............................... Crew Resource Management ...........................(2)

OTHER REQUIREMENTS

BVED 320 ............................... Business Communication .............................(3)
Mgmt 231 ............................... Aviation Meteorology I .................................(4)
Mgmt 331 ............................... Aviation Meteorology II .................................(4)

Plus electives total 125 credits.

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

Required: 125 hours, including:


II. Center for Aerospace Sciences Requirements, page 37.

III. The following curriculum:

GENERAL EDUCATION COURSES

Comm 161 ............................... Fundamentals of Public Speaking ...................(3)
CSci 110 ............................... Computer Programming I ...........................(3)
Econ 201 ............................... Principles of Microeconomics ......................(3)
Engl 101 ............................... Composition I ............................................(3)
Engl 209 ............................... Technical and Business Writing .................(3)
History Elective (see available courses, page xx) ...........................................
Lang 101 ............................... Foreign Language .........................................(4)
Lang 102 ............................... Foreign Language .........................................(4)
Math 204 ............................... Survey of Calculus .....................................(3)
Mgmt 110 ............................... Meteorology I ................................................(4)
Arts & Humanities (other than Language or History) ...........................................
Math, Science and Technology ...........................................................................(2)
Social Science ....................................................................................................(3)

One of the following:

Comm 171 ............................... Cultural Anthropology ..................................(3)
Psy 101 ................................. Introduction to Psychology .................................(3)
Soc 101 ................................. Introduction to Sociology ................................(3)

AVIATION COURSES

Avit 102 ............................... Introduction to Aviation .......................................(5)
Avit 104 ............................... Aviation History ...............................................(3)
Avit 250 ............................... Human Facets ......................................................(2)
Avit 251 ............................... Aircraft Systems and Instruments ....................(3)
Avit 252 ............................... Basic Attitude Instrument Flying ....................(3)
Avit 302 ............................... Air Transportation ................................................(3)
Avit 303 ............................... Introduction to Air Traffic Control .................(2)
Avit 308 ............................... Aviation Safety ....................................................(3)
Avit 309 ............................... Flight Physiology ...................................................(3)
Avit 327 ............................... Gas Turbine Engines ........................................(4)
Avit 335 ............................... Air Transport Regulations .................................(2)
Avit 353 ............................... Aerodynamics—Airplanes .............................(3)
Avit 354 ............................... IFR Regulations and Procedures .......................(3)
Avit 355 ............................... Multi-Engine Systems and Procedures ...........(2)
Avit 403 ............................... Aerospace Law ..................................................(3)
Avit 407 ............................... General Aviation Operations and Management ..(3)
Avit 409 ............................... Advanced Aircraft Operations ......................(3)

OTHER REQUIREMENTS

BVED 320 ............................... Business Communication .............................(3)
Mgmt 231 ............................... Aviation Meteorology I .................................(4)
Mgmt 331 ............................... Aviation Meteorology II .................................(4)

Plus electives total 125 credits.

AERONAUTICS PROGRAMS

Center for Aerospace Sciences

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

Required: 125 hours, including:


II. Center for Aerospace Sciences Requirements, page 37.

AVIATION COURSES

Avit 102 ............................... Introduction to Aviation .......................................(5)
Avit 104 ............................... Aviation History ...............................................(3)
Avit 250 ............................... Human Facets ......................................................(2)
Avit 251 ............................... Aircraft Systems and Instruments ....................(3)
Avit 252 ............................... Basic Attitude Instrument Flying ....................(3)
Avit 302 ............................... Air Transportation ................................................(3)
Avit 303 ............................... Introduction to Air Traffic Control .................(2)
Avit 308 ............................... Aviation Safety ....................................................(3)
Avit 309 ............................... Flight Physiology ...................................................(3)
Avit 327 ............................... Gas Turbine Engines ........................................(4)
Avit 335 ............................... Air Transport Regulations .................................(2)
Avit 353 ............................... Aerodynamics—Airplanes .............................(3)
Avit 354 ............................... IFR Regulations and Procedures .......................(3)
Avit 355 ............................... Multi-Engine Systems and Procedures ...........(2)
Avit 403 ............................... Aerospace Law ..................................................(3)
Avit 407 ............................... General Aviation Operations and Management ..(3)
Avit 409 ............................... Advanced Aircraft Operations ......................(3)
B.S. IN AIRWAY SCIENCE WITH A MAJOR IN ELECTRONIC SYSTEMS (transfer program)

Required: 132 hours, including:

I. Graduation from an electronics, avionics or related program at an institution with which UND Aerospace and the Department of Aviation have an articulation agreement AND

II. Completion of the following coursework at UND, or an accredited comprehensive four-year college, community college, or as part of an associate’s degree:

Engl 101 Composition I ...............................................................(3)
Engl 209 Technical and Business Writing ..................................(3)
Avit 102 Introduction to Aviation.................................................(5)
Avit 307 Aviation Safety ...............................................................(3)
Avit 400 Methods and Materials in Teaching Aviation ..............(3)
Avit 401 Certified Flight Instructor .............................................(5)
Avit 405 Instrument Flight Instructor .........................................(4)
Avit 416 Multi-engine Flight Instructor ......................................(2)

OTHER REQUIREMENTS

BVED 303 Methods of Teaching Business Education ...............(2-3)
BVED 320 Business Communication .........................................(3)
BVED 402 Curriculum Development in Voc Ed ..........................(3)
BVED 403 Professional Training Techniques in Business and Education .................................................................(3)
BVED 444 Philosophy of Vocational Education ...........................(3)
Men 231 Aviation Meteorology I ...............................................(4)
Psy 213 Educational Psychology ..................................................(3)

Plus electives to total 125 credits*

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

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

Required: 125 hours, including:


II. Center for Aerospace Sciences Requirements, page 37.

III. The following curriculum:

GENERAL EDUCATION COURSES

Comm 161 Fundamentals of Public Speaking .........................(3)
CSci 100 Computer Programming I ...........................................(3)
Econ 201 Principles of Microeconomics .................................(3)
Engl 101 Composition I ...............................................................(3)
Engl 209 Technical and Business Writing ..............................(3)
History Elective (see available courses, page xx) ....................(3)
Lang 101 Foreign Language .......................................................(4)
Lang 102 Foreign Language .......................................................(4)
Math 204 Survey of Calculus ...................................................(3)
Metr 231 Aviation Meteorology I .............................................(4)
Social Science .................................................................................(3)

AVIATION COURSES

Avit 102 Introduction to Aviation.................................................(5)
Avit 104 Aviation History ..............................................................(3)
Avit 250 Human Factors ...............................................................(2)
Avit 252 Aircraft Systems and Instruments ..............................(3)
Avit 302 Air Transportation .........................................................(3)
Avit 303 Introduction to Air Traffic Control .............................(2)
Avit 308 Aviation Safety ...............................................................(3)
Avit 353 Aerodynamics—Airplanes ...........................................(3)
Avit 354 IFR Regulations and Procedures ...............................(3)
Avit 355 Multi-Engine Systems and Procedures ......................(2)
Avit 400 Methods and Materials in Teaching Aviation ............(3)
Avit 403 Aerospace Law ...............................................................(3)
Avit 405 Airliner Operations and Managements ......................(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)

Suggested fields include Communication, Computer Science, Economics, Foreign Language, Industrial Technology, Meteorology, Office Administration, Political Science, Psychology and Public Administration.

II. Plus the following coursework (required of all students):

Avit 102 Introduction to Aviation .................................................(5)
Avit 307 Aviation Safety ...............................................................(3)
Avit 308 Introduction to Air Traffic Control .............................(2)
Avit 309 Aviation Safety ...............................................................(3)
Avit 403 Aerospace Law ...............................................................(3)
CSci Electives (approved by advisor, but must include CSci 110 or CSci 160) .................................................................(9)
Comm 161 Fundamentals of Public Speaking .........................(3)
Comm 162 Communication II ......................................................(3)
CSci 110 Computer Programming I ...........................................(3)
CSci 160 Introduction to Microcomputers ...............................(3)
Econ 201 Principles of Microeconomics .................................(3)
Econ 210 Microeconomics .........................................................(3)
Econ 220 Macroeconomics .........................................................(3)
Math 105 College Algebra ............................................................(3)
Math 201 Principles of Microeconomics ...................................(2)
Math 207 Calculus I .................................................................(3)
Math 208 Calculus II .................................................................(3)
Math 210 Calculus III .................................................................(3)
Math 301 Linear Algebra .............................................................(3)
Math 302 Differential Equations ...............................................(3)
Math 305 Advanced Calculus .....................................................(3)

Upper-division Elective ...............................................................(2)

Transfer credit will also be granted for completion of any of the requirements of II above.

III. Plus the following coursework (required of all students):

Avit 414 Certified Flight Instructor .............................................(5)
Avit 415 Instrument Flight Instructor .........................................(4)
Avit 416 Multi-engine Flight Instructor ......................................(2)

Other Requirements

BVED 320 Business Communication .........................................(3)
BVED 402 Curriculum Development in Voc Ed ..........................(3)
BVED 403 Professional Training Techniques in Business and Education .................................................................(3)
BVED 444 Philosophy of Vocational Education ...........................(3)
Men 231 Aviation Meteorology I ...............................................(4)
Psy 213 Educational Psychology ..................................................(3)

Plus electives to total 125 credits*

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

B.S. IN AIRWAY SCIENCE WITH A MAJOR IN AVIATION MAINTENANCE MANAGEMENT (transfer program)

Required: 132 hours, including:

I. Graduation from an Aviation Maintenance Technology or related program at an institution with which UND Aerospace and the Department of Aviation have an articulation agreement AND
II. Completion of the following coursework at UND, or an accredited comprehensive four-year college, community college, or as part of an associate’s degree:

Engl 101 Composition I (3)
Engl 209 Technical and Business Writing (3)
Eco 209 Principles of Microeconomics (3)
Econ 210 Introduction to Business and Economic Statistics (3)
Math 103 College Algebra (3)
PSCI 101 American Government I (3)
History Elective (U.S. History) (3)

Upon the student’s acceptance by the Aviation Department for admission to this program at the Junior level, 40 semester credits will be allowed for the Airframe and Power Plant licenses. These 40 credits can only be applied to this degree program at UND. If the student changes majors or leaves UND without completing this degree, the registrar will delete these 40 credits from the student’s transcript.

Transfer credit will also be granted for completion of any of the requirements of II above.

III. Plus the following coursework (required of all students):

Avit 102 Introduction to Aviation (5)
Avit 301 Avionics for Aviators* (3)
Avit 302 Air Transportation (2)
Avit 303 Introduction to Air Traffic Control (2)
Avit 308 Aviation Safety (3)
Avit 403 Aerospace Law (3)
CSci Electives (approved by advisor, but must include Csci 110 or Csci 160) (9)
Comm 161 Fundamentals of Public Speaking (3)
Metr 110 Meteorology I (4)
IT 300 Technology, Society and the Individual (2)
Mgmt 300 Principles of Management (3)
Mgmt 302 Human Resource Management (3)
Math 104 Finite Mathematics (3)
Math 204 Survey of Calculus (3)
Phys 101 Introductory College Physics (4)
Phys 102 Introductory College Physics (4)
PSCI 339 Survey of Public Administration (3)
Arts and Humanities (300 or 400 level)** (9)

Upper-division Elective (2)

* Arts and Humanities must be in English and at least one other department other than History. If only 2 hours of History are transferred under II above, ten hours of Arts and Humanities are required.

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 hours, including:

Avit 102 Introduction to Aviation (5)
Avit 251 Aircraft Systems and Instruments (3)
Avit 252 Basic Attitude Instrument Flying (3)
Avit 308 Aviation Safety (3)
Avit 353 Aerodynamics—Airplanes (3)
Avit 354 IFR Regulations and Procedures (3)
Avit 355 Multi-engine Systems and Procedures (2)
Metr 110 Meteorology I (4)
Avit 231 Aviation Meteorology I (4)

MINOR IN AVIATION ADMINISTRATION

Required: 27 hours, including:

Avit 102 Introduction to Aviation (5)
Avit 104 Aviation History (3)
Avit 302 Air Transportation (3)
Avit 308 Aviation Safety (3)
Avit 402 Airport Planning and Administration (3)
Avit 403 Aerospace Law (3)
Avit 405 Airline Operations and Management (3)
OR
Avit 407 General Aviation Operations and Management (3)
Metr 110 Meteorology I (4)

COURSES

All Avit 300 level courses are restricted to sophomore status. All 400 level courses are restricted to junior status.

100. Aviation Orientation, 1 credit. This course is suggested for all aviation majors. Its purpose is to prepare new students for their university career by discussing students’ responsibilities and options, common pitfalls, study procedures, time management, and other tools used by the professional student. Academic and aircraft requirements and procedures will be covered. F

101. Elements of Aerospace, 3 credits. An introductory course specifically designed for non-aviation majors who wish to obtain a broad understanding of the aerospace world including aviation and space exploration. Includes a study of aerospace history, aerospace environment, principles of aircraft, flight and navigation, the science of rocketry, and space flight, and the social, economic and political impact of aerospace on modern civilization. F, S

102. Introduction to Aviation, 5 credits. Co-requisite: Meteorology 150. The course serves as a preparation for the FAA Private Pilot written examination which will be taken upon successful completion of the semester. Course content includes instruction in FAA regulations, weather, air and radio navigation, flight safety, and emergency procedures. The student must complete the appropriate flight lessons or the private pilot test course to satisfactorily complete the course. F, S, SS

104 Aviation History, 3 credits. Topics covered include the history of the beginning of manned flight, history of military aviation, watercraft/aircraft, helicopters and commercial flight. This course will utilize expertise from many of the CAS faculty and sources. F, S

143. Introduction to Aviation–Helicopter, 5 credits. Co-requisite: Meteorology 150. The course serves as a preparation for the FAA Private Pilot Helicopter written examination which will be taken upon successful completion of the semester. Course content includes instruction in FAA regulations, weather, air and radio navigation, flight safety, helicopter aerodynamics, and emergency procedures. The student must complete the appropriate flight lessons in the Private Pilot Helicopter course to satisfactorily complete the course. F, SS

193. Glider Certification, 1 credit. Prerequisite: Avit 102. 200. Topics in Aviation, 1-3 credits. Selected topics in aviation which allow the student to study a specialized subject. Repeatability to a maximum of 6 credits. F, S

241. Aerodynamics and Performance-Helicopter, 2 credits. Prerequisite: Avit 142. This course will provide study of helicopter aerodynamics, performance, stability, control, weight and balance and special flight conditions. The student must complete the appropriate flight lessons in the Commercial Pilot Helicopter Course to satisfactorily complete the course. S

242. Aircraft Systems-Helicopter, 2 credits. Pre- or corequisite: Avit 241. Provides a study of turbine powered helicopters. Theory and application of turbine engines. Drive trains, fuel, oil, hydraulic, and electrical systems will be studied. The student must complete the appropriate flight lessons in the Commercial Helicopter Course to satisfactorily complete the course. F, SS

250. Human Factors, 2 credits. This course introduces the student to the relationship between person and machine and develops an understanding of the need to optimize design to allow for better person-machine interaction in aviation. It also introduces the student to the psychological and physiological limitations of humans in complex operating environments. (Air Transport Emphasis students only) F, S, SS

251. Aircraft Systems and Instruments, 3 credits. Prerequisite: Avit 102; corequisite: Avit 252. This course provides an in-depth study of flight instruments. Reciprocating engine, propeller, electrical, environmental, hydraulic, pneumatic, fuel, ignition, lubrication, and pressurization systems will be studied as well. The student must complete the appropriate flight lessons to satisfactorily complete the course. F, S, SS

252. Basic Attitude Instrument Flying, 3 credits. Prerequisite: Avit 102; corequisite: Avit 251. This course will include an in-depth study of basic attitude instrument flying. In addition, the operation, interpretation and practical use of VOR, ADF, DME, RNAV, RMI, HSI, and Flight Director systems will be studied. Finally the course will include the different types of instrument charts required for IFR flight. The student must complete the appropriate flight lessons to satisfactorily complete the course. F, S, SS

301. Avionics for Aviators, 3 credits. Prerequisite: Avit 102. Theory of operation of various common types of avionics equipment. The course starts with a review of basic electricity, then applies this basic theory to aircraft electrical systems. The course includes basic radio wave propagation, antenna/theory, transmitter/receiver theory, and theory and limitations of the basic navigation and air traffic control systems. A term paper is required. Students are encouraged to learn Morse Code for extra credit. F

302. Air Transportation, 3 credits. Prerequisite: Avit 102 or consent of the instructor. Provides a broad understanding of all aspects of the air transportation industry. The scope of course material includes knowledge of state and federal regulations and the basis for their establishment. Requirements of the past, present and future with respect to air traffic and engine design, airports and supporting facilities are reviewed and evaluated. Students are introduced to the practical economics of airline operations and maintenance and the factors which affect a profit or loss situation. F, S

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

308. Aviation Safety, 3 credits. Prerequisite: Avit 102. This course provides the student with a detailed introduction to aspects of aviation safety and the associated components of pilot psychology, human factors, and aircraft technology, weather related accidents and accident investigation. F, S

309. Flight Physiology, 3 credits. This course will provide an in-depth study of aeromedical factors for pilots. The causes, symptoms, prevention, and treatment of flight environment disorders, altitude effects, spatial disorientation, visual illusions, body heat imbalance, and psychological factors are included as they relate to pilot performance and survival. F, S, SS
327. Gas Turbine Engines. 4 credits. Prerequisite: Avit 235. Co-requisite: Avit 325, or consent of instructor. This course will provide an in-depth introduction to the turbine engine through the study of its development, theory of operation and the function of turbine engine components. Air Transport students only. F, S, SS

335. Air Transport Regulations. 2 credits. Prerequisite: Avit 355. Co-requisite: Avit 329 or consent of the instructor. This course provides an in-depth study of the regulations governing scheduled air carriers. The study of Federal Aviation Regulations part 135 and part 121 will be included, as well as the international regulations as established by the International Civil Aviation Organization. Air Transport students only.

337. Cooperative Education. 1-8 credits. May be repeated to a maximum of 24 credits. Co-op credits may not be substituted for any other required courses in curricu-

344. Basic Attitude Instruments and Navigation-Helicopter. 2 credits. Pre- or co-requisite: Avit 381. This course will include an in-depth study of flight instruments for instrument flight in helicopters. In addition, the operation, interpretation and practi-

345. Flight Procedures and Navigation-Helicopter. 2 credits. Pre- or co-requisite: Avit 344. 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 heli-

353. Aerodynamics—Airplanes. 3 credits. Prerequisite: Avit 251, 252 and Math 103 or equivalent. Corequisite: Avit 354. This course will provide an overview of aerodynamics, performance, stability, control, weight and balance, and special flight conditions as appropriate for commercial pilots. A discussion of commercial maneuvers and flight

354. IFR Regulations and Procedures. 3 credits. Prerequisite: Avit 251 and 252. Corequisite: Avit 355. 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, SS

355. Multi-Engine Systems and Procedures. 2 credits. Prerequisites: Avit 353 and 354. This course covers the operations necessary to operate a 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 com-

360. Air Traffic Control: Nonradar I. 4 credits. Prerequisite: Avit 303. This course is designed to provide aviation students with fundamental nonradar air traffic control procedures inherent in Federal Aviation Administration terminal and enroute facilities. This course will place the student in a “demand-response” simulated air traffic control environment to learn the procedures and then be evaluated. Emphasis will be placed on completing a series of exercise scenarios which require application of newly acquired knowledge. The class will prepare students for the highly competitive career of controlling air traffic. F, S

361. Air Traffic Control – Radar Operations I. 4 credits. Prerequisite: Avit 360. Provides students an orientation to fundamental ATC radar operations and procedures. Students learn basic radar concepts, theories, airspace orientation, flight progress strip marking, vectoring, radar operations and the terminal ATC radar separation stan-

362. Tower Operations. 4 credits. Prerequisite: Avit 361. Corequisite: Avit 306. Provides students with a basic understanding of control tower operations and structure. Students learn about control positions, standard and enhanced equipment located in a Tower and basic separation requirements. Tower interaction with other ATC and non-ATC agencies is also part of this course. Visits to local FAA and US military Control Tower facilities provides first-hand experience. To complete this course, students must demonstrate their basic knowledge of Control Tower operations through written examinations. F, S

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

380. Aviation Internship. 2-4 credits. Prerequisites: will vary depending on the area of interest to the student. Internships will be available in airport management, general aviation management, and on the job exposure of a particular area of interest to the student that has within the aviation industry. Internships will be available in airport management, general aviation management, 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

381. Professional Pilot Lab-Helicopter. 1 credit. Pre- or corequisite: Avit 242. This course will be taken to complete the Commercial Pilot Helicopter Rating. The stu-

383. Rotorcraft Certification. 3 credits. Prerequisite: Avit 202. Provides the necessary dual and solo flight instruction leading to a Rotorcraft Helicopter Rating. The course includes a ground instruction in helicopter aerodynamics, flight attitudes, control systems, auto rotations, vertical flight and off-airport operations. F, SS

395. Seaplane Certification. 1 credit. Prerequisite: Avit 391, 354 or consent of instructor. The seaplane certification course includes all the necessary flight instruction for the student to acquire the skill, knowledge, and experience for obtaining a seaplane rating on his/her commercial pilot’s certificate. The course will include, but not be limit-

396. Conventional Aircraft Operations. 1 credit. Prerequisite: Avit 302. 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 airplane on the ground and in flight. S-U grading only. F, SS

399. Introduction to Aerobatic Flight. 1 credit. Prerequisite: Avit 302. To introduce, analyze and fly some of the more advanced flight maneuvers defined as aer-

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

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

405. Airline Operations and Management. 3 credits. Prerequisite: Avit 302. Designed to cover the complex area of operational techniques and problems confronting the airlines today. Officials from airlines will conduct discussions on the real and intume-

410. Airline Planning and Administration. 3 credits. This is the first of a two course curriculum in airport administration. This initial course provides an intro-

411. International and Long Range Navigation. 3 credits. Prerequisites: Avit 305 or 354, and Math 103 or 104. This course provides an 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 informa-

414. CFI Certification. 5 credits. Prerequisite: Avit 391 or 429. Provides the student with a detailed study of the responsibilities and teaching concerns of a flight

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 their Instrument Rating for a Flight Instructor Certificate to satisfactorily complete the course. F, SS
416. Multi-engine Flight Instructor. 2 credits. Prerequisite: Avit 414 and 393, or 355. This course provides an understanding of the fundamentals of teaching in a multi-engine airplane. The course will include multi-engine aerodynamics and performance, analysis of multi-engine operations, single-engine cooperations and procedures, flight instructor responsibilities, flight safety concerns and instrument flight maneuvers in multi-engine airplanes. The student must obtain a Multi-engine Airplane Rating for the CFI Certification in order to satisfactorily complete the course. F, S, SS

421. Advanced Aerodynamics. 3 credits. Prerequisite: Avit 355 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. The student must complete all associated flight lessons to satisfactorily complete the course. Air Transport students only. F, S, SS

428. Transport Category Aircraft Systems. 4 credits. Prerequisite: Avit 355 or consent of the instructor. Co-requisite: Avit 421 or consent of the instructor. This course will provide a study of the complex systems of today’s air transport jet aircraft. It provides an initial orientation to heavy aircraft APV, fire, pneumatic, environmental, pressurization, fuel and electrical systems. Both normal and abnormal system operations will be studied. Air Transport students only. F, S, SS

429. Turboprop Operations. 4 credits. Prerequisite: Avit 421 or consent of the instructor. The course provides an in-depth study of turboprop-aircraft systems. The specific application of turboprop engines previously covered in Avit 327, Gas Turbine Engines, will be made. The type of aircraft studied may vary from semester to semester. The student must complete all associated flight lessons to satisfactorily complete the course. Air Transport students only. F, S, SS

430. Crew Resource Management. 2 credits. Prerequisite: Avit 250 and 355. This course will provide an in-depth study of Crew Resource Management techniques to be used by a helicopter instrument flight instructor. The course will provide an understanding of the flight deck environment and the proper utilization of all resources available to an aviator. The course will also provide an overview of the responsibilities and techniques which are involved in working with tenants, public officials, and patrons through the honing of individual writing and public speaking skills. F, S

440. CFI Certification – Helicopter. 5 credits. Prerequisite: Avit 434. This course provides a study of the role of the responsibilities and techniques involved in teaching a private helicopter instrument flight rating. The course is divided into two major sections: fundamentals of teaching and learning, and instructional methods. The student will complete a hands-on exercise to familiarize themselves with the course content. F, S

441. Instrument Flight Instructor – Helicopter. 4 credits. Prerequisite: Avit 444. Provides a comprehensive background of flight experience in two engine airplanes to meet the proficiency requirements of the FAA Airline 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. F, S, SS

497. Readings in Aviation. 1-3 credits. 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, SS

Biochemistry and Molecular Biology (BCh)

R. Nordlie (Chair), Detke, Knul, Lambeth, Milavetz, Nielsen, Norris, Ray, Shabb and Sukalski

Courses

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

303. Biochemistry Laboratory. 3 credits. Prerequisites: Quantitative Analysis (Mathematics 209) and Organic Chemistry (Chemistry 212, or Chemistry 305, or Chemistry 351, or equivalent). The laboratory (associated with Biochemistry 301) constitutes primarily of chemical analysis of biological materials. Fundamental clinical laboratory procedures employing modern instrumentation are carried out.

Biological and Physical Sciences

Center for Teaching and Learning

B.S.Ed. with a Major in Biological and Physical Sciences

(Combined major and minor)

Required 125 hours including:

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

II. The Center for Teaching and Learning Program in Secondary Education. See page 77.

III. The Following Curriculum:

65 major hours, including:

Biol 101, 102 Introduction to Biology .............................................(6)
Biol 101L, 102L Introduction to Biology Lab ....................................(2)
Biol 341 Cell Biology .....................................................................(3)
Biol 343 Plant Systematics .............................................................(4)
Biol 442 Histology of Organ Systems .............................................(3)
Biol 357 Genetics ........................................................................(3)

4-3 hours from:

Biol 336 Systematic Botany .............................................................(4)
Biol 450 Understanding Veterinary Science ....................................(3)
Biol 375 Invertebrate Zoology .......................................................(4)
Chem 105, 106 General Chemistry I and II .....................................(8)
Biology
(Biol)

A. Fivizzani (Chair), Auerbach, Carmichael, Crawford, Denome, Galowsky, Holloway, Hughes, Kelsich, LaDuke, Lang, Larson, D. Lieberman, M. Lieberman, Newman, Schlosser, Seabloom, Sheridan, Vanderpool, and Wrenn.

The Department of Biology offers concentrated study in Biology and in Fisheries and Wildlife Biology. The objective of these majors is to provide students with a broad knowledge of modern biology through training in each of the major areas of biological science: ecologic, genetic, molecular, morphologic and systematic biology. Specific department requirements for majors and minors are listed below.

FACILITIES

The Department of Biology is housed in Starcher Hall, completed in 1981. In addition to classrooms and 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.

College of Arts and Sciences

B.S. WITH MAJOR IN BIOLOGY

Required 125 hours including:

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

II. One of the following four options:

Option A. General Emphasis

This program is a broad one providing a comprehensive background in biology. It is designed for those students who are undecided on a career specialization and want to be prepared for several possible specific areas.

40 major hours including:

Biol 101, Biol 102...........Introduction to Biology.........................(6)
Biol 101L, 102L............Introduction to Biology Lab...............(2)

Cell and Metabolic Biology (Minimum of 9 hours).................(9)

6-7 hours from:

Biol 341..........................Cell Biology.................................(3)
Biol 341L..........................Cell Biology Lab........................(1)
Biol 357..........................Genetics........................................(3)

3-4 hours from:

Biol 343..........................Plant Physiology.........................(3)
Biol 343L..........................Plant Physiology Lab....................(1)
Biol 367..........................Cytology......................................(3)
Biol 378..........................Developmental Biology..................(3)
Biol 442..........................Physiology of Organ and Systems....(4)

Morphologic and Systematic Biology (Minimum of 8 hours)........(8)

4 hours from:

Biol 336..........................Systematic Botany.........................(4)
Biol 361..........................Plant Morphology........................(4)

4-5 hours from:

Biol 375..........................Invertebrate Zoology......................(4)
Biol 370..........................Vertebrate Zoology........................(3)
Biol 371..........................Anatomy and Adaptation Lab........... (2)

Environmental and Population Biology (Minimum of 7 hours)........(7)

4 hours from:

Biol 332..........................Ecology........................................(3)
Biol 332L..........................Ecology Lab.................................(1)

3-4 hours from:

Biol 333..........................Population Biology.......................(3)
Biol 338..........................Animal Behavior...........................(2)
Biol 338L..........................Animal Behavior Lab......................(2)
Biol 433..........................Aquatic Ecology..........................(3)
Biol 433L..........................Aquatic Ecology Lab....................(1)
Biol 470..........................Biometry.......................................(3)

Biology electives..............................(5-8)

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

Option B. Pre-Health Sciences Emphasis

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

40 major hours, including:

Biol 101, 102...........Introduction to Biology.........................(6)
Biol 101L, 102L............Introduction to Biology Lab...............(2)
Biol 332..........................Ecology........................................(3)
Biol 357..........................Genetics........................................(3)

3-4 hours from:

Biol 341..........................Cell Biology.................................(3)
Biol 341L..........................Cell Biology Lab........................(1)
Biol 378..........................Developmental Biology..................(3)
Biol 442..........................Physiology of Organ and Systems....(4)

3-4 hours from:

Biol 367..........................Cytology......................................(3)
Biol 369..........................Histology.......................................(2)
Biol 369L..........................Histology Lab.................................(2)
Biol 370..........................Vertebrate Zoology.......................(3)
Biol 371..........................Anatomy and Adaptations Lab........... (2)

9-10 hours from:

Biol 235..........................Human Environment.......................(2)
Biol 250..........................Human Sexuality...........................(3)
Biol 333..........................Population Biology.......................(3)
Biol 334..........................Ecology of Animal Parasites............(3)
Biol 338..........................Animal Behavior...........................(2)
Biol 338L..........................Animal Behavior Lab......................(2)
Biol 363..........................Entomology....................................(4)
Biol 364..........................Parasitology.................................(2)
Biol 364L..........................Parasitology Lab..........................(2)
Biol 470..........................Biometry.......................................(3)

Biology electives..............................(8-11)

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

At least 4 upper division courses must be taken with laboratories.

Students in pre-professional health sciences curricula (e.g. medicine, dentistry, optometry) should also consult the specific requirements outlined elsewhere in this catalog.

Option C. Plant Science Emphasis

Students primarily interested in the study of plants should elect this emphasis. It provides the basic training leading to academic teaching and research and for non-academic positions in industry, agriculture, and government.
40 major hours including:
Biol 101, 102. Introduction to Biology ..........(6)
Biol 101L, 102L Introduction to Biology Lab .......(2)
Biol 332. Ecology ........................................(3)
Biol 332L. Ecology Lab .................................(1)
Biol 336. Systematic Botany ......................(4)
Biol 341. Cell Biology ....................................(3)
Biol 341L. Cell Biology Lab .........................(1)
Biol 343. Plant Physiology .........................(3)
Biol 343L. Plant Physiology Lab ....................(1)
Biol 357. Genetics ........................................(4)

Minimum of 7 hours from:
Biol 333. Population Biology .....................(3)
Biol 360. Freshwater Algae .........................(4)
Biol 361. Plant Morphology .........................(4)
Biol 378. Developmental Biology .................(3)
Biol 470. Biometry .....................................(3)

Minimum of 1 hour of
Directed Studies or Seminar in area of advanced Plant Sciences ....(1)
Biology electives ............................................(5)

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

Option D. Zoology Emphasis

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

40 major hours including:
Biol 101, 102. Introduction to Biology ..........(6)
Biol 101L, 102L Introduction to Biology Lab .......(2)
Biol 332. Ecology ........................................(3)
Biol 332L. Ecology Lab .................................(1)
Biol 338. Animal Behavior .........................(2)
Biol 338L. Animal Behavior Lab ....................(1)
Biol 341. Cell Biology ....................................(3)
Biol 341L. Cell Biology Lab .........................(1)
Biol 357. Genetics ........................................(3)

4-5 hours from:
Biol 370. Vertebrate Zoology .......................(3)
Biol 371. Anatomy and Adaptations Lab ............(2)
Biol 375. Invertebrate Zoology ......................(4)

6-7 hours from:
Biol 333. Population Biology .....................(3)
Biol 375. Invertebrate Zoology ......................(4)
Biol 342. Physiology of Organs and Systems .......(4)
Biol 470. Biometry .....................................(3)
Biology electives ............................................(5-7)

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

III. Required in other departments (for all options):
Phys 203, 204. General Physics ....................(8)
Level II proficiency in a foreign language .....(8)
Chem 105. General Chemistry I ......................(4)
Chem 106. General Chemistry II and
Qualitative Analysis ..........................(4)

8-10 hours from:
Chem 212. Organic Chemistry .................(5)
BiCh 301. Biochemistry Lecture .................(3)
or

6-8 hours from:
Math 103 or 104 College Algebra or Finite Math ... (3)
Math 204. Survey of Calculus .....................(3)
or
Math 211, 212. Calculus I and II .................(8)

B.S.E.D. WITH A MAJOR IN BIOLOGY

Required 125 hours including:

I. General Education Requirements, see pages 27-31.
II. The Center for Teaching and Learning program in Secondary Education, (see
page 77).
III. The following Curriculum:
36 major hours, including:
Biol 101, 102. Introduction to Biology ..........(6)
Biol 101L, 102L Introduction to Biology Lab .......(2)
Biol 312. Evolution .....................................(3)

Biol 332. General Ecology ...........................(3)
Biol 332L, 332LL. General Ecology Lab ............(1)
Biol 336. Systematic Botany .........................(4)
Biol 357. Genetics ........................................(3)

4 hours from:
Biol 341. Cell Biology ....................................(3)
Biol 341L. Cell Biology Lab ...........................(1)
Biol 343. Plant Physiology .........................(3)
Biol 343L. Plant Physiology Lab ....................(1)
Biol 442. Physiology of Organs and Systems .......(4)

2-4 hours from:
Biol 361. Plant Morphology .........................(4)
Biol 367. Cytology ........................................(3)
Biol 370. Vertebrate Zoology .........................(3)
Biol 371. Anatomy and Adaptations Lab .........(2)

3-4 hours from:
Biol 373. Vertebrate Natural History .............(3)
Biol 375. Invertebrate Zoology ......................(4)
Biology Electives ............................................(1-4)

No more than one UND biological science course from outside the department
may be petitioned toward completion of this major. No more than one 200 level

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 com-
pleting this program are qualified to obtain positions with state, federal
and private fisheries and wildlife organizations.

Required 125 hours including:

General Education Requirements, see pages 27-31.

II. The Following Curriculum:
52-54 major hours, including:
Biol 101, 102. Introduction to Biology ..........(6)
Biol 101L, 102L. Introduction to Biology Lab .......(2)
Biol 332, 332L. General Ecology and Lab ............(4)
Biol 338. Animal Behavior .........................(2)
Biol 357. Genetics ........................................(3)
Biol 431. Wildlife Management ......................(4)
Biol 438. Fisheries Management ....................(3)
Biol 442. Physiology of Organs and Systems .......(4)
Biol 470. Biometry .....................................(3)

2 hours from:
Biol 338L. Animal Behavior Lab ....................(2)
Biol 371. Anatomy and Adaptations Lab ..........(2)

3 hours from:
Biol 312. Evolution .....................................(3)
Biol 333. Population Biology .........................(3)
Biol 370. Vertebrate Zoology .........................(3)

3-4 hours from:
Biol 363. Entomology .....................................(4)
Biol 364, 364L. Parasitology and Lab ...............(4)
Biol 375. Invertebrate Zoology .......................(4)
Biol 432. Fish and Wildlife Disease ...................(3)

3 hours from:
BiCh 301. Biochemistry Lecture ....................(3)
Biol 341. Cell Biology ....................................(3)

4 hours from:
Biol 336. Systematic Botany .........................(4)
Biol 360. Freshwater Algae ...........................(4)
III. Required in other departments:

Chem 105  General Chemistry I ...............................................................(4)
Chem 106  General Chemistry II ...........................................................(4)
Chem 212  Organic Chemistry ...............................................................(5)
Comm 161  Fundamentals of Public Speaking .........................................(3)

4 hours from: ............................................................................................. (4)
Gen 203  Introduction to Geology ............................................................(4)

6 or 8 hours from: ....................................................................................(6-8)
Math 103  College Algebra .................................................................(3)
Math 104  Finite Mathematics .................................................................(3)
Math 204  Survey of Calculus .................................................................(3)
Math 211, 212  Calculus I and II .................................................................(8)

*One summer of field experience or study at a recognized biological station is required.

MINOR IN BIOLOGY

Required 20 hours, including:

Biol 101, 102  Introduction to Biology ....................................................(6)
Biol 101L, 102L  Introduction to Biology Lab .........................................(2)

12 hours of Advanced Courses with at least one course in each of the three basic areas of Biology (Cellular/Subcellular, Organismal, Population and Community Biology). No more than one UND biological sciences course from outside the department may be petitioned toward completion of this minor.

Courses


100. Principles of Biology, 3 credits. Intended for non-science majors seeking general knowledge and cultural appreciation of contemporary biology. Does not serve as a prerequisite for 101 or any other biology course. Students may not normally receive credit for both 100 and 101-102, F,S.

100L. Principles of Biology Laboratory, 1 credit. Prerequisite or co-requisite: Biol 100. A basic biology laboratory to complement Biol 100. F,S

101, 102. Introduction to Biology, 6 credits. Basic concepts of biology with emphasis on life’s diversity, processes, and man’s place in nature. Broadly designed to satisfy the needs of those pursuing biological and preprofessional curricula. F,S.

101L, 102L. Introduction to Biology Laboratory, 2 credits. Prerequisite or co-requisite: Biol 101, 102. A contemporary biology laboratory to complement Biol 101, 102.

200. Topics in Biology, 1-3 credits. Special topics in biology. Primarily intended for non-majors. May be repeated if topic is different. On demand.

230. Natural History of the Northern Plains, 2 credits. This is a general course for non-majors. Topics include the ecological setting of the Northern Plains, ecological principles, regional communities, migration, winter ecology, courtship and reproduction, regional faunas, practical natural history, and human values in natural history. S/S.

235. Human Environment, 2 credits. A study of the effect of human activity upon the environment in which we live. F

240. Wildlife Conservation, 2 credits. Basic principles and philosophies of wildlife conservation in North America. F

250. Human Sexuality, 1 credit. Introduction to the biological basis for human reproduction and human sexual behavior. S

Advanced Courses

Biology 101, 101L, 102 and 102L or equivalent are prerequisites for all 300 and 400 level courses listed below.

312. Evolution, 3 credits. A study of the processes that have led from the origin of life to the diverse patterns and forms of life observable today. S

322. General Ecology, 3 credits. Prerequisite: course in systemsatics desirable. A study of the relationships of organisms to their biotic and abiotic environments. F

332L. General Ecology Laboratory, 1 credit. Prerequisite or co-requisite: Biol 332. Field projects and laboratory exercises to complement Biol 332. F

333. Population Biology, 3 credits. Principles of population genetics, population ecology, and evolution in plants and animals. S

334. Ecology of Animal Parasites, 3 credits. A study of the population biology of parasites. Host and parasite interactions, and factors that determine size of parasite populations and maintenance and control of host-parasite systems will be analyzed. F

336. Systematic Botany, 4 credits. Structure and classification of vascular plants with emphasis on field studies. F

337. Cooperative Education, 1-8 credits, repeatable to 24 credits. Prerequisites: Sophomore standing and approval of the department chair and acceptance by a supervisory faculty member. A practical work experience with an employer under the direction of a supervisory faculty member. A written final report will be required and will be used as a basis for evaluation. S/U grading only. F,S,S.


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

341. Cell Biology, 3 credits. Prerequisite: Organic Chemistry. Description of processes common to life at the cellular level including: physical, chemical and structural organization, membrane function, nutrition and metabolism, growth, division and genetic regulation of the cell. S

341L. Cell Biology Laboratory, 1 credit. Prerequisite or co-requisite: Biol 341; prerequisite: Organic Chemistry. Laboratory investigation utilizing techniques to study life at the cellular level including chemical composition and characterization, enzyme kinetics, metabolism and membrane transport. S

357. Genetics, 3 credits. An introduction to genetics, with emphasis on classical genetic analysis and the biochemical genetics of gene transmission, expression and regulation. S

360. Freshwater Algae, 4 credits. A survey of the major groups of freshwater and marine algae with particular emphasis on their morphology, physiology, ecology and systematics. F

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. S

369L. Histology Laboratory, 2 credits. Prerequisite or co-requisite: Biol 369. A basic histology laboratory to complement Biol 369. S

370. Vertebrate Zoology, 3 credits. Vertebrate evolution and natural history stressing the relationships of anatomy, ecology, physiology and behavior to one another. F

371. Anatomy and Adapations 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 & conservation. Lectures at UND followed by field work at terrestrial and marine sites in Costa Rica. Semiannually.

373. Vertebrate Natural History, 3 credits. Classification, distribution and habits of vertebrates. S/G

375. Invertebrate Zoology, 4 credits. Structure, functions, development, classification and habits of the invertebrates (exclusive of protozoans and insects). S

376. Developmental Biology, 3 credits. Prerequisite: Biol 357. A study of the diverse developmental systems of animals, plants and microbial organisms. F

403. Seminar, 1 credit. Prerequisite: Major or minor in biology. Discussion of selected topics in advanced biology, a different topic each semester. F,S.

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

427. Ornithology, 3 credits. Classification, identification, morphology, distribution, ecology and life history of birds. S

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

431. Wildlife Management, 4 credits. Theory and methods of management of game populations. 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

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

433L. Aquatic Ecology Laboratory, 1 credit. Co-requisite: Biol 433. Field and laboratory activities to complement Biology 433. F

438. Fisheries Management, 3 credits. Concepts and approaches to the management of freshwater fisheries. Course will include discussion of life histories and requirements of important regional sport fishes. F

442. Physiology of Organs and Systems, 4 credits. Study of the physiology of organs and organ systems in the animal kingdom. F

470. Biometry, 3 credits. Analysis and design of experiments with emphasis upon biological models. Includes descriptive and inferential statistics through analysis of variance and introductory problems of bioassay. S

491. Directed Studies, 1 to 4 credits. May be repeated up to a total of 9 credits. Designed to meet the needs of individual students in the areas of faculty specialization. Consent of instructor. F,S.

498. Research, 1 to 4 credits. Open to qualified majors. Prerequisite: Consent of instructor. Research conducted under the supervision of a faculty member. F

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.
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
   - Mgmt 420 Multinational Management
   - Mkt 325 International Marketing
   - Mkt 425 Current Prospectives in Global Marketing
   - Econ 437* International Economics
   - Econ 438* International Money and Finance
   - Econ 331* Comparative Economic Systems
   *only one of the above economic courses may be used.

2. Completion of 9 hours from the following:
   - Anth 171 Cultural Anthropology
   - Geog 161 World Regional Geography
   - Hist 102 Western Civilization Since 1500
   - PSCI 220 International Politics
   - PSCI 225 Comparative Politics

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

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

Business Administration (BAdm)

BVED 217................. Fundamentals of Management Information Systems .................(4)
BVED 308............... Office Management .....................................................(3)
BVED 320............... Business Communications .........................................(3)
**BVED 444........... Philosophy of Vocational Education ..............................(3)
BVED 470............... Senior Seminar ...........................................................(2)
Comm 161.............. Fundamentals of Public Speaking ......................................(3)
Econ 203.............. Principles of Microeconomics .........................................(3)
Econ 202.............. Principles of Macroeconomics ........................................(3)
Mgmt 300.............. Principles of Management ..............................................(3)
Mkt 301.............. Principles of Marketing ....................................................(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:

- Acct 301, 302: Intermediate Accounting I & II .................................................(8)
- Acct 305: Cost Accounting I .................................................................(3)
- BVED 303: Methods of Teaching Business Subjects .........................................(3)
- BVED 305: Microcomputer Applications for Business ....................................(3)
- BVED 315: Introduction to Records Management ...........................................(3)
- Electives: Approved by Chairperson ..............................................................(6)
**BVED 420........... Methods of Cooperative Office Education Programs .............(1)
**BVED 421........... Coordinating Techniques ....................................................(2)
BVED 431........... Career and Voc Ed. 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:

- Acct 200, 201: Elements of Accounting I & II ...............................................(6)
- Acct 315: Business in the Legal Environment ...............................................(3)
- BVED 101: Keyboarding .................................................................(1)
- BVED 102: Intermediate Keyboarding .........................................................(2)
- BVED 205: Career Planning-Business and Education ......................................(2)
- BVED 217: Fundamentals of Management Information Systems ......................(4)
- BVED 303: Methods of Teaching Business Education—General Methods ..........(1)
- BVED 303: Methods of Teaching Business Education—Entrepreneurship Methods .........(3)
- BVED 320: Business Communications .........................................................(3)
- BVED 380: BDeCA-Student Leadership Practicum ........................................(3)
- BVED 402: Curriculum Development in Vocational Marketing Education ...........(3)
BVED 403: Prof Training Techniques in Business and Education .........................(3)
BVED 421: Coordinating Techniques ...............................................................(2)
BVED 431: Career and Vocational Ed. of Special Needs Students .......................(3)
BVED 444: Philosophy of Vocational Education ...............................................(3)
BVED 469: Methods of Teaching Vocational Marketing Education .....................(2)
Comm 161: Fundamentals of Public Speaking ...................................................(3)
Econ 203: Principles of Microeconomics .........................................................(3)
Econ 202: Principles of Macroeconomics .........................................................(3)
Mgmt 300: Principles of Management .............................................................(3)
Mkt 301: Principles of Marketing ..................................................................(3)
Mkt 311: Personal Selling .............................................................................(3)
Mkt 312: Advertising ...................................................................................(3)
Mkt 315: Retail Management ........................................................................(3)

**Required for office education coordinators in reimbursable vocational programs.

Business and Vocational Education (BVED)

J. Navara (Chair), Langemo, Mohagen, and Prigge

Center for Teaching and Learning

The B.S.Ed. degrees require the completion of the Center for Teaching and Learning Program in Secondary Education. See page 77.

B.S.ED. WITH A MAJOR IN BUSINESS EDUCATION

Required 125 hours, including:

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

- Acct 200, 201: Elements of Accounting I & II ...............................................(6)
- Acct 315: Business in the Legal Environment ...............................................(3)
- BVED 101: Keyboarding .................................................................(1)
- BVED 102: Intermediate Keyboarding .........................................................(2)
- BVED 205: Career Planning-Business and Education ......................................(2)
- BVED 217: Fundamentals of Management Information Systems ......................(4)
- BVED 303: Methods of Teaching Business Education—General Methods ..........(1)
- BVED 303: Methods of Teaching Business Education—Entrepreneurship Methods .........(3)
- BVED 320: Business Communications .........................................................(3)
- BVED 380: BDeCA-Student Leadership Practicum ........................................(3)
- BVED 402: Curriculum Development in Vocational Marketing Education ...........(3)
BVED 403: Prof Training Techniques in Business and Education .........................(3)
BVED 421: Coordinating Techniques ...............................................................(2)
BVED 431: Career and Vocational Ed. of Special Needs Students .......................(3)
BVED 444: Philosophy of Vocational Education ...............................................(3)
BVED 469: Methods of Teaching Vocational Marketing Education .....................(2)
Comm 161: Fundamentals of Public Speaking ...................................................(3)
Econ 203: Principles of Microeconomics .........................................................(3)
Econ 202: Principles of Macroeconomics .........................................................(3)
Mgmt 300: Principles of Management .............................................................(3)
Mkt 301: Principles of Marketing ..................................................................(3)
Mkt 311: Personal Selling .............................................................................(3)
Mkt 312: Advertising ...................................................................................(3)
Mkt 315: Retail Management ........................................................................(3)
Minor in Vocational Marketing Education

20 semester hours, including:

BVED 203.........................Career Planning-Business and Education ...........(2)
BVED 380.........................DECA-Student Leadership Practicum ...............(1)
BVED 402.........................Curriculum Development in Vocational Marketing Education (3)
BVED 403.........................Prof Teaching Techniques in Business and Education ............(3)
BVED 460.........................Methods of Teaching Vocational Marketing Education ....(2)
Mrkt 311.........................Personal Selling .............................................(3)
Mrkt 301.........................Principles of Marketing ....................................(3)

Electives: Selected courses from Business and Vocational Education and/or from the College of Business and Public Administration.

Minor in Office Administration

23 hours, including:

Mgmt 300.........................Principles of Management ................................(3)
BVED 217.........................Fundamentals of Management Information Systems ...............(4)
BVED 308.........................Office Management ...........................................(3)
BVED 315.........................Introduction to Records Management .................(3)
BVED 405.........................Records Management Systems .........................(3)

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

Minor in Secretarial Administration

22 hours, including:

BVED 102.........................Intermediate Keyboarding .................................(2)
BVED 103.........................Advanced Keyboarding ....................................(2)
BVED 206.........................Word Processing Applications ...........................(3)
BVED 217.........................Fundamentals of Management Information Systems ...............(4)
BVED 305.........................Microcomputer Applications for Business ...............(3)
BVED 315.........................Introduction to Records Management .................(3)
BVED 322.........................Executive Secretarial Procedures .........................(3)

Elect five hours from courses in BVED.

Minor in Business Education Teaching

22 hours, including:

BVED 102.........................Intermediate Keyboarding .................................(2)
BVED 103.........................Advanced Keyboarding ....................................(2)
BVED 206.........................Word Processing Applications ...........................(3)
BVED 217.........................Fundamentals of Management Information Systems ...............(4)
BVED 303.........................Methods of Teaching Business Subjects .................(3-5)
BVED 305.........................Microcomputer Applications for Business ...............(3)
BVED 308.........................Office Management .............................................(3)

Elect 3-4 hours in BVED and/or from the College of Business and Public Administration.

College of Business and Public Administration

B.B.A. WITH A MAJOR IN INFORMATION MANAGEMENT

Required 125 hours, including:

I. 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 Information Systems ...............(4)
Comm 161............................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)
Fin 310............................Principles of Financial Management .................(2)
Fin 310L............................Problems in Financial Management .................(1)
Math 204............................Survey of Calculus ...........................................(3)
Mgmt 300.........................Principles of Management ....................................(3)
Mgmt 304............................Production Management .................................(3)
Mgmt 475.........................Strategic Management ...........................................(3)
Mrkt 301............................Principles of Marketing ....................................(3)
PSci 101............................American Government I ...................................(3)
Psy 101............................Introduction to Psychology ....................................(3)

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

BVED 203.........................Career Planning-Business and Education ...........(2)
BVED 380.........................DECA-Student Leadership Practicum ...............(1)
BVED 402.........................Curriculum Development in Vocational Marketing Education (3)
BVED 403.........................Prof Teaching Techniques in Business and Education ............(3)
BVED 460.........................Methods of Teaching Vocational Marketing Education ....(2)
Mrkt 311.........................Personal Selling .............................................(3)
Mrkt 301.........................Principles of Marketing ....................................(3)

III. Information Management Major Courses:

This major is designed to prepare students for positions in information management, office management, office automation, records management, systems analysis and design, telecommunications, and related fields.

BVED 102.........................Intermediate Keyboarding ....................................(2)
BVED 305.........................Microcomputer Applications for Business ...............(3)
BVED 308.........................Office Management .............................................(3)
BVED 309.........................Information Management Systems .........................(3)
BVED 315.........................Introduction to Records Management .................(3)
BVED 320.........................Business Communications ....................................(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

Students who have had prior training in keyboarding and shorthand are eligible for advanced placement. They should consult with a member of the Business and Vocational Education staff to determine appropriate course level.

101. Keyboarding, 1 credit. A half-semester course offering basic instruction and practice in learning to use proper fingering for touch operation of the alphameric keyboard, developing techniques and manipulative skills for operating the keyboard of data/word processing equipment, microcomputers, or computer terminals. F,S

102. Intermediate Keyboarding, 2 credits. Development of speed and accuracy, letter writing, manuscripts, and tabulation techniques. F

103. Advanced Keyboarding, 2 credits. Prerequisites: BVED 102 or equivalent. Skill development, rough drafts, statistical keyboarding, preparation of manuscripts, reports, legal forms, and display typing. S

105. Beginning Shorthand, 3 credits. Mastery of the principles for reading and writing Gregg shorthand, introduction to dictation, and intensive English review. F

201. Advanced Dictation & Transcription, 3 credits. Prerequisites: BVED 102 and 105, or equivalent. Principles of Gregg shorthand in intensive review, followed by dictation and transcription. This course may count as Upper Level credit if it is completed in the junior or senior year. S

205. Career Planning in Business and Education, 2 credits. An orientation to an exploration of business and marketing education careers. Career interest assessments, business and education career studies, and individual career planning projects are included. F,S

206. Word Processing Applications, 3 credits. Prerequisites: BVED 102, 103. Orientation to word processing concepts, hands-on applications, and skill development on dictation/transcription equipment. F


303. Methods of Teaching Business Education, 1 to 5 credits. Five areas of teaching methods comprise the course: (a) general methods, (b) keyboarding methods, (c) local area networking methods, (d) accounting/bookkeeping methods, (e) entrepreneurship methods; each to be taught for an equal number of weeks and each to be one hour credit. The general methods area and entrepreneurship methods area are required of all business education and vocational marketing education students. Selection of other areas is determined by curricula in which students are enrolled. 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, 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

320. Business Communications, 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

322. Executive Secretarial Procedures, 3 credits. Prerequisite: BVED 206. Advanced word processing concepts and applications as well as desktop publishing, computerized shorthand, and other technologies. F

337. Cooperative Education, 1-6 credits, repeatable to 12 credits. Prerequisites: Overall GPA 2.5; approval of the Director of BVED Cooperative Education. On-the-job compensated work experience in various areas related to Information Management, Marketing Education, and Business Education. S-U grading only. F,S,SS
Center for Teaching and Learning

Center for Teaching and Learning (CTL)

M. Harris (Dean), Ahler, Backes, Baker/Big Back, Barrenette, Bass, Chalmers, Dahl, Franklin, Fuller, Gershman, Guy, Hanhan, Hanley, Hoff, Hoover, Kelley, King, Knowlton, Landry, Laycock, Lemon, Nelson, Olsen, Olson, Piper, Reid, Rice, Strackbein, Strathe, Thomas, Tyree, Uhlenberg, and Williams

B.S. ED. WITH MAJOR IN ELEMENTARY EDUCATION

Robert King, Chair

Required 125 hours, including:

I. General University Graduation Requirements, see pages 27-31.

II. General Graduation Requirements.

English Composition — 6 credits
(English 101, 102, or 209)

Social Sciences — 12 credits
From 3 departments including Psychology 251 or Horse Economics 252 (but not both); 9 additional credits of University General Education courses from Anthropology, Economics, Geography, Political Science, Psychology (except 251), Sociology, or Indian Studies.

Arts and Humanities — 15 credits
From 3 departments including 9 credits from English, History, or Humanities I and II, including courses from at least two departments; 3 credits of studio visual arts (VA 100, 120, 130, 151, 173, 260) and/or performance classes from music (Music 105, 260, 261, 262, 263, 264, 265, 269), Theater (TA 200, 225, 227, 229), dance (HPER 101 Jazz or Modern Dance); 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 211.

Students must have coursework in the biological, physical, and earth sciences. This coursework may be selected from the General Education course list or from a combination of such courses and CTL 440 science courses. Note that CTL 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-CTL), 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:

CTL 330 Introduction to Teaching and Learning (3)
Math 277 Mathematics for Elementary School Teachers (3)
CTI 410 Comm: Children’s or Young Adult Literature (3)
CTI 315 Education of Exceptional Student

TEAM: CTL 410 Communication: Reading/
Lang. Arts in the Elem. School (3)
CTL 420 Creative Expres.: Creat. Writing/Writing in the Content Areas (3)
CTL 430 Human Relations: Social Studies in the Elementary School (3)
CTL 440 Mathematics and Science: Math in the Elementary School (2)
CTL 440 Mathematics and Science: Science in the Elementary School (2)
CTL 486 Field Experience (2)
Advanced Courses (TEAM is a prerequisite)
CTL 410 Communication: Primary, Intermediate, or Corrective Reading (3)

380. DECA—Student Leadership Practicum, 1 credit. Repeatable to 3 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,S

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,S

405. Records Management Systems, 3 credits. Prerequisite: BVED 315. Application of records management fundamentals to the design and management of records creation, maintenance, and disposal systems for paper, film, and computer records; cost and systems analysis; records management computer-aided retrieval; micrographics systems; forms management systems; optical and video systems; emerging concepts. S

409. Data Resource Management, 3 credits. Prerequisite: BVED 309. Stresses design and utilization of databases, emphasis on both minicomputer and microcomputer database development environments, integrity and security issues. Project oriented. S

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

414. Office Systems Design, 3 credits. Prerequisites: BVED 308, 309 and 315. Design of new or improved office information processing systems. Heavy emphasis on the development of micro and minicomputer information systems including analysis, design, development, implementation, technical manuals, and training. S

420. Methods of Cooperative Office Education Programs, 1 credit. Co-requisite: BVED 303. Vocational occupational office programs in high school and post-secondary institutions: selecting and setting up office simulation programs; related class content and activities; project and individualized instruction; evaluation and grading; supplementary materials; equipment and facilities; youth clubs; adult programs; college programs; and youth with special needs. S

421. Coordinating Techniques, 2 credits. Guidance, selection, and placing students in training stations; assisting in job adjustment process; developing training agreements and training plans; evaluation; follow-up; state reports; advisory committees; public relations; labor laws; program justifications; organization and supervision of cooperative programs. S

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


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, SU 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. SU only. F,S
B.S.ED. WITH COMBINED MAJOR IN ELEMENTARY EDUCATION AND EARLY CHILDHOOD

Sara Hanhan, Chair

Required 125 hours, including:
I. General Education Requirements, see pages 27-31.
II. CTL General Graduation Requirements, see page 55.
III. Elementary Education Curriculum as listed above.
IV. The following Early Childhood Education Curriculum:

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>CTL 310</td>
<td>Introduction to Early Childhood Education</td>
<td>(3)</td>
</tr>
<tr>
<td>CTL 311</td>
<td>Human Relations: Classroom Management</td>
<td>(3)</td>
</tr>
<tr>
<td>CTL 313</td>
<td>Young Children’s Language and Thought</td>
<td>(3)</td>
</tr>
<tr>
<td>CTL 314</td>
<td>Social and Emotional Lives of Young Children</td>
<td>(3)</td>
</tr>
<tr>
<td>CTL 450</td>
<td>Comparative Approaches to the Education of Young Children</td>
<td>(3)</td>
</tr>
<tr>
<td>CTL 451A</td>
<td>Methods and Materials: Pre-Kindergarten</td>
<td>(3)</td>
</tr>
<tr>
<td>CTL 451B</td>
<td>Pre-Kindergarten Seminar</td>
<td>(2)</td>
</tr>
<tr>
<td>CTL 452</td>
<td>Developing Personal Teaching Styles</td>
<td>(1)</td>
</tr>
<tr>
<td>CTL 453A</td>
<td>Methods and Materials: Kindergarten</td>
<td>(2)</td>
</tr>
<tr>
<td>CTL 486A</td>
<td>Field Experience in Early Childhood Education</td>
<td>(1)</td>
</tr>
<tr>
<td>CTL 487A</td>
<td>Student Teaching: Pre-Kindergarten</td>
<td>(9)</td>
</tr>
</tbody>
</table>

One elective course which deals with communication with adults, to be selected with advisor approval.

Total credits 37-39.

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 the 17 hours of kindergarten coursework. In addition, they are required to take a minimum of 6 credits of kindergarten student teaching.

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>CTL 310</td>
<td>Introduction to Early Childhood Education</td>
<td>(3)</td>
</tr>
<tr>
<td>CTL 313</td>
<td>Young Children’s Language and Thought</td>
<td>(3)</td>
</tr>
<tr>
<td>CTL 314</td>
<td>Social and Emotional Lives of Young Children</td>
<td>(3)</td>
</tr>
<tr>
<td>CTL 453A</td>
<td>Methods and Materials: Kindergarten</td>
<td>(2)</td>
</tr>
</tbody>
</table>

B.S. ED. WITH COMBINED MAJOR IN ELEMENTARY EDUCATION AND MATHEMATICS

Advisor: Mavis Kelley

Required 125 hours, including:
I. General Education Requirements, see pages 27-31.
II. CTL General Graduation Requirements, see page 55.
III. Elementary Education Curriculum as listed above.
IV. The Following Mathematics Curriculum:

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Math 105</td>
<td>College Algebra or equivalent</td>
<td>(3)</td>
</tr>
<tr>
<td>Math 377</td>
<td>Geometry for Elementary Teacher</td>
<td>(2)</td>
</tr>
<tr>
<td>CTL 440</td>
<td>Math/Science Cluster: Math Electives</td>
<td>(6)</td>
</tr>
<tr>
<td>CTL 495</td>
<td>Special Projects: Math Practicum</td>
<td>(3)</td>
</tr>
<tr>
<td>BASIC Computer Programming</td>
<td>(2)</td>
<td></td>
</tr>
<tr>
<td>Math Electives (CTL 440 or Math Electives)</td>
<td>(10)</td>
<td></td>
</tr>
</tbody>
</table>

B.S.ED WITH COMBINED MAJOR IN ELEMENTARY EDUCATION AND MUSIC

Advisor: Barbara Lewis

Required 125 hours, including:
I. General Education Requirements, see pages 27-31.
II. CTL General Graduation Requirements, see page 55.
III. Elementary Education Curriculum as listed above.
IV. The Following Music Curriculum:

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mus 111, 112, 211, 212</td>
<td>Theory, Theory, Theory, Theory</td>
<td>(12)</td>
</tr>
<tr>
<td>Mus 113, 114, 213, 214</td>
<td>ET/SS, ET/SS, ET/SS, ET/SS</td>
<td>(12)</td>
</tr>
<tr>
<td>Mus 224</td>
<td>Popular and Classical / Music of the World</td>
<td>(3)</td>
</tr>
<tr>
<td>Mus 230</td>
<td>Basic Conducting</td>
<td>(2)</td>
</tr>
<tr>
<td>Mus 311, 322</td>
<td>Music History Survey, II, III, IV</td>
<td>(6)</td>
</tr>
<tr>
<td>Mus 340</td>
<td>Music History Survey, II, III, IV</td>
<td>(6)</td>
</tr>
<tr>
<td>Mus 341</td>
<td>Basic Conducting</td>
<td>(2)</td>
</tr>
<tr>
<td>Mus 131 or 132</td>
<td>Voice or Piano Class, Voice or Piano Class</td>
<td>(1)</td>
</tr>
<tr>
<td>CTL 420E</td>
<td>Methods &amp; Materials in Elementary Music</td>
<td>(3)</td>
</tr>
</tbody>
</table>

Electives in Music                                                    | (3)     |
**B.S. ED. WITH COMBINED MAJOR IN ELEMENTARY EDUCATION AND PHYSICAL EDUCATION**

Advisor: William Bolonchuk

Required 125 hours, including:

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

II. CTL General Graduation Requirements, see page 55.

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>HPER 107</td>
<td>Introduction to Physical Education</td>
<td>(3)</td>
</tr>
<tr>
<td>HPER 205</td>
<td>Physical Education for the Elementary Grades</td>
<td>(3)</td>
</tr>
<tr>
<td>HPER 223</td>
<td>Movement Performance Analysis Labs</td>
<td>(6)</td>
</tr>
<tr>
<td>HPER 310</td>
<td>First Aid and CPR</td>
<td>(2)</td>
</tr>
<tr>
<td>HPER 323/324L</td>
<td>Introduction to Teaching in Physical Education</td>
<td>(4)</td>
</tr>
<tr>
<td>HPER 355</td>
<td>Applied Motor Development</td>
<td>(3)</td>
</tr>
<tr>
<td>HPER 403</td>
<td>School Health Education</td>
<td>(2)</td>
</tr>
<tr>
<td>HPER 404</td>
<td>Adapted Activities Program</td>
<td>(2)</td>
</tr>
<tr>
<td>HPER 406/406L</td>
<td>Strategies for Teaching Physical Education</td>
<td>(4)</td>
</tr>
<tr>
<td>HPER 487</td>
<td>Senior Teaching Seminar</td>
<td>(2)</td>
</tr>
</tbody>
</table>

Total: 31 credit hours

**B.S. ED. WITH COMBINED MAJOR IN ELEMENTARY EDUCATION AND VISUAL ARTS**

Advisor: Ellen Auyong

Required 125 hours, including:

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

II. CTL General Graduation Requirements, see page 55.

III. Elementary Education Curriculum as listed above.

IV. The Following Visual Arts Curriculum:

Minimum requirement of 12 credits of VA History including VA 210 and 211.

Minimum requirement of 36 credits of VA practicum (studio) courses.

Core Requirements:

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>VA 108</td>
<td>Hand and Power Tool Safety</td>
<td>(1)</td>
</tr>
<tr>
<td>VA 130, 131</td>
<td>Drawing I, II</td>
<td>(6)</td>
</tr>
<tr>
<td>VA 173, 174</td>
<td>Design I, Two-Dimensional</td>
<td>(6)</td>
</tr>
<tr>
<td>VA 210</td>
<td>Art History Survey: Paleolithic to Renaissance</td>
<td>(3)</td>
</tr>
<tr>
<td>VA 241</td>
<td>Art History Survey: Renaissance to Present</td>
<td>(3)</td>
</tr>
</tbody>
</table>

Plus at least 9 credits in the following:

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>VA 204, 205</td>
<td>Jewelrymaking I, II</td>
<td>(3, 3)</td>
</tr>
<tr>
<td>VA 220, 221</td>
<td>Painting I, II</td>
<td>(3, 3)</td>
</tr>
<tr>
<td>VA 230, 231</td>
<td>Figure Drawing I, II</td>
<td>(3, 3)</td>
</tr>
<tr>
<td>VA 240</td>
<td>Printmaking I, Intaglio</td>
<td>(3)</td>
</tr>
<tr>
<td>VA 241</td>
<td>Printmaking I, Relief and Serigraphy</td>
<td>(3)</td>
</tr>
<tr>
<td>VA 253</td>
<td>Ceramics I, II</td>
<td>(3)</td>
</tr>
<tr>
<td>VA 258</td>
<td>Slide Photography</td>
<td>(3)</td>
</tr>
<tr>
<td>VA 274</td>
<td>Calligraphy</td>
<td>(3)</td>
</tr>
<tr>
<td>VA 276</td>
<td>Surface Design on Fabric</td>
<td>(3)</td>
</tr>
<tr>
<td>VA 277</td>
<td>Fibers I</td>
<td>(3)</td>
</tr>
</tbody>
</table>

Plus a MINIMUM of 20 credits in courses selected from the following list:

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>VA 302, 303</td>
<td>Sculpture III, IV</td>
<td>(3, 3)</td>
</tr>
<tr>
<td>VA 304, 305</td>
<td>Jewelry &amp; Small</td>
<td>(3, 3)</td>
</tr>
<tr>
<td>VA 322, 323</td>
<td>Painting III, IV</td>
<td>(3, 3)</td>
</tr>
<tr>
<td>VA 332, 333</td>
<td>Figure Drawing III, IV</td>
<td>(3, 3)</td>
</tr>
<tr>
<td>VA 340</td>
<td>Printmaking II, Lithography</td>
<td>(3)</td>
</tr>
<tr>
<td>VA 341</td>
<td>Printmaking III, Plate &amp; Color Lithography</td>
<td>(3)</td>
</tr>
<tr>
<td>VA 342, 343</td>
<td>Printmaking II, III, Intaglio</td>
<td>(3, 3)</td>
</tr>
<tr>
<td>VA 344, 345</td>
<td>Printmaking II, III, Serigraphy</td>
<td>(3, 3)</td>
</tr>
<tr>
<td>VA 351</td>
<td>Ceramics II, Sculpture</td>
<td>(3)</td>
</tr>
<tr>
<td>VA 353</td>
<td>Ceramics III, Throwing</td>
<td>(3)</td>
</tr>
<tr>
<td>VA 355</td>
<td>Clay &amp; Glasses</td>
<td>(3)</td>
</tr>
<tr>
<td>VA 361</td>
<td>Concepts in Visual Arts Education</td>
<td>(2)</td>
</tr>
<tr>
<td>VA 365, 366</td>
<td>Photography Studio I, II</td>
<td>(3, 3)</td>
</tr>
<tr>
<td>VA 371, 372, 373</td>
<td>Fibers I, II, III, IV</td>
<td>(3, 3, 3)</td>
</tr>
<tr>
<td>VA 375</td>
<td>Brush Lettering &amp; Sign Painting</td>
<td>(3)</td>
</tr>
<tr>
<td>VA 379</td>
<td>Color Theory</td>
<td>(3)</td>
</tr>
<tr>
<td>VA 391A, 391B</td>
<td>Special Topics</td>
<td>(1-4)</td>
</tr>
<tr>
<td>VA 410</td>
<td>Art History: Selected Topics</td>
<td>(1-4)</td>
</tr>
<tr>
<td>VA 412</td>
<td>Art History: 20th Century (to 1930s)</td>
<td>(3)</td>
</tr>
<tr>
<td>VA 413</td>
<td>Art History: 20th Century (1930s to present)</td>
<td>(3)</td>
</tr>
<tr>
<td>VA 490</td>
<td>Special Projects/Independent Research</td>
<td>(1-12)</td>
</tr>
</tbody>
</table>

*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.*

**Middle/Junior High School Education**

**B.S. ED. WITH MAJOR IN MIDDLE/JUNIOR HIGH SCHOOL EDUCATION**

Advisor: Milton Hoff

Required 125 hours, including:

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

II. CTL General Graduation Requirements, see page 55.

III. The Following Middle/Junior High School Education (Grades 5-9) Curriculum (45 credits):

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>CTL 350</td>
<td>Development and Education of Adolescents</td>
<td>(3)</td>
</tr>
<tr>
<td>CTL 341</td>
<td>Curriculum Development and Instruction</td>
<td>(3)</td>
</tr>
<tr>
<td>CTL 400</td>
<td>Methods and Materials</td>
<td>(3)</td>
</tr>
<tr>
<td>CTL 410</td>
<td>Communication: Reading in the Content Areas</td>
<td>(2)</td>
</tr>
<tr>
<td>CTL 410</td>
<td>Communication: Reading and Language Arts (TEAM)</td>
<td>(4)</td>
</tr>
<tr>
<td>CTL 420</td>
<td>Creative Expression: Creative Arts (TEAM)</td>
<td>(3)</td>
</tr>
<tr>
<td>CTL 430</td>
<td>Human Relations: Social Studies (TEAM)</td>
<td>(3)</td>
</tr>
<tr>
<td>CTL 440</td>
<td>Math &amp; Science: Math in the Elementary School (TEAM)</td>
<td>(2)</td>
</tr>
<tr>
<td>CTL 440</td>
<td>Math &amp; Science: Science in the Elementary School (TEAM)</td>
<td>(2)</td>
</tr>
<tr>
<td>CTL 430</td>
<td>Multicultural Education</td>
<td>(2)</td>
</tr>
<tr>
<td>CTL 486</td>
<td>Field Experience: Pre-Student Teaching</td>
<td>(2)</td>
</tr>
<tr>
<td>CTL 487</td>
<td>Student Teaching in Middle/Junior High School</td>
<td>(16)</td>
</tr>
</tbody>
</table>

IV. Subject Matter Courses (45 credit minimum):

Students must select a minimum of 45 credits of work in two subject areas that are normally included in the Middle/Junior High School Curriculum (i.e. science, mathematics, physical education, etc.). The 45 credits may be divided more or less evenly between the two areas (i.e. 23 credits in English and 22 credits in history) or they may be focused more heavily in one area (27 credits in English and 18 in history) but must include at least 18 credits in each area in order to meet certification requirements. One-half of the credits in each area must have a catalog identification number of 200 or above (an exception may be granted to students pursuing a very broad preparation in science).

**Secondary Education**

Secondary Education Certification Preparation Sequence

Course Sequence (29 credits minimum):

Pre-admission:

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>CTL 200</td>
<td>Exploring Teaching</td>
<td>(2)</td>
</tr>
<tr>
<td>CTL 286</td>
<td>Field Experience</td>
<td>(1)</td>
</tr>
</tbody>
</table>

Admission to the Center for Teaching and Learning is required for enrollment in all of the following courses:

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>CTL 380</td>
<td>Curriculum Development and Instruction</td>
<td>(3)</td>
</tr>
<tr>
<td>CTL 390</td>
<td>Elective Special Interest Topics</td>
<td>(1-3)</td>
</tr>
<tr>
<td>CTL 350</td>
<td>Development and Education of the Adolescent</td>
<td>(3)</td>
</tr>
<tr>
<td>CTL 380</td>
<td>Multicultural Education</td>
<td>(3)</td>
</tr>
<tr>
<td>GR 121</td>
<td>Introduction to Indian Studies</td>
<td>(3)</td>
</tr>
<tr>
<td>CTL 386</td>
<td>Field Experience, elective</td>
<td>(1)</td>
</tr>
<tr>
<td>CTL 400</td>
<td>Methods and Materials</td>
<td>(3)</td>
</tr>
<tr>
<td>CTL 460</td>
<td>Microteaching</td>
<td>(2)</td>
</tr>
<tr>
<td>CTL 486</td>
<td>Field Experience</td>
<td>(1)</td>
</tr>
<tr>
<td>CTL 495</td>
<td>Elective: Independent Study/Secondary Education</td>
<td>(1-2)</td>
</tr>
<tr>
<td>CTL 487</td>
<td>Student Teaching</td>
<td>(10-16)</td>
</tr>
</tbody>
</table>

**Special Education**

MINOR IN SPECIAL EDUCATION

Due to the mandates by the North Dakota Department of Public Instruction, the minor in special education has been reconfigured to focus on mild disabilities, including the areas of learning disabilities, emotional/behavioral disorders, and mentally handicapped. Students can obtain important coursework and sequence information in the Special Education Office, Room 305 in the Education Building.

**Courses**

**Center for Teaching and Learning**

258. Library Orientation. 1 credit. An introduction to the Dewey Decimal and Library of Congress Classification Systems, the on-line catalog, periodical indexes, basic references, and bibliographies. Aims to acquaint the student with the facilities and resources of libraries. E&S
Elementary Education  

301. Center Seminar. 1-3 credits each semester. Required S-U grading. Small group seminars under the leadership of an instructor or team of instructors who serve as advisers for seminar students. Students have the opportunity to discuss, experiment, explore ideas, techniques, and concepts related to teacher preparation, identify and clarify personal and professional needs, and to integrate their learning experiences.

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

410. Communication. 1-16 credits. (May be repeated.) A broad examination of the objectives and materials of communication with special emphasis upon those approaches involved in effectively developing knowledge and skills of reading, writing, speaking and listening. Special emphasis given to oral and written language development. Typical offerings include Reading/Language Arts in the Elementary School, Reading and Writing Development of Bilingual and Second Language Children, Children’s Literature, Young Adult Literature, Corrective Reading, Reading in the Content Areas, Advanced Lower Primary Reading, Advanced Intermediate Language Arts, Reading/Language Arts in the Elementary School is a prerequisite to Corrective Reading, Advanced Lower Primary Reading and Advanced Intermediate Language Arts.

410C. Introduction to Children’s Literature. 3 credits. A survey of children’s literature including the application of established literary criteria to imaginative writing and biography and methods of meeting needs and interests of children through literature. F,S

410D. Building Media Collections. 3 credits. A study of the principles and practices in building and maintaining collections for school media centers with an emphasis on criteria for evaluating print and nonprint materials and the use of appropriate bibliographies. S

420. Creative Expression. 1-16 credits. (May be repeated.) A broad examination of the objectives, methods and materials of the creative arts with special focus upon those strategies for effectively developing skills of creative expression. Major consideration is given to creative expression in literature, art, drama, and music. Students will actively participate in the arts as well as develop a repertoire of teaching skills in the arts. Typical offerings include: Visual Arts in the Elementary School, Classroom Management, Multicultural Education, How Children Learn, Authentic Crafts to Enrich Social Studies, and Home School Relations. All TEAM courses are prerequisite to Multicultural Education and Classroom Management.


486. Field Experience. 1-4 credits. (Repeatable to 16.) Prerequisite: Permission of program chair. Supervised tutorial of 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

489. Senior Project in Early Childhood Education. 2-4 credits. During the last year of study, each Early Childhood major completes a self-initiated project or independent study. The focus of the project may be an in-depth study of a material previously studied or beginning exploration of a new idea. Students enrolled in this course meet with faculty to discuss the process of exploration and to share discoveries. F,S

495. Independent Study in Early Childhood Education. 1-4 credits, repeatable to 8. This course is designed for the interested student’s pursuit of an area of study not offered through regular courses. In addition, students can continue to pursue subject matter covered in courses in greater depth.

498. Special Projects. 1-8 credits. Course number reserved for committee approved proposals, independent study, special colloquia, or experimental courses.

Foundations of Education

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

Middle/Junior High School Education

380. Development and Education of Adolescents. 3 credits. A comprehensive examination of the characteristics and behavior of the early adolescent student with implications for curriculum and instruction in middle/junior high schools. Transition from childhood to adolescence, including cognitive development, self-concept, psychological changes, social needs and values, and values and attitudes of adolescents. This course will provide an understanding of the wide range of differences in developmental patterns of children and the influence of economic, sociological and psychological factors in development. A practicum will be required as part of this course.

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

CTL 313. Young Children's Language and Thought. 3 credits. Prerequisite: Elementary or Early Childhood major. This course examines both typical and atypical development of language and thought in children 0-8, as a basis for understanding and working with young children in educational settings. F

CTL 314. Social and Emotional Lives of Young Children. 3 credits. Prerequisite: Elementary or Early Childhood major. This course examines both typical and atypical social and emotional development in children ages 0-8 as a basis for understanding and working with young children in educational settings. S

CTL 450. Comparative Approaches to the Education of Young Children. 3 credits. Prerequisite: CTL 310. A review and comparison of various approaches to the education of young children. Early childhood models reviewed include: traditional nursery school, Headstart, open education, Montessori, Piagetian approaches, behavioral analysis, and Disrotar. S

CTL 451A. Methods and Materials: Pre-Kindergarten. 3 credits. Pre or Corequisites: CTL 310, 313, 314. Exploration of curriculum, methods and materials for use in pre-kindergarten educational settings. Includes selection of materials, creative environments, and planning for the individual needs of children within a group setting. F

CTL 451B. Pre-Kindergarten Seminar. 2 credits. Prerequisite: CTL 451A, 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

CTL 452. Developing Personal Teaching Styles. 1 credit. Prerequisite: Departmental permission. Corequisite: CTL 487, 451B. A tutorial, taken in conjunction with pre-kindergarten student teaching, in which personal styles of teaching are identified and developed in a manner conducive to exemplary practice in early childhood educational settings. S-U grading only. F,S

CTL 453A. Methods and Materials: Kindergarten. 2 credits. Prerequisite: CTL 310, 312, 313, 314. Exploration of curriculum, methods, and materials for use in kindergarten settings. S

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

491. Senior Project in Early Childhood Education. 2-4 credits. During the last year of study, each Early Childhood major completes a self-initiated project or independent study. The focus of the project may be an in-depth study of a material previously studied or beginning exploration of a new idea. Students enrolled in this course meet with faculty to discuss the process of exploration and to share discoveries. F,S

495. Independent Study in Early Childhood Education. 1-4 credits, repeatable to 8. This course is designed for the interested student’s pursuit of an area of study not offered through regular courses. In addition, students can continue to pursue subject matter covered in courses in greater depth.

498. Special Projects. 1-8 credits. Course number reserved for committee approved proposals, independent study, special colloquia, or experimental courses.

Published by the University of North Dakota

Page 78
Chemical Engineering

ChE (Chemical Engineering)

Ludlow (Chair), Erjavec, Hasan, and Owens

Graduates from this program are well qualified to practice the profession of chemical engineering in a broad spectrum of industries including energy, chemicals, petroleum, plastics, synthetic fibers, and food. They may be engaged in research, teaching, development, production, sales, or project engineering, and frequently enter engineering management later in their careers. They also are well qualified to seek additional professional or graduate education.

School of Engineering and Mines

B.S. IN CHEMICAL ENGINEERING

Required 136 hours, including:

I. General Education Requirements, see pages 27-31 and page 43-46.

II. The Following Curriculum:

Freshman Year

First Semester

Second Semester

Chem 102 Introduction to Chemical Engineering

Chem 151 Fundamental Concepts of Chemistry

Chem 153 Analytical Chemistry

Chem 161 Quantitative Analysis Laboratory (1)

Chem 162 Qualitative Analysis Laboratory (1)

Engl 101 Composition I (3)

Engr 101 Engineering Graphics (2)

Engr 201 Fundamentals of Computer Programming (2)

Math 211, 212 Calculus I, II, III (4)

Phys 205 General Physics I (4)

Social Science (see page xx) (3)
Sophomore Year

ChE 201............. Stoichiometry ............................................. (3)
ChE 222............. ChE Laboratory I ........................................ (2)
Chem 351.......... Organic Chemistry ...................................... (5)
Chem 352.......... Organic Chemistry II ..................................... (3)
ChE 300............. Analytical Mechanics (Statics) . .............. (2)
Engl 209.......... Technical and Business Writing ......... (3)
Math 213.......... Calculus III .................................................. (4)
Math 351.......... Elem. Differential Equations .............. (3)
Phys 206 .......... General Physics II ........................................ (4)
Arts and Humanities (See pg. xx) .................................. (3)

Junior Year

ChE 301............. Transport Phenomena .................................. (4)
ChE 306............. Unit Operations in ChE ................................... (3)
ChE 331, 332 ChE Laboratory II, III ..................................... (2)
ChE 333............. Basic Experimental Strategies ......................... (1)
ChE 405............. Mass Transfer Operations .................. (3)
Chem 450............. Physical Chemistry I .............................. (3)
Chem 451............. Physical Chemistry II ............................... (3)
CE 301............. Mechanics of Materials .................... (3)
Econ 201............. Principles of Microeconomics .............. (3)
EE 206............. EE Fundamentals ......................................... (3)
Phil 370............. M Q & P: Ethics in Engineering .......... (3)
*Technical Elective I .................................................. (3)

Senior Year

ChE 403............. Chemical Engineering Thermodynamics .......... (3)
ChE 408............. Chemical Process Dynamics ......................... (3)
ChE 412............. ChE Plant Design ........................................ (6)
ChE 421............. ChE Reactor Design ........................................ (3)
EM 460............. Engineering Economy ...................................... (3)
ChE 405............. Chemical Process Dynamics ......................... (3)
ChE 431............. ChE Laboratory IV ........................................ (3)
*Chemical Engineering Elective ................................... (3)
*Technical Elective II .................................................. (3)

*Lists of courses that satisfy the requirements for the various electives are available in the department office.

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.

201. Stoichiometry, 3 credits. Prerequisite: Chem 106* or 152*. Introductory principles of stoichiometry with emphasis directed to material and energy balances involved in chemical processes.

232. Chemical Engineering Laboratory I, 1 credit. 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 351 (or concurrent enrollment) and Physics 206*. An analytical study of the transport of momentum, energy and mass; derivation and utilization of the differential equations of change.

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

331. Chemical Engineering Laboratory II, 2 credits. Prerequisites: ChE 301 and Chem 450 or concurrent enrollment. Experiments illustrating physico-chemical principles and transport phenomena.

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.

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-S

403. Chemical Engineering Thermodynamics, 3 credits. Prerequisites: ChE 201* and Chem 450 and 451 or concurrent enrollment. Thermodynamics applied to chemical engineering with emphasis on computational work, including thermodynamic laws, chemical equilibria and pressure-volume-temperature relationships.

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.

408. Chemical Process Dynamics, 3 credits. Prerequisite: Math 351. Dynamics and control of chemical processes and of systems.

412. Chemical Engineering Plant Design, 6 credits. Prerequisites: ChE 306, 403, 405 and completed or concurrent enrollment in 421 and EM 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.


431. Chemical Engineering Laboratory IV, 3 credits. Prerequisites: ChE 306 and 405 or concurrent enrollment in 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)

R. Balitsberger (Chair), Abrahamson, Ballintine, Hoffmann, Jensen, Mallik, Pierce, Smoliakova, Stahl, Thomasson, Tilotta, and Woolsey

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

Students who wish to pursue the B.S. degree in chemistry must complete the following program leading to the Bachelor of Science in Chemistry in the College of Arts and Sciences. 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 in a major in chemistry. The specific course requirements for each of these majors programs are listed below.

Graduate Study

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

College of Arts and Sciences

B.S. IN CHEMISTRY

Required 125 hours, including:

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

II. The Following Curriculum:

Major Requirements—43 hours including:

FRESHMAN YEAR

Fall Spring
Chem 151.......Fundamental Concepts of Chemistry ..........(3)
Chem 153.......Analytical Chemistry ..............................(3)
Chem 161.......Quantitative Analysis Laboratory ............(1)
Chem 162.......Qualitative Analysis Laboratory ..............(1)
Engl 101.......Technical and Business Writing ..............(3)
Engl 209.......Technical and Business Writing ..............(3)
Math 211.......Calculus I .............................................(4)
Math 212.......Calculus II ............................................(4)
Chemistry

B.S. WITH MAJOR IN CHEMISTRY
Required 125 hours, including:
I. General Education Requirements, see pages 27-31.
II. The Following Curriculum:
  Major Requirements — 33 hours including:
<table>
<thead>
<tr>
<th>Fall</th>
<th>Spring</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chem 151</td>
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</tr>
<tr>
<td>Chem 153</td>
<td>Analytical Chemistry</td>
</tr>
<tr>
<td>Chem 161</td>
<td>Qualitative Analysis Laboratory</td>
</tr>
<tr>
<td>Chem 162</td>
<td>Qualitative Analysis Laboratory</td>
</tr>
<tr>
<td>Engl 101</td>
<td>Composition 101</td>
</tr>
<tr>
<td>Engl 209</td>
<td>Technical and Business Writing</td>
</tr>
<tr>
<td>Math 211, 212</td>
<td>Calculus I, II</td>
</tr>
<tr>
<td>Humanities or Social Science Elective</td>
<td>(5)</td>
</tr>
<tr>
<td>Total Hours</td>
<td>16</td>
</tr>
</tbody>
</table>

OR

| Chem 105 | General Chemistry | (4) |

SOPHOMORE YEAR

| Chem 253 | Inorganic Chemistry | (2) |
| Chem 351 | Organic Chemistry I | (5) |
| Chem 352 | Organic Chemistry II | (3) |
| Chem 362 | Organic Chemistry Lab I | (2) |
| Math 213 | Calculus III | (4) |
| Phys 205, 206 | General Physics | (4) | (4) |
| Humanities or Social Science Elective | (7) |
| Total Hours | 15 | 16 |

OR

| Chem 209 | Quantitative Analysis | (4) |
| Chem 305, 306 | Organic Chemistry | (5) |
| Math 213 | Calculus III | (4) |
| Phys 205, 206 | General Physics | (4) | (4) |
| Humanities or Social Science Elective | (3) | (2) |
| Total Hours | 16 | 15 |

JUNIOR YEAR

| Chem 388 | Introduction to Research | (1) |
| Chem 450, 451 | Physical Chemistry I, II | (3) | (3) |
| Chem 461 | Instrumental Analysis | (5) |
| Chem 462 | Physical Chemistry Laboratory | (2) |
| Level II Language (German, French, or Russian) | (4) | (4) |
| Electives | (8) | (12) |
| Total Hours | 16 | 16 |

SENIOR YEAR

| Chem 454 | Inorganic Chemistry | (3) |
| Minimum of 6 credits of advanced chemistry electives which must include at least 3 credits of course work (Chem 455, any 500 Chem course or Biochem 301) and at least one laboratory course of 2 credits or more (Chem 463, Chem 490) | (3) | (3) |
| Electives | (10) | (12) |
| Total Hours | 16 | 16 |

With permission of the advisor, a student may substitute English 102 if English 209 is not available.

If a student is not ready for Math 211, the math sequence may be moved back one semester and Math 105 (also Math 103, if needed) should be taken in the first semester.

To fulfill the University Graduation Requirements, a minimum of 6 credit hours in Arts and Humanities (in addition to languages) and 9 credit hours in Social Sciences must be taken (see pp. 27-31 of this catalog). (see pp. 27-31 of this catalog).

MINOR IN CHEMISTRY
Required: A minimum of 20 semester hours and shall include one year of general chemistry with laboratory, a semester of analytical chemistry with laboratory and one year of organic chemistry with laboratory.

Center for Teaching and Learning

B.S. ED. WITH MAJOR IN CHEMISTRY
Required 125 hours, including:
I. General Education Requirements, see pages 27-31.
II. The Center for Teaching and Learning program in Secondary Education. See page 77.
III. The Following Curriculum:
  Major Requirements — 33 hours including:
<table>
<thead>
<tr>
<th>Fall</th>
<th>Spring</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chem 151</td>
<td>Fundamental Concepts of Chemistry</td>
</tr>
<tr>
<td>Chem 153</td>
<td>Analytical Chemistry</td>
</tr>
<tr>
<td>Chem 161</td>
<td>Quantitative Analysis Laboratory</td>
</tr>
<tr>
<td>Chem 162</td>
<td>Qualitative Analysis Laboratory</td>
</tr>
<tr>
<td>Engl 101</td>
<td>Composition 101</td>
</tr>
<tr>
<td>Engl 209</td>
<td>Technical and Business Writing</td>
</tr>
<tr>
<td>Math 211, 212</td>
<td>Calculus I, II</td>
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<tr>
<td>Humanities or Social Science Elective</td>
<td>(5)</td>
</tr>
<tr>
<td>Total Hours</td>
<td>16</td>
</tr>
</tbody>
</table>

OR

| Chem 105 | General Chemistry | (4) |

SOPHOMORE YEAR

| Chem 351 | Organic Chemistry I | (5) |
| Chem 352 | Organic Chemistry II | (3) |
| Math 215 | Calculus III | (4) |
| Phys 205, 206 | General Physics | (4) | (4) |
| Humanities or Social Science Elective | (5) | (4) |
| Total Hours | 16 | 15 |

OR

| Chem 305, 306 | Organic Chemistry | (5) |
| Math 213 | Calculus III | (4) |
| Phys 205, 206 | General Physics | (4) | (4) |
| Humanities or Social Science Elective | (3) | (6) |
| Total Hours | 16 | 15 |

JUNIOR YEAR

| Chem 253 | Inorganic Chemistry | (2) |
| Level II Language (German, French, or Russian) | (4) | (4) |
| Electives | (10) | (12) |
| Total Hours | 16 | 16 |

OR

| Chem 209 | Quantitative Analysis | (4) |
| Level II Language (German, French, or Russian) | (4) | (4) |
| Electives | (8) | (12) |
| Total Hours | 16 | 16 |

SENIOR YEAR

| Chem 450, 451 | Physical Chemistry I, II | (3) | (3) |
| Chem 461 | Instrumental Analysis | (5) |
| Chem 462 | Physical Chemistry Laboratory | (2) |
| Electives | (8) | (10) |
| Total Hours | 16 | 15 |

With permission of the advisor, a student may substitute English 102 if English 209 is not available.

If a student is not ready for Math 211, the math sequence may be moved back one semester and Math 105 (also Math 103, if needed) should be taken in the first semester.

To fulfill the University Graduation Requirements, a minimum of 6 credit hours in Arts and Humanities (in addition to languages) and 9 credit hours in Social Sciences must be taken (see pp. 27-31 of this catalog).

Suggested electives are courses in Physics, Mathematics, Biochemistry, Biology, Languages, Computer Science, Chemical Engineering, Business Management, and Speech.

If Chem 162 was completed then Chem 253 should be taken. If Chem 162 was not completed then Chem 209 should be taken.

Graduate level courses in Chemistry may be taken as electives.
Courses

101. Fundamentals of Our Chemical World, 4 credits. Prerequisites: none. A course designed specifically for non-science majors who wish to obtain a basic understanding of chemistry as applied in the world today. Does not serve as a prerequisite for any other chemistry course. Includes laboratory. Students receiving credit in Chem 101 may not take Chem 104, 105, or 151 for credit. F,S

104. Introductory Chemistry, 4 credits. Prerequisite: none. Introduction to inorganic chemistry. Includes laboratory. Students receiving credit in Chem 104 may not take Chem 105 or 151 for credit. F

105. General Chemistry I, 4 credits. Prerequisite: Math 102 or an appropriate score on the Mathematics Testing Program (MTP). Open to all students; no high school credit in chemistry required. Elementary principles and theories of chemistry; chemical elements and their compounds. Atomic and molecular structure, periodicity, stoichiometry, states of matter, solutions, reactions in solutions. Includes one three-hour laboratory per week. Students receiving credit in Chem 105 may not take Chem 151 for credit. F,S, SS

106. General Chemistry II and Qualitative Analysis, 4 credits. Prerequisite: Chem 105. Satisfies all requirements of Qualitative Analysis. Elementary principles and theories of chemistry; chemical elements and their compounds. Includes one three-hour laboratory per week. Students receiving credit in Chem 106 may not take Chem 152 for credit. F,S, SS

107. Introduction to Organic and Biochemistry, 4 credits. Prerequisite: Chem 104 or 105. An alternate to Chem 106. May not take both. Does not satisfy the prerequisite for any advanced chemistry course. A second semester of General Chemistry with the emphasis on organic and biochemistry. Includes laboratory. Especially for students who wish to include organic and biochemistry in the first year. F,S, SS

151. Fundamental Concepts of Chemistry, 3 credits. Prerequisites: one year high school chemistry and Math 102 or an appropriate score in Mathematics Testing Program (MTP). Recommended for chemistry majors and chemical engineers. Atomic and molecular structure, periodicity, stoichiometry, states of matter, solutions, reactions in solutions and equilibria. F, S, SS

153. Analytical Chemistry, 3 credits. Prerequisites: Chemistry 151 or 105. Recommended for chemistry majors and chemical engineering majors. Principles and applications of chemical stoichiometry, equilibria, and spectroscopy to modern chemical analysis. S

161. Quantitative Analysis Laboratory, 1 credit. Prerequisites: One year high school chemistry and one year high school algebra. Required for chemistry majors and recommended for chemical engineers. The techniques of gravimetric and volumetric analysis. F

162. Qualitative Analysis Laboratory, 1 credit. Prerequisite: Chem. 161. Required for chemistry majors and recommended for chemical engineers. Qualitative analysis in the chemical laboratory. S

212. Organic Chemistry, 5 credits. Prerequisite: Chem 106. Intended to meet the minimum requirements for students preparing for medical technology and for natural science majors. Includes laboratory. Students receiving credit in Chem 212 may not take Chem 305 for credit. S

233. Inorganic Chemistry, 2 credits. Prerequisites: Chemistry 153. Required for chemistry majors. Chemistry of the elements with emphasis on occurrence, preparation, physical properties, chemical reactivity, uses, nomenclature, structure, and periodic behavior. Includes chemical kinetics and thermodynamics. F

305, 306. Organic Chemistry, 10 credits. Prerequisite: Chem 106 with a grade of C or better or permission of the Chemistry Department. Designed for professional preparation of students other than chemistry majors. Organic chemistry is discussed in terms of modern theory. Includes laboratory. 305F, 306S

337. Cooperative Education, 8 credits. May be repeated for a maximum of 12 credits. Prerequisites: one year of freshman chemistry with laboratory and either one of the following course sequences: Chem 351, 352 and 362 or Chem 305, 306, 306). S,S

351. Organic Chemistry I, 5 credits. Prerequisites: Chem 153 & 162. Recommended for chemistry majors. Descriptive and mechanistic chemistry of carbon containing compounds; their occurrence, properties, nomenclature, stereochemistry, structure, synthesis and reactions. Includes laboratory. S

352. Organic Chemistry II, 3 credits. Prerequisite: Chem 351. Recommended for chemistry majors. Descriptive and mechanistic chemistry of functionalized derivatives of carbon containing compounds including biologically significant compounds. S

362. Organic Chemistry Laboratory II, 2 credits. Prerequisite: Chem 351. Recommended for chemistry majors. The synthesis of organic compounds including the qualitative and instrumental characterization of selected compounds. S

388. Introduction to Research, 1 credit. Prerequisites: Chem 253 and 362; or Chem 209 and 306. Introduction to chemical literature, computer searching of the literature and to prudent laboratory practices, including safety and waste disposal. S

390. Special Problems in Chemistry, 1 to 3 credits. Prerequisite: consent of instructor. Total credits not to exceed 3. An opportunity for students to work on research problems under close faculty guidance. F,S

427. Glass Working, 1 credit. May be repeated for a maximum of 2 credits. Techniques of repair and construction of glass apparatus useful in research. SS

431. Selected Topics in Chemistry, 1-3 credits, repeatable with different topics. On demand.

450. Physical Chemistry I, 3 credits. Prerequisites: Chem 253, 306 or 352, Math 212 & Physics 206. Required for chemistry majors. The use of energy concepts in studying and understanding the nature of matter, equilibria, solubility, reactivity, criteria for reactions. F

451. Physical Chemistry II, 3 credits. Prerequisite: Chem 450. Theory and nature of bonding and structure, chemical kinetics, and theory of reactions as applied to both inorganic and organic systems. S

454. Inorganic Chemistry I, 3 credits. Prerequisite: Chem 451. Chemistry of inorganic compounds in terms of modern theories and concepts. F

455. Spectroscopy and Structure, 3 credits. Prerequisite: Chem 451. Applications of spectroscopic techniques to the determination of molecular structure. F

461. Instrumental Analysis, 5 credits. Prerequisite: Chem 253 or 209. Required for chemistry majors. Applications of physicochemical principles via instrumental techniques to problems of quantitative and qualitative analysis. Includes laboratory. F

462. Physical Chemistry Laboratory, 2 credits. Prerequisites: Chem 461 and 450. Corequisite: Chem 451. Required for chemistry majors. The solution of chemical problems in the laboratory using modern physical and analytical methods. S

463. Advanced Synthesis Laboratory, 3 credits. Prerequisites: Chem 462 and 455. Advanced synthetic, preparatory and characterization methods currently used in modern laboratory practice will be emphasized. S

490. Senior Research, 2-6 credits. Prerequisites: Chem 451 and 462. May be repeated up to 6 credits. Total credits not to exceed 6. F, S, SS

Chinese and Far Eastern Studies

D. S. Lowe (Advisor)

Responsibility for Chinese and Far Eastern Studies at present lies mainly in the College of Arts and Sciences, under the guidance of the Chinese and Far Eastern Studies Committee. For those interested in increasing their knowledge of East Asian or Pacific Rim affairs, it coordinates offerings when available in the Chinese and Japanese languages (A&S 250, Lang 333), history (Hist 300), literature (A&S 250, Eng 415), culture and civilization (A&S 250), philosophy, and religion. We expect that courses will be offered in other departments as well. Each term the Committee makes available a descriptive list of Chinese and Far Eastern Studies courses. No regular major or minor exists at present in Chinese and Far Eastern Studies at the University of North Dakota, but students may consult the provisions under “Other Available Majors and Concentrations,” and “Minors.”

Civil Engineering (CE)

R. Apanian (Chair), Guillicks, Jerath, Mason, Moretti, and Phillips

The Civil Engineering curriculum includes a core of chemistry, physics, mathematics, and engineering science, followed by intensive design-oriented courses in environmental and water resources engineering, soils and structural engineering, and transportation engineering. This curriculum has the goal of developing the student as a professional engineer capable of systematically solving complex problems of society within the engineering field, while also preparing graduates for continuing professional or graduate education.
School of Engineering and Mines

B.S. IN CIVIL ENGINEERING

Required 140 hours, including:

I. General Education Requirements, see pages 27-31 and pages 43-46.

II. The Following Curriculum:

<table>
<thead>
<tr>
<th>Courses</th>
<th>Freshman Year</th>
<th>First Semester</th>
<th>Second Semester</th>
</tr>
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<tr>
<td></td>
<td>Chem 105........General Chemistry.................. (4)</td>
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<tr>
<td></td>
<td>Chem 106........General Chemistry.................. (4)</td>
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<td></td>
<td>Engl 101........Composition I........................ (3)</td>
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<tr>
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<td>Engl 101........Engineering Graphics............... (2)</td>
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<tr>
<td></td>
<td>Engr 102........Descriptive Geometry................ (2)</td>
<td></td>
<td></td>
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<tr>
<td></td>
<td>Engr 201........Fundamentals of Computer Programming....... (2)</td>
<td></td>
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<td>Math 211, 212...Calculus I &amp; II........................ (4)</td>
<td></td>
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<tr>
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<td>Phys 205........General Physics I................... (4)</td>
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<td></td>
<td>arts and Humanities (See page 28).................. (3)</td>
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</tbody>
</table>

| Sophomore Year | CE 300........Analytical Mechanics (Statics)...(2) |                |                |
|                | CE 301........Mechanics of Materials I.............. (3) |                |                |
|                | CE 313........General Surveying.............................. (4) |                |                |
|                | CE 314........Route Surveying............................. (2) |                |                |
|                | Econ 201........Principles of Microeconomics......... (3) |                |                |
|                | EE 206........Electrical Engineering.................. Fundamentals. (3) |                |                |
|                | Engl 209........Technical & Business Writing.......... (2) |                |                |
|                | Geol 203........Geology for Engineers.................. (3) |                |                |
|                | Math 213........Calculus III.............................. (4) |                |                |
|                | Math 351........Elementary Differential Equations...... (3) |                |                |
|                | Phys 206........General Physics II.................... (4) |                |                |

| Junior Year | CE 305........Analytical Mechanics (Dynamics). (3) |                |                |
|             | CE 351........Structural Mechanics I.................. (3) |                |                |
|             | CE 303........Civil Engineering Lab.................. (3) |                |                |
|             | CE 352........Structural Mechanics II................. (3) |                |                |
|             | CE 412........Soil Mechanics............................ (3) |                |                |
|             | CE 431........Environmental Engineering I............ (3) |                |                |
|             | CE 423........Hydraulic Engineering.................. (3) |                |                |
|             | CE or ME 306...Fluid Mechanics.......................... (3) |                |                |
|             | Math 352........Advanced Engineering Math.................. I (3) |                |                |
|             | Math 356........Advanced Engineering Math.................. II (3) |                |                |
|             | Arts and Humanities (See page 28).................. (3) |                |                |
|             | Social Science (See page 28).......................... (3) |                |                |

| Senior Year | CE 413........Soil Mechanics Lab I.................... (2) |                |                |
|             | CE 416........Transportation Engineering............... (3) |                |                |
|             | CE 432........Environmental Engineering II............ (3) |                |                |
|             | CE 451........Structural Design I...................... (3) |                |                |
|             | CE 453........Reinforced Concrete..................... (4) |                |                |
|             | CE...........Elective.................................. (3) |                |                |
|             | CE...........Elective.................................. (3) |                |                |
|             | EM 460........Engineering Economy.................... (3) |                |                |
|             | Phil 370........M Q & P: Ethics in Engineering....... (3) |                |                |
|             | ME 341........Thermodynamics........................... (3) |                |                |
|             | Arts and Humanities (See page 28).................. (3) |                |                |
|             | Social Sciences (See page 28).......................... (3) |                |                |

Courses

300. Analytical Mechanics (Statics) 2 credits. Prerequisite: Math 211. Principles of statics, resultants of force systems, equilibrium of force systems, analysis of structures, force systems in space, friction, centroids, moments of inertia. F/S.

301. Mechanics of Materials I 3 credits. Prerequisites: CE 101; simple stress and strain, torsion, shear and bending moment, flexural and shear stresses in beams, combined stresses, deflection of beams, statically determinate and indeterminate members and columns. F/S.

303. Civil Engineering Laboratory, 3 credits. Prerequisite: CE 301. Engineering properties of materials; A.S.T.M. testing of asphaltic and portland cement concretes, ceramic products, metals, woods, and other materials; electrical straing measurement. F.

305. Analytical Mechanics (Dynamics). 3 credits. Prerequisite: CE 300. Principles of dynamics, rectilinear and curvilinear translation, rotation, plane motion, work and energy, impulse and momentum. M/S.

306. Fluid Mechanics. 3 credits. Prerequisite: Physics 205, Math 212. Fluid properties; fluid statics and dynamics; transport theory and transport analogies, conservation of mass, energy, and momentum; dimensional analysis, boundary layer concepts, pipe flow, compressible flow, open channel flow. F/S.

313. General Surveying. 4 credits. Prerequisite: Math 211. Measurements of distance and angles; instrument adjustment; stadia and plane table mapping; triangulation; differential leveling; azimuth by solar observation; horizontal and vertical curves; traverse surveys; calculations; state plane coordinate systems; U.S. public land surveys; earthwork. F.

314. Route Surveying. 2 credits. Prerequisite: CE 313. Route location; horizontal curves simple, compound, and reverse; vertical curves; spiral curves; earthwork; principles of construction layout and route location design; aerial photography in route surveying. F.

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.

351. Structural Mechanics I 3 credits. Prerequisite: CE 301. Reactions, shear and bending moment, trusses, graphic statics, influence lines, bridge and roof trusses, long-span structures, three dimensional framework, cables and approximate analysis. F/S.

352. Structural Mechanics II 4 credits. Prerequisite: CE 351. Moment areas, elastic loads, virtual work, Castigliano’s law, super-position equations, slope-deflection method and moment distributions. F/S.

412. Soil Mechanics. 3 credits. Prerequisites: Geol 203 and CE 301. Soil characteristics, steady-state and transient water flow in soil, soil deformation, conditions at failure in cohesionless and cohesive soils and plastic-equilibrium states in soils. F/S.

413. Soil Mechanics Laboratory, 2 credits. Prerequisite: CE 412. Visual identification and classification, index properties, moisture density relations, consolidation, permeability, soil strength, and soil stabilization. F.

414. Foundation Engineering, 3 credits. Prerequisite: CE 412. Lateral earth pressure, retaining structures, soil exploration and sampling, bearing capacity, spread footings, combined footings, mat foundations, settlement analysis, drilled shaft and pile foundations, stability of slopes. Once a year.

416. Transportation Engineering, 3 credits. Prerequisite: CE 314 and CE 412. Transportation systems; urban transportation planning; design of land, air and water transportation facilities; and future developments in transportation. F/S.


423. Hydraulic Engineering, 3 credits. Prerequisite: CE 306. Fluid statics and dynamics; open channel flow; transitions and controls; hydraulic structures; hydraulic power conversion. Laboratory: Laboratory techniques and model studies; calibration principles and fluid measurements; open channel, pipeline and hydraulic machinery experiments. F.

431. Environmental Engineering I 3 credits. Prerequisite: ME 306. Environmental quality, water quality modeling, water and wastewater treatment systems, sludge processing, solid wastes, hazardous wastes, environmental law. F/S.

432. Environmental Engineering II 3 credits. Prerequisite: ME 306. Water distribution networks, mass curve analysis, wastewater collection systems, pumping systems for water and wastewater, system design-project, computer-assisted design. F/S.

434. Environmental Engineering Laboratory 3 credits. Physical, chemical and biological methods used in environmental engineering, water chemistry, instrumental methods, lab tours. On demand.

444. Contracts and Specifications. 3 credits. Prerequisite: Consent of instructor. Engineering contracts, specification essentials, approved methods of handling construction projects, trade practices, worker’s compensation acts, power and duties of engineering representative. F.

451. Structural Design I 3 credits. Prerequisite: CE 352. Selection of sections, riveted and welded connections, plate girders, trusses, bearings, light gauge structural members, fatigue of structural members and introduction to plastic design. F/S.

453. Reinforced Concrete 4 credits. Prerequisite: CE 352. Materials and specifications, axially and eccentrically loaded columns, strength beam theory, shear stresses, retaining walls, one-way slabs, flat slabs and footings. F.

499. Special Topics. 1 to 3 credits. Prerequisite: Departmental approval. Investigation of special topics dictated by student and faculty interests. F/S.

Clinical Laboratory Science

(formerly Medical Technology)

R. Sopher (Chair), A. W. Bruce (Program Director), J. Bruce, Coleman, Larson, 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, physicians offices, clinics, government agencies, industry, research, armed forces.
and other health related facilities. A current shortage of clinical labora-
tory 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 lab-
oratory science (formerly medical technology) since 1949. The Clinical
Laboratory Science program is accredited by the National Accrediting
Agency for Clinical Laboratory Sciences (NAACLS). Graduates of the
program will be eligible to sit for several national certification examina-
tions. In addition to certification, some states have specific requirements
for licensure of clinical laboratory personnel which vary from state to
state.

Clinical laboratory scientists attain their professional skills through a
baccalaureate education with an emphasis in the sciences. The degree
includes two years of pre-professional education followed by two years
of professional coursework. Application for advancement to the profes-
sional 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 col-
lege preparation, and personal adjustment to the clinical laboratory sci-
ence field. Once accepted, all students in the professional program must
attain a letter grade of at least “C” in their major courses in order to con-
tinue in the program. No student will be allowed to complete the second
professional year unless he/she has received at least a grade of “C” in
each of the major coursework classes. Exceptions for acceptance and
continuance may be made by petition to the Program Director.

The professional education component includes lecture and labora-
tory courses that prepare the student to work in the profession.
Coursework focuses on the clinical application and interpretation of test-
ing, test management and utilization, laboratory operations, profession-
alismand quality assurance. In addition, students spend three months in a
student laboratory and six to eight months in a hospital setting operating
equipment, performing and managing testing activities, evaluating quali-
cy control and working with the health care team.

The amount of time spent in the hospital setting is determined by the
clinical program the student selects. Hospitals currently affiliated with
the Clinical Laboratory Science program are United Hospital, Grand
Forks; St. Alexius Medical Center, Bismarck; and Hennepin County
Medical Center, Minneapolis, Minnesota. Some students opt to apply for
other NAACLS approved programs. Students in these programs com-
plete a twelve month course of study at the hospital site after the junior
year. Approved programs affiliated with UND include UNIMED Center
and Trinity Medical Center in Minot, ND and St. Paul Ramsey Medical
Center in St. Paul, Minnesota.

During the senior professional year students register for courses in
the summer, fall and spring semesters. Students in the program must be
aware that there are special requirements prior to contact with patients
and to testing patient specimens. Students are required to have a physical
and to be immunized with Hepatitis B vaccine. If a student elects not to
be immunized they must sign a liability waiver. The student will also be
responsible for travel, housing, food costs, and a student laboratory fee
in addition to the payment of regular tuition, during the senior professional
year.

Clinical Laboratory Technician (CLT) or Medical Laboratory
Technician (MLT) graduates from a NAACLS or equivalent accredited
MLT program are eligible for the transfer of up to 19 semester credits to
the B.S. degree program. Transfer credits allow the waiver of several sci-
ence courses in the preprofessional and professional curriculum. Each
student’s record is evaluated and a recommendation made to the
Registrar regarding the number of credits to be transferred and the sci-
ence courses to be waived. Also the students may be eligible for a short-
ened professional program based on the previous coursework, years of
experience working in a clinical laboratory and competency assessment.

A Master of Science degree with a major in Medical Technology is
also offered. The Master of Science Program is designed to prepare stu-
dents for careers as administrative laboratory directors, clinical labora-

Program accommodations for qualified handicapped persons will be
reviewed upon notification of a prospective student’s needs and limita-
tions.

B.S. IN CLINICAL LABORATORY SCIENCE

Required 129 hours, including

I. General Education Requirements see pages 27-31.

II. Curriculum:

Freshman Year

FIRST SEMESTER
Engl 101.......................... Composition I.........................................................(3)
Biol 101.......................... Introduction to Biology ...........................................(3)
Biol 101L......................... Introduction to Biology Lab ......................................(1)
Chem 103.......................... General Chemistry ...................................................(4)
Mathematics .................................................................(3)
SECOND SEMESTER
Path 126.......................... Intro to Clinical Laboratory ........................................(1)
Biol 102.......................... Introduction to Biology .............................................(3)
Eng 102 or 209...................... Composition II/Technical Writing ............................(3)
Comm 161.......................... Fundamentals of Public Speaking ...............................(3)
Chem 106.......................... Qualitative Analysis ................................................(4)

Sophomore Year

FIRST SEMESTER
Path 226.......................... Intro to Clinical Lab Science ......................................(2)
Comm 210.......................... Interpersonal Communications .................................(3)
Psy 101............................ Intro to Psychology .......................................................(3)
Soc 101............................ Intro to Sociology ..........................................................(3)
Anat 204.......................... Anatomy for Paramed ...............................................(3)
Path 325.......................... Hematology .................................................................(3)
Path 328.......................... Hematology Laboratory ..............................................(2)
Path 336.......................... Laboratory Calculations ..............................................(1)

SECOND SEMESTER
BioCh 301.......................... Biochemistry ...........................................................(3)
BioCh 303.......................... Biochemistry Lab .......................................................(3)
MBio 402.......................... Clinical Microbiology .................................................(4)
Mgmt 100.......................... Principles of Management .........................................(3)
Path 238.......................... Computer & Statistical Applications in CLS ......................(2)
Path 305.......................... Managerial Concepts ......................................................(3)
Path 380.......................... Professional Issues in CLS ...........................................(1)

Professional Year 01 (Junior)

FIRST SEMESTER
Path 325.......................... Pathology ..........................................................(3)
Path 326.......................... Pathology Laboratory ....................................................(2)
Path 328.......................... Pathology Laboratory ....................................................(2)
Path 336.......................... Laboratory Calculations ..............................................(1)

SECOND SEMESTER
Path 325.......................... Pathology .................................................................(3)
Path 326.......................... Pathology Laboratory ....................................................(2)
Path 336.......................... Laboratory Calculations ..............................................(1)

Professional Year 02 (Senior)

SUMMER SESSION
Path 470.......................... Clinical Immunohematology I ..................................(1)
Path 471.......................... Clinical Hematology .......................................................(1)
Path 472.......................... Clinical Pathology .........................................................(1)
Path 473.......................... Clinical Pathology II ......................................................(1)
Path 474.......................... Clinical Microscopy & Urinalysis .................................(1)
Path 475.......................... Clinical Immunology I & Body Fluids ............................(1)
Path 476.......................... Clinical Microbiology .....................................................(1)
Path 477.......................... Clinical Immunohematology Theory ................................(1)
Path 478.......................... Clinical Microbiology Theory .........................................(1)

FIRST SEMESTER
Path 480.......................... Clinical Hematology II ...............................................(1)
Path 481.......................... Clinical Hematology I ....................................................(1)
Path 482.......................... Clinical Microbiology .....................................................(1)
Path 483.......................... Clinical Pathology III ......................................................(1)
Path 484.......................... Clinical Pathology IV ......................................................(1)
Path 485.......................... Clinical Pathology V .........................................................(1)

University of North Dakota
<table>
<thead>
<tr>
<th>Second Semester</th>
<th>Course Title</th>
<th>Credits</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Path 490</td>
<td>Financial &amp; Quality Management</td>
<td>2</td>
<td>Introduces the roles and ethical considerations in healthcare delivery.</td>
</tr>
<tr>
<td>Path 491</td>
<td>Clinical Lab III</td>
<td>1</td>
<td>Involves practical procedures in clinical laboratory science.</td>
</tr>
<tr>
<td>Path 492</td>
<td>Clinical Immunohematology III</td>
<td>2</td>
<td>Focuses on serology and disease immunology.</td>
</tr>
<tr>
<td>Path 493</td>
<td>Lab Management &amp; Education</td>
<td>1</td>
<td>Teaches laboratory management practices.</td>
</tr>
<tr>
<td>Path 494</td>
<td>Clinical Microbiology I</td>
<td>2</td>
<td>Covers basic microbiology principles.</td>
</tr>
<tr>
<td>Path 495</td>
<td>Clinical Microbiology II</td>
<td>3</td>
<td>Explores advanced microbiology techniques.</td>
</tr>
<tr>
<td>Path 496</td>
<td>Clinical Immunology</td>
<td>1</td>
<td>Introduces principles of immunology.</td>
</tr>
<tr>
<td>Total Credits</td>
<td></td>
<td>12</td>
<td></td>
</tr>
</tbody>
</table>

Courses (Path)

The Medical Technology program is part of the Pathology Department. The Pathology (Path) courses that are required for Medical Technology majors are listed below.

126. Introduction to Clinical Laboratory Professions. 1 credit. Examination of the role of the clinical laboratory profession in the delivery of healthcare and the integration of the practitioner into the healthcare team. Field trips, student projects, oral and written reports. This course is suggested for students interested in a clinical laboratory major. Annually.

226. Introduction to Clinical Laboratory Science. 2 credits. Introduction to the role, ethics, conduct, certification, education, employment, and fundamental knowledge and skills related to clinical laboratory science. Annually.

492. Immunohematology I. 1 credit. Prerequisite: Biol 101. Biological aspects of human parasites, their symbiotic host parasite relationships and clinical diagnostic techniques. Annually.

234L. Human Parasitology Laboratory. 1 credit. Prerequisite: Biol 101. Laboratory methods for the identification and diagnosis of human parasites. Annually.

238. Computer and Statistical Application in Clinical Laboratory Science. 2 credits. Applications of modern information systems, terminology, word processing, data base, spread sheet and statistical analysis including normal and binomial distribution, t-tests, chi square tests, analysis of variance, linear regression and correlation. Annually.


325L. Hematology Laboratory. 2 credits. Pre or Corequisite: Biol 325. Morphologic examination of blood and marrow and laboratory testing used in hematological study. F

356. Laboratory Calculations. 1 credit. Calculations used in the clinical laboratory including measurement systems, dilutions, graphing, solution chemistry, statistics of quality control and research interpretation. Annually.

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. Annually.

392. Immunoimmunohematology/Immunology. 2 credits. Principles of clinical immunology and immunohematology focusing on the cellular and molecular nature of antigens and immunoglobulin, the immune response, immunogenetics, immune mediated disease, and the common blood groups factors and antibodies, and compatibility testing. Annually.


470. Clinical Immunohematology I. 1 credit. Practical application of modern transfusion techniques, component therapy, and quality assurance. Annually.

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. Annually.

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. Annually.

473. Clinical Hemostasis. 1 credit. Physiological mechanisms of normal human hemostasis as well as hereditary and acquired defects. Therapeutic measures which alter the normal coagulation processes are discussed. Techniques for obtaining blood, screening procedures, specific assays and procedures to monitor anticoagulant therapy. Annually.


476. Medical Mycology. 1 credit. Comparative morphology, physiology and pathogenicity of medically important fungi. Laboratory methods for identification emphasizing interpretation and evaluation of results including the recognition of contaminating organisms. Annually.


478. Clinical Microbiology Theory. 1 credit. Theory and practical applications emphasizing host parasite relationships, epidemiology and infection control. Laboratory methods of detection, isolation and identification of medically important bacteria. Annually.


482. Hematology II. 2 credits. Emphasis on interpretive correlation of hematology findings and pathophysiology. Topics of current interest and advances in hematology. Annually.

483. Clinical Laboratory II. 1 credit. Techniques and practice in routine phlebotomy at the clinical affiliate. Annually.


489. Financial and Quality Management of the Clinical Laboratory. 2 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 profitability, quality management, and quality improvement. Annually.

491. Clinical Immunohematology III. 1 credit. Observation, practice, or research in specialized areas or settings at the clinical affiliate. Annually.

492. Clinical Microbiology III. 2 credits. Techniques and modern transfusion practices at the clinical affiliate. Annually.

493. Laboratory Management and Education. 1 credit. Presentation and discussion of current concepts and trends in the administration and management of the laboratory. Introduction to education/instructional methodologies. Annually.


495. Clinical Microbiology II. 3 credits. Techniques and practice in clinical microbiology at the clinical affiliate. Annually.

496. Clinical Immunology. 1 credit. Applied theory and practice in clinical immunology and serology at the clinical affiliate. Annually.

School of Communication

(Comm)

Davies, Fischer, Ganje, Gooch, Hallahan, Hasegawa, Holden, McCutchan, Rakow, and Rendahl

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, as well as a major in Communication leading to the Bachelor of Education degree. (Students planning to teach at the middle and secondary levels. 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 27–31) or offered by the traditional liberal arts departments.

Facilities and Special Programs: The School has computerized writing and graphics laboratories, as well as its own reading room that houses a wide selection of daily and weekly newspapers and professional journals. The facilities of the Northern Lights Public Radio and the University’s Television Production Center are available for student training. The School’s Communication Research Center conducts research on a variety of communication issues and problems. The Native Media Center’s mission is to promote diversity in communication by enhancing awareness of Native American issues among...
media professionals and by attracting Native American students into journalism and communication careers. The activities include production of special publications and materials written by, about, and for Native peoples.

**Student Opportunities.** Students are encouraged to supplement classroom instruction through work on campus publications, the University’s radio stations, a national award-winning television program, and supervised professional internships.

Student organizations sponsored by the School include chapters of the American Advertising Federation, the Public Relations Student Society of America, and the Society of Professional Journalists. Other programs sponsored by the School include the Northern Interscholastic Press Association, which serves high school journalism programs in North Dakota and northern Minnesota, and the UND High School Invitational Speech Tournament.

**Admission Requirements.** Admission to the College of Fine Arts and Communication does not automatically carry admission to the School of Communication. Students planning to pursue a major or minor through the School must formally apply for admission to major or minor status. This is usually done during the sophomore year. To be admitted, students must:

- Complete Comm 102 or 103 and Engl 101 with grades of C or better.
- Pass an English Proficiency Test administered by the School.
- Have a 2.50 overall grade point average.
- Have earned at least 24 semester credits.
- Apply for major or minor status in the School.

Students are classified as Pre-Communication majors until they have completed these requirements. Additional information about the application process is available from the School.

Note: Pre-majors and majors must earn a grade of C or better in all courses taken to fulfill requirements toward the major and minor, and they must maintain an overall grade point average of 2.50 in order to be enrolled in any Communication course beyond Comm 102 and 103.

**College of Fine Arts and Communication**

**B.A. WITH MAJOR IN COMMUNICATION**

Required 125 hours for graduation, including:

I. **General Education Requirements**, see pages 27-31. (Note: Communication Pre-majors and majors 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 201 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:**

A. **Level A: 6 credits required**

Comm 102 Communication and the Human Community (3)

Comm 103 Information Technology and Social Change (3)

B. **Level B: 15-18 credits required, minimum of one course per category**

**COMMUNITY**

Comm 161 Fundamentals of Public Speaking (3)

Comm 201 Visual Communication (3)

Comm 210 Introduction to Interpersonal Communication (3)

Comm 303 Principles of Public Relations (3)

Comm 341 Advertising Creative Strategy (3)

Comm 365 Small Group Discussion and Conference (3)

**INFORMATION**

Comm 200 Writing for the Media (3)

Comm 202 Writing for the Electronic Media (3)

Comm 221 Reporting (3)

Comm 321 Advanced Journalistic Writing (3)

Comm 322 Editing (3)

Comm 352 Writing for Public Relations (3)

Comm 366 Business and Professional Speaking (3)

**TECHNOLOGY**

Comm 204 Graphic Design (3)

Comm 220 Photo Imaging (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)

C. **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 and Intercultural Communication (3)

Comm 403 Community Relations (3)

Comm 490 Special Topics (3)

**INFORMATION**

Comm 308 Argumentation (3)

Comm 361 Persuasion (3)

Comm 367 Classical and Modern Criticism (3)

Comm 404 Advertising and Society (3)

Comm 405 Social Implications of the Information Society (3)

Comm 410 Research Methods in Communication (3)

Comm 461 Political Communication (3)

Comm 490 Special Topics (3)

**TECHNOLOGY**

Comm 302 Popular Culture (3)

Comm 331 Survey of Broadcasting (3)

Comm 406 Media Consequences and Effects (3)

Comm 407 Communication Technologies and the Future (3)

Comm 412 Communication Law (3)

Comm 428 Media History (3)

Comm 490 Special Topics (3)

D. **Level D: 1-3 credits required, Pre-Reqs Level B or instructor consent**

Comm 337 Cooperative Education (3)

Comm 329 Practicum (3)

Comm 391 Individual Projects, Readings (3)

Comm 485 Internship (3)

**Level E: 1 credit required**

Comm 450 Senior Portfolio (3)

*NOTE: Additional pre-requisites may apply to some courses. Check individual course descriptions.*

**MINOR IN COMMUNICATION**

Required 24 credits:

- 6 credits in Level A (Comm 102 and 103)
- 9 credits of courses in Level B
- 9 credits of courses in Level C

Internship or practicum courses will not count toward the minor. Minors must fulfill the admissions requirements of the School of Communication. They must also earn a grade of C or better in all courses taken in the School and maintain an overall GPA of 2.50.

**Center for Teaching and Learning**

**B.S.E.D. WITH A MAJOR IN COMMUNICATION**

Required 125 hours, including:

I. General Education Requirements, see pages 27-31. (Note: Students cannot count Communication courses toward these requirements.)

II. Completion of the Center for Teaching and Learning Program in Secondary Education, see page 77.

III. One of the following options also is required:

A. Level IV proficiency in a second language (which requires completion of the courses numbered 201 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. Requirements: minimum of 35, maximum of 38 credits

Majors must complete the requirements for the B.A. degree in Communication with the additional requirements that they must choose Comm 367, Classical and Modern Criticism, and Comm 300, Communication and Society. A minor in Theatre Arts is recommended.

MINOR IN COMMUNICATION

24 credits required, including:
Comm 102.............Communication in the Human Community.............(3)
Comm 161.............Fundamentals of Public Speaking......................(3)
Comm 200.............Writing for the Media..........................................(3)

Choose one 3-credit course from:
Comm 300...................Communication and Society......................(3)
Comm 310...................Communication and Diversity......................(3)
Comm 412...................Communication Law....................................(3)
Comm 428...................Media History.............................................(3)
Comm 461...................Political Communication...............................(3)

Other Requirements (12 credits):
Comm 210.............Introduction to Interpersonal Communication...........(3)
Comm 215.............Public Speaking.................................................(3)
Comm 365.............Small Group Discussion......................................(3)
Comm 402.............Intercultural/International Communication.............(3)

Courses

102. Communication and the Human Community, 3 credits. An introduction to the important concepts and principles of human communication, with a focus on how humans create meaningful worlds to live in through shared language, visual perception and interaction processes. Examination of the conflicts and opportunities that can result from communication differences within and among communities, with particular emphasis on gender, race and ethnicity, age, sexual orientation, class and physical ability.

103. Information Technology and Social Change, 3 credits. Evolution of communication technology and the consequences for how people communicate and acquire information, including the impact of culture, economics and public policy on contemporary media practices. Current issues related to media content, access and effects are examined. F S

161. Fundamentals of Public Speaking, 3 credits. Basic principles of speech from the viewpoint of composition and delivery. Emphasis on student performance stressing organization, effective organization and direct communication of ideas.

200. Writing for the Media, 3 credits. Prerequisites: Admitted major. Keyboarding skills required. Introduction to writing in the various styles and forms required in journalism, advertising, broadcasting, public relations and speech communication.

201. Visual Communication, 3 credits. An examination of the history and development of design as visual communication with emphasis on the visual components of communication, particularly the graphics of news and advertising, photography and television.

202. Writing for the Electronic Media, 3 credits. Prerequisite: Admitted major. 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 structuring scripts.

204. Graphic Design, 3 credits. An introduction to theory and practice of image-making for the media. Coverage of major structural theories including style, semantics, and iconography in a historical, environmental and psychological context. Typography, corporate symbology, logotypes and special relationships are included. Emphasis on recognizing professional and cultural standards and conventions. Survey of critical and ethical thinking about visual decisions for communication professionals.

210. Introduction to Interpersonal Communication, 3 credits. To acquaint the student with fundamental concepts relative to communication between individuals. 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.

221. Reporting, 3 credits. Prerequisite: Admitted major. Introduction to news gathering, judgment and writing.

226. Photo Imaging, 3 credits. Introduction to the practice of photography. Film developing, print making, photographic composition. Emphasis on the purposes of photography.

300. Communication and Society, 3 credits. Prerequisites: Comm 102 or 103 or instructor consent. Explores the interrelationships of society and forms of communication. Objectives include developing knowledge of the media, an ability to discuss in an informed manner the issues of communication in a democratic society and to develop an awareness of intelligent use of the media.

301. Psychology of Communication, 3 credits. Prerequisite: Comm 202 or 103 or instructor consent. A consideration of the psychological effects of the nature and function of communication in interpersonal relationships, special consideration of recurring patterns of communication behavior and the relations among personal characteristics and communications.

302. Popular Culture, 3 credits. Prerequisite: Comm 202 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.

303. Principles of Public Relations, 3 credits. Examines public relations as a professional communication and management function, applications within a range of organizations, and PR’s impact on society and role in community-building. In-depth analysis of the PR campaign process, PR media and publicity. Ethical and legal considerations.

304. Electronic Editing, 3 credits. Introduction to the concepts, theories and practice of electronic editing. Topics include aesthetics, composition, lighting, use of color, connecting action, manipulating time, use of sound and types of editing schemes. 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.

305. Publications, 3 credits. Prerequisite: Comm 204. An overview of the print production process from concept to distribution. Includes publication conceptualization, design and production, budgeting, pre-press and printing processes.

306. Advertising Media Planning, 3 credits. Prerequisite: Comm 341. An introduction to the complexities of buying space and time for advertising clients. Includes devising and using effective advertising objectives, strategies and tactics; appropriation of advertising budgets and the effective allocation of budgets to various media; the use of secondary data for target-audience cost efficiency, reach and frequency analysis. Developing advertising strategies and tactics to reach culturally diverse audiences and how this affects media buying.


308. Argumentation, 3 credits. Prerequisite: 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.

310. Communication and Diversity, 3 credits. Prerequisites: Comm 100, junior standing. Study of minority status within mass media organizations and in media content from historical, contemporary and speculative points of view.

321. Advanced Journalistic Writing, 3 credits. Prerequisite: Comm 221 or 202; admitted major. News coverage and writing techniques involving public and private sectors of contemporary society.

322. Editing, 3 credits. Prerequisite: Comm 221 or 202; admitted major. Editing and headline writing, copy preparation and layout applicable to newspapers and other print media.

328. Community Journalism, 3 credits. Prerequisite: Comm 102 or 103 or instructor consent. Considers the role that news media can play in enhancing community life. May focus on the role of print and broadcast journalism in Native American communities, on the role of weekly newspapers in 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 communities.

329. Practicum, 1-3 credits, repeatable to 8 credits. Prerequisite: Level B or instructor consent. Supervised and graded experiences offered in a variety of communication contexts, including, but not limited to Studio One, KFJM radio, Native Directions and communication campaigns. Experiences offered will vary.

331. Survey of Broadcasting, 3 credits. Prerequisite: Comm 102 or 103 or instructor consent. Examination of broadcasting with emphasis on basic technology, structure, and organization. Study will include the basic legal, social and artistic aspects of broadcasting as well as techniques and utilization of audience research.

332. Fundamentals of Television Production, 3 credits. Introduction to basic studio production. Emphasis on the function and operation of TV equipment, lighting, producing and directing, including crew management, program conception, writing, planning and evaluation.

337. Cooperative Education, 1-3 credits, repeatable to a total of 3 credits in Cooperative Education, Internship, or a combination of both. A practical work experience with an employer closely associated with the student’s academic area. Arranged by mutual agreement among student, department, and employer. S/U grading only. F S S S

341. Advertising Creative Strategy, 3 credits. Prerequisites: Comm 204. Introduces students to ideas and their translation into words and images that inform and persuade. Emphasis is on strategic approaches to creative decision-making across all media. Topics include the setting of objectives, selection of copy structure, demands of different media, design principles, layout and story boards, and regulations affecting messages.

352. Writing for Public Relations, 3 credits. Prerequisites: Admitted major. Intensive practice in preparing the most common types of materials for public relations, special emphasis on writing style and form, and effective media relations.

361. Persuasion, 3 credits. Prerequisite: Comm 102 or 103 or instructor consent. Principles and practices of persuasion and influence will be examined across communication contexts such as interpersonal, group, and mass communication. Emphasis will be placed on ethical standards and implications of persuasion and influence.
Communication Sciences and Disorders (CDIs)

W. Swisher (Chair), Biberdorf, Fire, Glick, Hess, Madden, and Schill

It is the general mission of the Department of Communication Sciences and Disorders to provide academic and clinical instruction, supervised clinical practicum, and research experience for students; to provide clinical services to individuals, groups, and agencies within the University and greater Grand Forks area; to provide professional leadership with local, state, and national organizations; to contribute to the body of knowledge concerning communication processes and communication disorders; and to serve the University through its governance. This mission is directed at meeting the interests and needs of the University of North Dakota constituency.

SPEECH, LANGUAGE AND HEARING CLINIC

The Clinic provides an opportunity for students to gain practical experience in speech and language evaluation and treatment procedures as student clinicians and provides a basis for research into the clinical process. The clinical practicum/research is under the direct supervision of departmental faculty who hold the Certificate of Clinical Competence of the American Speech-Language-Hearing Association. The Department of Communication Sciences and Disorders is accredited by the Educational Standards Board of the American Speech-Language-Hearing Association.

Services provided include evaluation and remedial treatment of all types of speech handicaps, language disabilities, and hearing problems (including hearing aid evaluation). Referrals to the Clinic may be made by anyone, and treatment is provided for individuals of all ages.

Majors

The undergraduate major in Communication Sciences and Disorders is a pre-professional degree. Graduates of this pre-professional program are qualified for employment in this field only after additional study on the graduate level. Academic and practicum requirements for certification by the American Speech-Language-Hearing Association are completed during graduate study.

To enroll in courses other than CDIs 231, 232, and 235, students majoring in Communication Disorders must have achieved a 2.50 GPA overall and a C or better in their major courses after having completed at least 60 credit hours.

Limitations of staff, client population, facilities and practice teaching sites may make it necessary to limit the number of students accepted for clinical training. Undergraduate students will apply for admission to their first registration for clinical practice, which will typically begin the first semester of their junior year. Students should apply before the end of the preceding semester. If there are more applicants than available positions, the faculty will admit students selectively based on the information furnished in the application, including grade point average and grades in Communication Sciences and Disorders courses taken to that date. Students who are not admitted may enter the competition for vacancies at the next registration.

College of Arts and Sciences

B.A. WITH MAJOR IN COMMUNICATION SCIENCES AND DISORDERS*

Required 125 hours, including:
I. General Education Requirements (see pages 27-31)
   (Laboratory science requirement to be met by 4 credits of anatomy, biology or physics)
II. The Following Curriculum
   A. Major Course Requirements
      (CDIs 231: Anatomy & Physiology of Speech and Hearing Mechanism)
Computer Science

(CSci)

M. Ali (Chair), Dai, Flannery, O’Neil, Ram, White, Wiggen, and Winrich

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 (CSCA) 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.

381. Introduction to Practicum I, 2 credits. Orientation to the Speech, Language and Hearing Clinic and an introduction to clinical case management. Includes supervised observation of clinical intervention. F

382. Introduction to Practicum II, 2 credits. Prerequisite: CDis 381. Continuation of content introduced in CDis 381, with increased emphasis on practice of clinical skills. Includes supervised observation of clinical intervention. S

383. Clinical Tests and Measures, 3 credits. Prerequisites: CDis 343 and 381 or consent of instructor. Corequisite: CDis 333. 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. S

422. Neuropathology of Communication Disorders, 3 credits. Prerequisite: CDis 321. A study of the essentials that form the basis for neuropathology, neuropsychology, neuropsychopharmacology, and neurology, with a special section of study dealing with the neurological bases for speech, language, and hearing. F

430. Sign Language, 2 credits. Introduction to manual communication. F, S, SS

431. Introduction to Audiology, 3 credits. Prerequisites: 231 and 235 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. F

434. Aural Rehabilitation, 3 credits. Prerequisites: Communication Disorders 343, 344 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. S

437. Cleft Palate and Other Orofacial Anomalies, 2 credits. Prerequisites: 231, 232, 333. Communication disorders related to cleft palate and other defects of the speech mechanism. A consideration of etiology, incidence, and clinical management of resulting communication and related problems. S

484. Clinical Practicum I: Speech-Language Pathology, 1-4 credits. Prerequisites: 381, 382. The first practicum in the direct provision of clinical services to children and adults with speech-language pathologies. S, SS

485. Clinical Practicum II: Speech-Language Pathology, 1-4 credits. Prerequisites: 381, 382, 484. An advanced undergraduate practicum in the direct provision of clinical services to children and adults with speech-language pathologies. S, SS

486. Clinical Practicum III: Audiology, 1-4 credits. Prerequisites: 431. An advanced undergraduate practicum in the direct provision of clinical audiological services to children and adults. S

497. Special Problems in Communication Disorders, 1-3 credits. Prerequisites: consent of instructor. An examination of special topics in Communication Disorders. On demand.
A minor in computer science is available to students who choose to concentrate their studies in an affiliated area. In addition, several courses are offered to provide the necessary basic knowledge of computer technology and computer programming for those students wishing to use the computer as a tool for study and research in other disciplines.

**College of Arts and Sciences**

### B.S. WITH MAJOR IN COMPUTER SCIENCE

Required 125 hours, including:


II. College of Arts and Sciences Requirements. See page 39.

III. Courses from computer science as follows:

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<td>CSci 451</td>
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CSci Electives* (12)

*All Computer Science electives must be at or above the 200 level. CSci 260 and 337 may be applied toward this major in Computer Science, but only up to a combined maximum of 3 hours. CSci 300, 472, and 491 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:

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Approved math elective (3)

Approved probability/statistics elective (3)

Approved 2-semester laboratory sequence (8)

2 approved courses in science or quantitative methods | (6-8)

### B.A. WITH MAJOR IN COMPUTER SCIENCE

Required 125 hours, including:


II. College of Arts and Sciences Requirements. See page 39.

III. Courses from Computer Science as follows:

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<td>CSci 435</td>
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<td>CSci Electives* (12)</td>
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*Electives may be selected from CSci 260 (at most 3 hours), CSci 289, CSci 337 (at most 3 hours) and any other Computer Science courses numbered 300 or above.

IV. Courses from other departments as follows:

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<td>Math 208</td>
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<td>Math 211/212</td>
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<td>Math 204</td>
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Approved probability/statistics elective (3)

### MINOR IN COMPUTER SCIENCE

Courses from Computer Science as follows:

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<td>CSci 223</td>
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CSci electives* (9)

*All 9 credits hours of Computer Science electives must be at least 200 level or above, and at least 3 credit hours must be 300 level or above.

### Courses

- **101L. Introduction to Computers Laboratory.** 1 credit. Recommended corequis: CSci 101L. An introduction to the basic laboratory course to complement CSci 101. Activities will include hands-on experience with operating systems and application software. F,S

- **101. Introduction to Computers.** 2 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

- **105. Introduction to Programming.** 3 credits. An introduction to computer programming in a high-level language, with emphasis on problem solving and logical thinking. Students learn to design, implement, test, and debug programs for small-scale problems using elementary data types and control structures. A student may not receive credit for both CSci 110 and CSci 160. F,S

- **110. Programming I.** 3 credits. An introduction to computer programming in a high-level language. Emphasis on learning how to design, code, debug, and document programs, using techniques of good programming style. Includes laboratory. A student may not receive credit for both CSci 160 and CSci 110. F,S

- **160. Computer Science I.** 4 credits. An introduction to computer science, with problem solving, algorithm development, and structured programming in a high-level language. Emphasis on learning how to design, code, debug, and document programs, using techniques of good programming style. Includes laboratory. A student may not receive credit for both CSci 160 and CSci 110. F,S

- **161. Computer Science II.** 4 credits. Prerequisites: CSci 160 and Math 103. Concurrent enrollment in Math 208 is recommended. A broadening of foundations for computer science with advanced concepts in computer programming. Includes an introduction to data structures, arrays, and computer organization. Includes laboratory. A student may not receive credit for both CSci 161 and CSci 111. F,S

- **223. Computer Organization and Programming.** 4 credits. Prerequisites: 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. Programming Languages I.** 3 credits. Prerequisite: CSci 111 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. F,S

- **289. Social Implications of Computer Technology.** 2 credits. Prerequisite: any college-level programming course. 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

- **300. Topics in Computer Science.** 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

- **322. Computer Architecture.** 3 credits. Prerequisite: CSci 223. Introduction to hardware methodologies and software extensions to hardware in computers. Some topics on hardware and software selection will be discussed. S

- **327. Data Communications.** 3 credits. Prerequisites: CSci 223 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,S

- **337. Cooperative Education.** 1-8 credits repeatable to 18. Prerequisite: 15 completed credits in CSci including 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


- **365. Organization of Programming Language.** 3 credits. Prerequisite: CSci 242. Compile and run time requirements of programming languages, parameter passing and value binding techniques. Vector and stack processing. F

- **384. Artificial Intelligence.** 3 credits. Prerequisite: CSci 242. A survey of the applications and techniques of artificial intelligence. Topics include problem solving paradigms, expert systems, rule searching, rule-based systems, theorem proving, knowledge representation, natural language processing, image processing, and computer learning. On demand. F

- **411. Information Systems.** 3 credits. Prerequisite: CSci 351. Representation, storage, and processing of information. Design of an information system to solve a specific problem. F

- **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,S

- **445. Mathematical Modeling and Simulation.** 3 credits. Prerequisites: CSci 161 or 111, Math 212 and a statistics course. A study of various mathematical applications for digital computers, including the modeling, simulation and interpretation of the solution of complex systems. F

- **446. Computer Graphics.** 3 credits. Prerequisites: CSci 242 and Math 212. Introduction to computer graphics hardware and software. Topics include display technologies, clipping, three-dimensional representations, shading, and color. On demand.
Counseling (Coun)

C. Barké (Chair), Henly, Jacobs, Juntunen-Smith, Schmitt, and Twohey

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. is accredited by the National Council for the Accreditation of Teacher Education (NCATE). The Ph.D. in Counseling Psychology has been provisionally accredited by the American Psychological Association and prepares graduates for Psychologist licensure in North Dakota. Course work for the M.A. degree satisfies eligibility requirements for the North Dakota Board of Counselor Examiners for certification as a Counselor, for the Department of Public Instruction for School Counselor certification, and for the North Dakota Division of Alcoholism and Drug Abuse for Addiction Counselor licensure. The Department is committed to diversity with a particular emphasis on providing graduate training for Native Americans interested in mental health careers.

The masters program provides preparation for counseling practice in community service agencies, universities and colleges, addiction 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 Miller 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, 20 students are admitted each year from a pool of 70 or more. The masters program requires completion of 48 semester credits, generally requires two years of full-time study, and includes a two semester half-time supervised internship at an external agency.

The doctoral degree program, Counseling Psychology, provides advanced preparation in counseling theory, practice, and research. It requires completion of a masters degree prior to admission, which is based upon achievement in undergraduate and graduate work, scores on the Graduate Record Examinations, recommendations, and relevant experience. The program requires three years of full-time study, plus a year-long, full-time, external internship. Upon completion, graduates are prepared to work as doctoral level counseling psychologists in a variety of settings, such as university counseling centers, mental health agencies, university departments of counseling or psychology, hospitals and private practice. Four to six students are admitted each 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).

Criminal Justice Studies (CJS)

M. Meyer (Director)

This program is a cooperative venture which pools the resources of the Departments of Philosophy, Political Science, Psychology, and Sociology with the Criminal Justice Studies Program. The purpose of the program leading to a Bachelor of Science in Criminal Justice Studies in the College of Arts and Sciences is to prepare students for positions as practitioners within criminal justice professions while also offering 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 CJS 251, CJS 252, Soc 252, and Soc 253 with a minimum grade point average of 2.70 and apply for major status in the College of Arts and Sciences. Once admitted, majors will be required to maintain a GPA of 2.70 overall and in the major. Failure to meet either or both of these requirements will result in the student being placed on probation 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 hours, 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:

CJS 251 ................................ Introduction to Criminal Justice ..........................(3)
CJS 252 ................................ Introduction to Law Enforcement .........................(3)
Soc 252 ................................ Criminology ..................................................(3)
Soc 253 ................................ Juvenile Delinquency .......................................(3)

Additional major hours, including:

CJS 301 ................................ Criminological Theory .......................................(3)
CJS 353 ................................ Law for Criminal Justice System .........................(3)
Soc 323 ................................ Sociological Research Methods ............................(3)
Soc 326 ................................ Sociological Statistics ........................................(3)
Phil 412 ................................ Philosophy of Law ...........................................(3)
Psyc 306 ................................ American Constitution–Civil Liberties ..........(3)

9 hours from:

Soc 351 ................................ Corrections .........................................................(3)
CJS 331 ................................ Victimology .......................................................(3)
CJS 350 ................................ Correctional Alternatives .....................................(3)
CJS 351 ................................ Police Administration .........................................(3)
CJS 360 ................................ Administration of Justice ....................................(3)
CJS 352 ................................ Criminal Investigation .........................................(3)
CJS 452 ................................ Police Role in Society ..........................................(3)

6 hours from:

Soc 250 ................................ Diversity in American Society .............................(3)
Soc 361 ................................ Social Psychology .................................................(4)
Soc 435 ................................ Race and Ethnic Relations ...................................(3)
Soc 436 ................................ Social Inequality ...................................................(3)
Soc 450 ................................ Deviant Behavior .................................................(3)
Psy 251 ................................ Developmental Psychology ...................................(4)
Psy 360 ................................ Introduction to Personality .....................................(3)
Psy 370 ................................ Abnormal Psychology .........................................(3)

A concentration in a single supplementary field other than criminal justice 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

Required 21 hours from:

CJS 251 Introduction to Criminal Justice ..............................................(3)
CJS 252 Introduction to Law Enforcement ............................................(3)
CJS 253 Law for Criminal Justice System ............................................(3)
PSci 305 American Constitution-Government Powers .....................................(3)
PSci 306 American Constitution-Civil Liberties .........................................(3)
CJS 452 The Police Role in Society ................................................(3)
Soc 252 Criminology ..............................................................................(3)
Soc 253 Juvenile Delinquency ...................................................................(3)
Soc 351 Corrections ..................................................................................(3)
SWk 306 Social Welfare ..........................................................................(3)

Courses

251. Introduction to Criminal Justice. 3 credits. An undergraduate study and overview of the criminal justice system emphasizing the "system," its legal actors and its political constraints. Designed for the beginning student in law enforcement, criminology, corrections, sociology, social welfare, government and pre-law.

252. Introduction to Law Enforcement. 3 credits. Prerequisite: CJS 251. Introduces the student to the specific field of law enforcement. Provides an overview of federal, state, and local law enforcement agencies. Reviews the coordination requirements of the system.

301. Criminological Theory. 3 credits. Prerequisite: CJS majors and minors only. This class will provide an overview of a variety of criminological theories. Attention will be directed toward the study of the major theoretical schools of thought which have influenced the discipline of criminology. The basic goal of this course is to help the student develop an understanding of and appreciation for the insights gained by examining crime and criminals through different theoretical frameworks.

331. Victimization. 3 credits. Prerequisite: CJS majors and minors only. This class will provide an overview of the literature and research concerning victimization. Attention will be directed toward current trends concerning the victim in the American criminal justice system, with particular emphasis on measuring victimization, fear of crime, the impact of victimization on the individual, and victims rights and 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.

337. Cooperative Education. 1-8 credits, repeatable to 16. Prerequisite: CJS 491 (1 cr.) and CJS majors and minors only. A practical work experience with an employer closely associated with the student’s academic area. Arranged by mutual agreement among student, department, and employer. Any student registering for CJS 337 will not be eligible to register in CJS 480, Administrative Internship. S/U grading only.

350. Correctional Alternatives. 3 credits. Prerequisites: Restricted to CJS 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.

351. Police Administration. 3 credits. Prerequisite: CJS 252. Principles of police administration and organization for a modern police agency. Included are planning and development of organizations, direction, goal identification, etc.

352. Criminal Investigation. 3 credits. Prerequisite: CJS 252. An overview and examination of basic principles and techniques in the criminal investigations procedures and the rules of law in evidence in criminal court proceedings.

353. Law for Criminal Justice System. 3 credits. Prerequisite: CJS majors and minors only. An overview of principles of criminal law and criminal procedure as established by case law and contemporary legal codes in the United States.

360. Administration of Justice. 3 credits. Prerequisites: Restricted to CJS majors and minors. This course addresses issues of the nature of organizations, the individual in the organization, group behavior in organizations, processes in organizations, and organizational change as applied to the administration of criminal justice.

393. Problems in Criminal Justice Studies. 1-3 credits. Maximum of 6 credits. Prerequisite: CJS 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.

401. The Police Role in Society. 3 credits. CJS majors and minors only. The functions and role of police in society with a focus on contemporary issues in police organization and administration.

480. Administrative Internship. 2-12 credits. Prerequisite: CJS 491 (1 credit). Prerequisite: CJS majors and minors only, consent of instructor. Prior approval of instructor required. S/U grading only. On-the-job training in a criminal justice position with final report and analysis of the agency by the intern.

491. Readings in Criminal Justice Studies. 1-6 credits. Prerequisite: CJS majors and minors only, consent of instructor. Selected readings with oral and written reports.

Cytotechnology

R. Sopher, M.D. (Medical Director)

H. E. Thompson, SCT (Program Director)

Cytotechnology is a high-level medical laboratory specialty centered on the subject of diagnostic cytotology, 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 and marked, these cells are reviewed by a pathologist. Cytotechnologists are also trained to be proficient in cytotology specimen preparation and in laboratory quality assurance methods.

Diagnostic cytotology practice is documented at UND back to 1952. The Department of Pathology has offered an accredited course in cytototechnology 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 maximum capacity of four to six students. Most recently awarded reaccreditation in 1993, the program currently exists as one of over 60 accredited cytotechnology programs in only 34 states which graduate a total of about 300 cytotechnologists annually.

The Cytotechnology Program (Path 401, Path 402, & Path 403) is a 12-month professional course designed to prepare students for a career in cytotechnology. Enrollment in the senior year professional phase is limited to 6 students per year. University commencement and graduation from the program both occur at the end of summer sessions. Students are selected using criteria of academic performance, references, an interview 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 (professional phase) must be submitted to the Program Director by January 1 to be considered for enrollment Fall semester. If permission to enroll is granted, it will be subject to the following conditions:

(A) All remaining required courses except Path 402 and 403 must be completed with a grade of C or better prior to enrollment in Path 401.

(B) Students must be classified by the University as having good academic standing (i.e., not on probation and eligible to enroll in the University).

(C) Prior to enrollment in Path 401 all other admission requirements (as noted on the Cytology Program application form) must be completed.

Failure to meet any of these conditions may result in denial of permission to register. To be eligible for enrollment in the Professional Phase, applicants must meet the following requirements:

(1) They must receive departmental approval.

(2) They must have completed all other required courses.

(3) Upon successful completion of the professional phase (Path 401, 402, 403), they must be eligible to be awarded a bachelor’s degree (or already possess a degree). Persons without a bachelor’s degree will not be permitted to take the national registry examination. For those students who already possess a bachelor’s degree, transcripts must indicate that a minimum of 20 semester hours of biological science, 8 semester hours of chemistry, and 3 semester hours of college mathematics have been taken.

School of Medicine

B.S. IN CYTOTECNOLOGY

Required 125 hours, including:

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

II. The Following Curriculum:

Anat 204 Anatomy for Paramedical Personnel ...........................................(3-5)
Biol 101, 102 Introduction to Biology ......................................................(8)
The Pathology courses for Cytotechnology majors are listed below:

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

III. The Following Curriculum:

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 preparing/diagnosing body fluid and fine needle aspiration samples in the medical laboratory. Prerequisites: 20 hours biologic sciences, 8 hours chemistry, 3 hours math; including Biology 101, 102, and 369; Anatomy 204 and departmental approval.

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.

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.

The Cytotechnology Program is part of the Pathology department.

The Pathology courses for Cytotechnology majors are listed below:

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

II. The Center for Teaching and Learning Program in Secondary Education, see page 77.

III. The Following Curriculum:

65 hours, including:

Geol 101, 102 General Geology—Physical and Historical (8)
Geol 311 Geomorphology (4)
Geol 313 (An additional 10 hours, in consultation with adviser) (10)

Earth Science

Center for Teaching and Learning

B.S.Ed. with Major in Earth Science

Required 125 hours, including:

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

II. The Center for Teaching and Learning Program in Secondary Education, see page 77.

III. The Following Curriculum:

65 hours, including:

Geol 101, 102 General Geology—Physical and Historical (8)
Geol 311 Geomorphology (4)
Geol 313 (An additional 10 hours, in consultation with adviser) (10)

Economics (Econ)

D. Ramsett (Chair), Bagheri, Biederman, Blackwell, Ceyhun, Khactu, Korbach, O’Neill, and Stradley

Economics is the study of resources and how they may be used to achieve and maximize the economic goals of individuals, business firms, organizations, governments and societies. The study of Economics is typically divided into two parts: macro-economics (or aggregate economic analysis) studies economics from a broad-based perspective, including problems and issues such as unemployment, inflation and economic growth; micro-economics (or partial economic analysis) studies economics in terms of individual components, including problems and issues such as product pricing, competition, regulation and international trade. Students of Economics can expect to become familiar with key economic concepts and laws which give them an analytical perspective which is unique to this discipline, but is of great importance to individuals and to society.

The Department of Economics offers three undergraduate programs that prepare students for careers in business, banking, and government. The B.B.A. with a major in Banking and Financial Economics or with a major in Business Economics is offered by the College of Business and Public Administration. The major in Banking and Financial Economics offers a comprehensive curriculum which provides a background in economic theory, the principles and practices of banks and other financial institutions, bank regulation, macroeconomic policy and international finance. Experience has shown that graduates of this program are prepared to immediately function in highly responsible positions in financial institutions or regulatory agencies and, also have the advantages of the “big picture” perspective provided by a knowledge of economics in general. The major in Business Economics emphasizes the business firm—integrating economics with related areas in marketing, management, accounting, finance and quantitative analysis. This program provides students with the analytical and technical skills increasingly required in business and government at local, regional, national and international levels. The B.A. with a major in Economics is offered by the College of Arts and Sciences. This is a flexible program for students who wish to combine the study of Economics with such fields as Mathematics, Statistics, the Social Sciences or Industrial Technology. A minor in Economics also is offered by the College of Arts and Sciences.

Graduates from the departments programs may be employed as bank officers, bank examiners, economic analysts, financial analysts, economic forecasters, and many other related professions. All programs in Economics include the necessary undergraduate economics courses for students who intend to pursue graduate level study. In addition, the major in Business Economics and the major in Economics offer a quantitative track which is recommended for students preparing for graduate study in Economics or Actuarial Science.

College of Business and Public Administration

All B.B.A. candidates must fulfill the College of Business and Public Administration degree requirements.
**B.B.A. WITH MAJOR IN BANKING AND FINANCIAL ECONOMICS**

Required 125 hours, including:

I. General Education Requirements, see pages 27-31.
II. College of Business and Public Administration Requirements, see page 42 and including:

- **Acct 200, 201** Elements of Accounting I & II
- **Acct 315** Business in the Legal Environment
- **BVED 217** Fundamentals of Management
- **Comm 161** Fundamentals of Public Speaking
- **Fin 310L** Principles of Finance
- **Fin 310L** Problems in Financial Management
- **Math 104** Finite Mathematics
- **Mgmt 300** Principles of Management
- **Mgmt 303** Production Management
- **Mgmt 497** Strategic Management
- **Mrkt 301** Principles of Marketing

Elect one course from the following:

- **Anth 171** Introduction to Anthropology
- **Psy 101** Introduction to Psychology
- **Soc 101** Introduction to Sociology

Required courses:

- **Econ 201** Principles of Microeconomics
- **Econ 202** Principles of Macroeconomics
- **Econ 210** Introduction to Business and Economic Statistics
- **Econ 300** Money and Banking
- **Econ 303** Principles of Banking
- **Econ 308** Intermediate Microeconomic Theory and Policy
- **Econ 405** Bank Regulation
- **Econ 438** International Money and Finance
- **Econ 496** Research in Economics
- **Econ 497** Readings in Economics
- **Math 212** Calculus II
- **Math 213** Calculus III
- **Math 351** Elementary Differential Equations
- **Math 352** Advanced Engineering Mathematics I
- **Math 353** Advanced Engineering Mathematics II
- **Math 421** Statistical Theory I
- **Math 422** Statistical Theory II

*Required electives: a minimum of 3 hours from:

- **Acct 302** Intermediate Accounting II
- **Econ 310** Intermediate Business and Economic Statistics
- **Econ 311** Business Cycles and Forecasting
- **Econ 324** Public Finance
- **Econ 331** Comparative Economic Systems
- **Econ 338** International Economics
- **Econ 341** Labor Economics and Labor Relations
- **Econ 355** Government Regulation of Business
- **Econ 370** Issues in Applied Microeconomics
- **Econ 380** Current Issues in Global Economics
- **Econ 395** Special Topics in Economics
- **Econ 400** History of Economic Thought
- **Econ 414** Managerial Economics
- **Econ 416** Mathematics for Economists
- **Econ 438** International Money and Finance
- **Econ 496** Research in Economics
- **Econ 497** Readings in Economics
- **Math 212** Calculus II
- **Math 213** Calculus III
- **Math 351** Elementary Differential Equations
- **Math 352** Advanced Engineering Mathematics I
- **Math 353** Advanced Engineering Mathematics II
- **Math 421** Statistical Theory I
- **Math 422** Statistical Theory II

**No more than 6 hours of electives from Econ 395, 496 and 497 may count toward the major requirements.**

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**B.B.A. WITH MAJOR IN BUSINESS ECONOMICS**

Required 125 hours, including:

I. General Education Requirements, see pages 27-31.
II. College of Business and Public Administration, see page 42 and including:

- **Acct 200, 201** Elements of Accounting I & II
- **Acct 315** Business in the Legal Environment
- **BVED 217** Fundamentals of Management
- **Comm 161** Fundamentals of Public Speaking
- **Fin 310L** Principles of Finance
- **Fin 310L** Problems in Financial Management
- **Math 104** Finite Math
- **Math 204** Survey of Calculus
- **Mgmt 300** Principles of Management
- **Mgmt 303** Production Management
- **Mgmt 497** Strategic Management
- **Mrkt 301** Principles of Marketing

**Psci 101** American Government

Elect one course from the following:

- **Anth 171** Cultural Anthropology
- **Psy 101** Introduction to Psychology
- **Soc 101** Introduction to Sociology

Required Economics courses:

- **Econ 201** Principles of Microeconomics
- **Econ 202** Principles of Macroeconomics
- **Econ 210** Introduction to Business and Economic Statistics
- **Econ 303** Money and Banking
- **Econ 308** Intermediate Microeconomic Theory
- **Econ 309** Intermediate Macroeconomic Theory & Policy
- **Econ 400** History of Economic Thought

Required Economics courses (6 hours from the following):

- **Econ 370** Issues in Applied Microeconomics
- **Econ 380** Current Issues in Global Economics
- **Econ 409** Current Issues in Macroeconomic Policy

(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
- **Econ 310** Intermediate Business and Economic Statistics
- **Econ 311** Business Cycles and Forecasting
- **Econ 324** Public Finance
- **Econ 331** Comparative Economic Systems
- **Econ 338** International Economics
- **Econ 341** Labor Economics and Labor Relations
- **Econ 355** Government Regulation of Business
- **Econ 395** Special Topics in Economics
- **Econ 405** Bank Regulation
- **Econ 414** Managerial Economics
- **Econ 416** Mathematics for Economists
- **Econ 438** International Money and Finance
- **Econ 496** Research in Economics
- **Econ 497** Readings in Economics
- **Math 212** Calculus II
- **Math 213** Calculus III
- **Math 351** Elementary Differential Equations
- **Math 352** Advanced Engineering Mathematics I
- **Math 353** Advanced Engineering Mathematics II
- **Math 421** Statistical Theory I
- **Math 422** Statistical Theory II

**No more than 6 hours of electives from Econ 395, 496, and 497 may count toward the major requirements.**

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**College of Arts and Sciences**

**B.A. WITH MAJOR IN ECONOMICS**

Required 125 hours, 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
- **Econ 202** Principles of Macroeconomics
- **Econ 210** Introduction to Business and Economic Statistics
- **Econ 303** Money and Banking
- **Econ 308** Intermediate Microeconomic Theory
- **Econ 309** Intermediate Macroeconomic Theory & Policy
- **Econ 400** History of Economic Thought

Required Economics courses (6 hours from the following):

- **Econ 370** Issues in Applied Microeconomics
- **Econ 380** Current Issues in Global Economics
- **Econ 409** Current Issues in Macroeconomic Policy

(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
- **Econ 310** Intermediate Business and Economic Statistics
- **Econ 311** Business Cycles and Forecasting
- **Econ 324** Public Finance
- **Econ 331** Comparative Economic Systems
- **Econ 338** International Economics
- **Econ 341** Labor Economics and Labor Relations
- **Econ 355** Government Regulation of Business
- **Econ 395** Special Topics in Economics
- **Econ 405** Bank Regulation
- **Econ 414** Managerial Economics
- **Econ 416** Mathematics for Economists
- **Econ 438** International Money and Finance
- **Econ 496** Research in Economics
- **Econ 497** Readings in Economics
- **Math 212** Calculus II
- **Math 213** Calculus III
- **Math 351** Elementary Differential Equations
- **Math 352** Advanced Engineering Mathematics I
- **Math 353** Advanced Engineering Mathematics II
- **Math 421** Statistical Theory I
- **Math 422** Statistical Theory II

**No more than 6 hours of electives from Econ 395, 496, and 497 may count toward the major requirements.**
MINOR IN ECONOMICS

Courses

105. Elements of Economics, 3 credits. Survey of Economic principles for students planning no further formal study of Economics. Analysis of factors influencing aggregate levels of output, employment, and prices; introduction to U.S. monetary system; price determination and resource allocation under competitive and monopolistic conditions. Review of selected contemporary economic issues. (No credit if Economics 201-202. Principles I and II, have been completed or audited. Not available to students in the College of Business and Public Administration.) F,S

201. Principles of Microeconomics, 3 credits. Open to freshmen. Pre- or corequisite: 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: Economics 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: Economics 303. This course introduces the students to basic principles of banking governing loans, investments, deposits, liabilities, and capital. Consideration is given to the areas of liquidity, profitability, and capital adequacy as they relate to regulatory standards. Additional topics include bank organization, performance, and scope of services. F,S

308. Intermediate Microeconomic Theory, 3 credits. Prerequisite: Economics 201 and 202. Theory of demand, production, and cost; price determination under alternative market structures; general equilibrium and economic welfare; analysis of market failure; applications to public policy. (Core requirement for students planning advanced study in Economics.) F,S

309. Intermediate Macroeconomic Theory and Policy, 3 credits. Prerequisite: Economics 201 and 202. A framework for studying national income, employment, and the general price level is developed. Theoretical perspectives on the National Income and Product accounts, expenditures in the public and private sectors of the economy, and the 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.) F,S

310. Intermediate Business and Economic Statistics, 3 credits. Prerequisites: Economics 210, Math 204 or equivalent, BUS 207 or equivalent. Estimation and interpretation of models widely used in Business and Economics. Topics include multiple regression analysis and analysis of covariance, cross-sectional and time-series problems, and multiple equation models. F

311. Business Cycles and Forecasting, 3 credits. Prerequisite: Economics 210. An examination of the theories and methods of forecasting economic trends at various levels of aggregation. S

324. Public Finance, 3 credits. Prerequisite: Economics 201 and 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,S

331. Comparative Economic Systems, 3 credits. Prerequisite: Economics 201 and 202. Theoretical foundation of capitalism; comparative role of the price mechanism and centralized planning; historical development of the British and Soviet economies; analysis of resource allocation, economic institutions and problems under contrasting economic systems. On demand.

337. Cooperative Education, 1-4 credits. Repeatable to 6 credits. Prerequisite: Permission of Departmental Cooperative Education Coordinator to enroll. A practical work experience with an employer closely associated with the student’s academic area. S-U grading only. F,S

338. International Economics, 3 credits. Prerequisite: Economics 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 or S

341. Labor Economics and Labor Relations, 3 credits. Prerequisite: Economics 201 and 202. A survey of the nature and causes of the economic problems of the American wage and salary earner and of the attempts of wage earners and society, through organizations and legislation, to alleviate these problems. The course comparatively surveys the history and systematic theories of labor movements and the market and institutional influences on wages and employment. Particular emphasis will be placed on the law of industrial relations, employment and income access, and the adjustment of labor disputes. F

355. Government Regulation of Business, 3 credits. Prerequisite: Economics 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,S

370. Issues in Applied Microeconomics, 3 credits. Prerequisite: Economics 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 include: national income account, 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: Economics 201 and 202. The 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.

391. Special Topics in Economics, 1-3 credits. Prerequisite: Economics 201 and 202. Specific topics 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: Economics 105 or Economics 201 and 202. Broad overview of the major schools of thought including Mercantilist, Physiocratic, Classical, Marxian, Socialist, Historical, Austrian, Neoclassical, Institutional, Keynesian, and Monetarist. The coverage includes value theory, income/expenditure theory, growth/development theory, socialist economic theory, scope of services, and a survey of current economic issues/controversies. S

405. Bank Regulation, 3 credits. Prerequisite: Economics 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: Economics 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: Economics 210, 308; Math 204 or equivalent: BUS 207 or equivalent. Synthesis of banking regulations as curricula, and mathematics to pricing, output, and resource allocation decisions by business firms. S


420. Economic Education, 3 credits. Prerequisite: Economics 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: Economics 303. Identification of key international financial concepts and analysis of their relationships in the international monetary and capital markets and preparation of special topics and bibliographies. Familiarizing the student with government publications and other material available for study of economic problems. F,S,S

496. Research in Economics, 1-3 credits. Research work and use of original documents, collecting of data, preparing of special topics and bibliographies. Familiarizing the student with government publications and other material available for study of economic problems. F,S,S
School of Engineering and Mines

B.S. in ELECTRICAL ENGINEERING

Required 136 hours, including:

I. General Education Requirements, see pages 27-31 & page 45

II. The Following Curriculum:

### Freshman Year

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chem 101</td>
<td>General Chemistry I</td>
<td>(4)</td>
</tr>
<tr>
<td>Econ 201</td>
<td>Principles of Microeconomics</td>
<td>(3)</td>
</tr>
<tr>
<td>EE 101</td>
<td>Intro to Electrical Engineering***</td>
<td>(1)</td>
</tr>
<tr>
<td>EE 201</td>
<td>Intro to Digital Electronics</td>
<td>(1)</td>
</tr>
<tr>
<td>EE 202</td>
<td>Electrical Engineering Lab</td>
<td>(1)</td>
</tr>
<tr>
<td>Engl 101</td>
<td>Composition I</td>
<td>(3)</td>
</tr>
<tr>
<td>Engl 209</td>
<td>Technical and Business Writing</td>
<td>(3)</td>
</tr>
<tr>
<td>Engr 101</td>
<td>Engineering Graphics</td>
<td>(2)</td>
</tr>
<tr>
<td>Math 211, 212</td>
<td>Calculus I, II</td>
<td>(4)</td>
</tr>
<tr>
<td>Phys 205</td>
<td>General Physics</td>
<td>(4)</td>
</tr>
<tr>
<td>Soc 101</td>
<td>Introduction to Social Science</td>
<td>(3)</td>
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### Sophomore Year

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<tbody>
<tr>
<td>Chem 102</td>
<td>Analytical Mechanics (Statics)</td>
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</tr>
<tr>
<td>EE 206</td>
<td>Electrical Engineering</td>
<td>(3)</td>
</tr>
<tr>
<td>EE 304 or Engr 212</td>
<td>Fundamentals of Computer Programming</td>
<td>(3)</td>
</tr>
<tr>
<td>EE 306</td>
<td>Electrical Engineering Laboratory</td>
<td>(1)</td>
</tr>
<tr>
<td>EE 307</td>
<td>Electrical Engineering Laboratory</td>
<td>(1)</td>
</tr>
<tr>
<td>EE 313</td>
<td>Linear Electric Circuits</td>
<td>(3)</td>
</tr>
<tr>
<td>Math 213</td>
<td>Calculus III</td>
<td>(4)</td>
</tr>
<tr>
<td>Math 351</td>
<td>Elem. Differential Equations</td>
<td>(3)</td>
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<tr>
<td>Phys 206</td>
<td>General Physics</td>
<td>(4)</td>
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<tr>
<td>Soc 101</td>
<td>Social Science (See page 94)</td>
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### Junior Year

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<th>Title</th>
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<tbody>
<tr>
<td>EE 308</td>
<td>Electrical Engineering Laboratory</td>
<td>(2)</td>
</tr>
<tr>
<td>EE 314</td>
<td>Linear Electric Circuits</td>
<td>(3)</td>
</tr>
<tr>
<td>EE 316</td>
<td>Electric &amp; Magnetic Fields</td>
<td>(4)</td>
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<tr>
<td>EE 321</td>
<td>Electronics I</td>
<td>(4)</td>
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<tr>
<td>EE 401</td>
<td>Electromechanical Energy Conversion</td>
<td>(4)</td>
</tr>
<tr>
<td>EE 405</td>
<td>Control Systems I</td>
<td>(3)</td>
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<tr>
<td>EE 409</td>
<td>Distributed Networks</td>
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<tr>
<td>EE 421</td>
<td>Electrons II</td>
<td>(3)</td>
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<tr>
<td>EE 425</td>
<td>Electronics Laboratory</td>
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<tr>
<td>Math 353</td>
<td>Advanced Engineering Math II</td>
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<tr>
<td>Phys 208</td>
<td>General Physics</td>
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### Senior Year

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<th>Course</th>
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<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>EE 403</td>
<td>Machinery Laboratory</td>
<td>(1)</td>
</tr>
<tr>
<td>EE 407</td>
<td>Senior Design I</td>
<td>(2)</td>
</tr>
<tr>
<td>Phil 370</td>
<td>Ethics in Engineering</td>
<td>(3)</td>
</tr>
<tr>
<td>Phys 320</td>
<td>Elementary Solid State Physics</td>
<td>(3)</td>
</tr>
<tr>
<td>Engineering Science Electives</td>
<td>(3)</td>
<td></td>
</tr>
<tr>
<td>Technical Electives**</td>
<td>(3)</td>
<td></td>
</tr>
<tr>
<td>Electrical Engineering Electives***</td>
<td>(3)</td>
<td></td>
</tr>
<tr>
<td>Arts and Humanities (See page 28)</td>
<td>(3)</td>
<td></td>
</tr>
</tbody>
</table>


** Technical Electives: Approved (by advisor) courses in Engineering, Math, and Computer Science and Physical Science not prerequisite to any required course in Electrical Engineering, and normally should be a 300 or higher level course.

*** Electrical Engineering Electives must include one of the following: EE 402, 423, 424, or 428.

**** May be waived for transfer students (substitute science credit required.)

### Courses

101. Introduction to Electrical Engineering. 1 credit. An introduction to the electrical engineering discipline. Recent technologies and practices in electronics, computers, controllers, power systems, robotics, control systems, and microwaves. F

201. Introduction to Digital Electronics. 1 credit. Co-requisite: EE 202. Introduction to the fundamentals of digital circuits design. Logic gates, Boolean algebra; Karnaugh maps; Mathematical operations; Flip Flops, Counters. F,S

202. Electrical Engineering Laboratory. 1 credit. Co-requisite: 201. Introduction to design and implementation of digital electronic circuits. S

301. Electric Circuits Laboratory I. 1 credit. Co-requisite: EE 206. Introduction to methods of experimental circuit analysis and to proper uses of laboratory equipment. F

307. Circuits Laboratory II. 1 credit. Prerequisite: EE 306. Co-requisite: EE 313. Experimental circuit analysis and proper uses of laboratory equipment. F

308. Electronics Laboratory I. 2 credits. Prerequisite: EE 307. Co-requisite: EE 324. Practical application and design using theory studied in concurrent electrical engineering courses. F

313. Lineare Electric Circuits. 3 credits first semester, 3 credits second semester. Prerequisites: EE 206*, Math 213*, Physics 206*. Co-requisite: Math 351. Analysis of Electric Circuits in the steady state and transient condition, single and polyphase systems, filter design, wave analysis, and digital circuits. 313 S 314 F

316. Electric and Magnetic Fields. 3 credits. Prerequisites: EE 206*, Math 351, and Physics 206*. Field produced by simple distributions of electric charges and magnetic poles, field mapping, and application problems. F


337. Cooperative Education. 1-3 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

401. Electromechanical Energy Conversion. 4 credits. Prerequisite: EE 313 and 316. Theory and operation of transformers, induction motors, synchronous machines and D.C. machines and associated equipment. S

403. 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.


405. Control Systems I. 3 credits. Prerequisite: EE 313 or consent of instructor. Dynamics response to linear control systems; design and synthesis techniques used in determining stability of linear systems. S

409. Distributed Networks. 2 credits. Prerequisites: EE 313 and 316. Fundamentals of power and communication transmission lines. S

411. Communications Engineering. 3 credits. Prerequisites: EE 314. Mathematical definition of random and deterministic signals and a study of various modulation systems. On demand.

421. Electronics II. 3 credits. Prerequisite: EE 314 and 321. Analysis of electronic devices, including power amplifiers, pulse and digital circuits. S


424. Electronic Circuits. 3 credits. Prerequisite: EE 421. Principles, applications, and design of electronic equipment studied from viewpoint of complete systems. On demand.

425. Electronics Laboratory. 1 credit. Co-requisite: EE 421. Laboratory work to parallel the material in Electrical Engineering 421. S

428. Robotics Fundamentals. 3 credits. Prerequisite: EE 321 and consent of instructor. Fundamentals of industrial robots' configuration, programming, and control are addressed. Actuators, sensors, device coordination and programming and control are emphasized. The laboratory provides hands-on experience with numerical control and robot's control. On demand.

430. Radiating Systems. 3 credits. Prerequisite: EE 409. Analysis and synthesis of a variety of telecommunication and sensor systems. On demand.

434. Microwave Engineering. 3 credits. Prerequisite: EE 409 or consent of instructor. Review of transmission lines and plane waves, analysis of microwave networks and components using scattering matrices, analysis of periodic structures, trans-
mission 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.

456. Digital Image Processing, 3 credits. Prerequisites: EE 313 or consent of instructor and Math 353 (or can be taken as a corequisite). Co-requisite: Math 353. Digital image retrieval, modification, enhancement, restoration, and storage. Image transformation and computer vision. The associated laboratory provides hands-on experience. On demand.

490. Electrical Engineering Problems, 1-9 credits. Repeatable to maximum of 9 credits. Prerequisite: Approval by departmental faculty member under whom the electrical engineering problem is studied. F,S

*Course must be completed with a "C" or better.

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**Engineering**

(Engr)

**Courses**

101. Introduction to Engineering and Design, 2 credits. Development of visualization, technical communication, and documentation skills. 3-D geometric modeling as applied to CADD applications using current methods and techniques commonly found in industry. Introduction to engineering, design and problem solving. F,S

102. Descriptive Geometry, 2 credits. Prerequisite: Engr 101. Study of basic engineering and geological applications of 3-D geometric problem solving. Analysis techniques are presented for the enhancement of spatial visualization skills. Computer Aided Design applications are utilized using current methods and techniques commonly found in industry. A

201. Computer Applications in Engineering, 2 credits. The fundamentals of digital computer programming are presented with special emphasis on a high-level language and engineering applications. The fundamentals of PC-based software applications (word processing, spreadsheets, communications, and networks) and operating systems are also presented. F,S

212. Advanced 3-D Computer Geometric Modeling and Analysis, 2 credits. Prerequisites: Engr 101 and 102. The study of solid modeling methods (constructive solid geometry, boundary representation, and octree) including Boolean logic and operators, parametric modeling, transformations, surface modeling, documentation, and standards. F

460. Engineering Economy, 3 credits. Prerequisite: Econ 201. Economic effects of engineering decisions involving time, value of money, economic balance, cost estimating and venture analysis. F,S,SS

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**Engineering Physics**

(See Applied Physics)

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**English Language and Literature**

(Engl)

D. Sheridan (Chair), Anderegg, Beard, Borden, Carson, Coleman, Dilks, Dixon, Donaldson, Hampsten, Huang, King, Koprinch, Lewis, Little, Marshall, McKenzie, J. Meek, M. Meek, O’Donnell, O’Kelly, Rankin, 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, librarianship, and the professions of law, medicine, the ministry, and diplomacy.

English 251 and 252 (3 hours each) are courses at the sophomore level recommended for English majors. The courses require a reasonable degree of ability to analyze orally and in writing a wide variety of literary texts. These courses are introductory to all other literature courses. Students who become English majors after their sophomore year or after having taken 211, 213, and/or 217, or their equivalents, may substitute those courses or their equivalents with the approval of their advisers.

Other courses for the 36-hour English major must be approved by each student’s English Department adviser. Programs of study 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. Students are urged to take more than one foreign language if they are considering graduate work in languages and linguistics.

The following is a listing of courses grouped in categories to fulfill distribution requirements for the major. At least 3 credits must be taken in each of five of the following six categories. A minimum of 2 credits is acceptable in category six.

1. Historical period or survey courses, including:
   - 151, 152: Masterpieces of European Literature
   - 200*: Topics in Language and Literature (when applicable and approved), e.g., The Twenties
   - 301, 302: Survey of English Literature
   - 303, 304: Survey of American Literature
   - 357: Women Writers and Readers (when applicable and approved)
   - 365: Black American Writers (when applicable and approved)
   - 367: American Indian Literature (when applicable and approved)
   - 369: Literature and Culture
   - 401: Studies in Medieval Literature
   - 402: Studies in Early Renaissance Literature
   - 403: Studies in Colonial American Literature
   - 404: Studies in Late Renaissance Literature
   - 405: Studies in Restoration and Eighteenth Century (English) Literature
   - 406: Studies in Nineteenth Century Literature
   - 407: Studies in Twentieth Century Literature
   - 415: Special Topics in Literature (when applicable and approved), e.g., Nineteenth Century American Humor, Restoration Satire, Modern Canadian Literature

2. Major author courses, including:
   - 200*: Topics in Language and Literature (when applicable and approved)
   - 315, 316: Shakespeare
   - 415: Special Topics in Literature (when applicable and approved), e.g., Keats, Melville, Dickinson, Faulkner

3. Generic courses, including:
   - 200*: Topics in Language and Literature (when applicable and approved), e.g., The Modern Short Story
   - 211*: Introduction to Fiction
   - 213*: Introduction to Poetry

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*Course must be completed with a "C" or better.
### College of Arts and Sciences or Center for Teaching and Learning

**B.A. or B.S.Ed. WITH MAJOR IN ENGLISH AND SECONDARY CERTIFICATION PREPARATION**

Required 125 hours including:

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

II. The Center for Teaching and Learning program in Secondary Education. See page 77. Must include:

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>CTL 400</td>
<td>Methods and Materials of Teaching Literature and Reading</td>
<td>(3)</td>
</tr>
<tr>
<td>CTL 400</td>
<td>Methods and Materials of Teaching Writing</td>
<td>(3)</td>
</tr>
</tbody>
</table>

III. The Following Curriculum:

**Major Requirements — 36 hours including:**

- 24 hours of English courses
- 12 hours from other departments

**Language and Linguistics courses, including:**

- 411, 412 The Art of Writing (each course may be repeated once for credit)
- 203, 308 Composition III and IV
- 442 History of the English Language
- 417 Special Topics in Language, e.g., Transformational Grammar, Classic Rhetoric
- 419 Teaching English as a Second Language

**Courses**

101. Composition I. 3 credits. Guided practice in writing, with emphasis on thoughtful analyses of one’s subject matter, clear understanding of the writing situation, flexible use of rhetorical strategies, and development of stylistic options. Does not apply to English major or minor. F.S

102. Composition II. 3 credits. Prerequisite: English 101. Guided practice in writing, with emphasis on more demanding writing situations. Does not apply to English major or minor. F.S

151, 152. Masterpieces of European Literature. 6 credits. Great literature of western Europe, or in the European tradition, studied with emphasis upon intellectual and cultural values. F.S

206. Topics in Language and Literature. 1-4 credits. A course for undergraduate students, on topics varying from term to term. F.S

209. Technical and Business Writing. 3 credits. Prerequisite: English 101. Does not apply on the English major or minor. F.S

211. Introduction to Fiction. 2 credits. Fiction studied as a literary type, for understanding and for critical appreciation. F.S

213. Introduction to Poetry. 2 credits. Poetry studied as a literary type, for understanding and for critical appreciation. F.S

217. Introduction to Drama. 2 credits. Drama studied as a literary type, for understanding and for critical appreciation. F.S

219. Introduction to Film. 2 credits. The study of film drama, concentrating on appreciation and evaluation of motion pictures. F.S
251, 252. Analysis of Literature I and II. 4-6 credits. Recommended for English majors. Prerequisite: English 102. Students read, write about, and discuss significant literary texts in English. A critical introduction to advanced literature courses. F/S

301, 302. Survey of English Literature. 6 credits. English Literature from its beginnings to the twentieth century. F/S

303, 304. Survey of American Literature. 6 credits. The literature of the United States from its beginnings to the twentieth century. F/S

305. Creative Writing. 2 credits. Imaginative writing of various types. The course may be repeated once for credit. F/S

308. Composition IV. 2 credits. Advanced writing. Emphasis on the conventions of particular kinds of writing such as research reporting, writing for teachers, and article writing. English 203 recommended before English 308. S

309. Modern Grammar. 3 credits. Various approaches to the structure of modern English, with emphasis on dialect variation and applications to the problems of teaching. F

315, 316. Shakespeare. 6 credits. Shakespeare’s works studied in chronological sequence. F/S

320. Studies in American Fiction. 3 credits. Prior course recommended: 211, 251, or 252. Repeatable when topics vary. F


322. Studies in American Drama. 3 credits. Prior course recommended: 217, 251, or 252. Repeatable when topics vary. S

330. Studies in English Fiction. 3 credits. Prior course recommended: 211, 251, or 252. Repeatable when topics vary. S

331. Studies in English Poetry. 3 credits. Prior course recommended: 213, 251, or 252. Repeatable when topics vary. S

332. Studies in English Drama. 3 credits. Prior course recommended: 217, 251, or 252. Repeatable when topics vary. F

337. Cooperative Education. 1-8 credits, repeatable to 15. Prerequisites: 15 credits completed in English; 2.5 GPA; 2.75 GPA in English. A course designed to offer English majors work experience related to their disciplinary training in close reading, careful writing, and interpretative analysis. F,S,SS

357. Women Writers and Readers. 2-4 credits. Literature by and about women, examining the social, historical, and aesthetic significance of the works. Repeatable when topics vary. F,S

361. American Indian Languages I. 3 credits. Prerequisite: English 207. Introductory study of one of the Native American Languages of North Dakota. Repeatable for different languages. F

362. American Indian Languages II. 3 credits. Prerequisite: 207; 361. Continuing introductory study of one of the Native American Languages of North Dakota; repeatable for different languages. S

365. Black American Writers. 3 credits. Writing by Black Americans studied for understanding and critical appreciation. S

367. American Indian Literature. 3 credits. Writings by and about American Indians, studied for understanding and critical appreciation. S

369. Literature and Culture. 1-3 credits. Repeatable when topics vary. Prerequisite: 3 hours of English (excluding composition) or consent of the department. F

370. Language and Culture. 3 credits. Prerequisite: English 207. Interaction of language with other cultural subsystems. (Same course as Anthropology 370.) S

398. Independent Study. 1-4 credits. For English majors only. Prerequisite: Written consent of the department. Supervised independent study. Only 6 hours may apply to the 36-hour English major. F,S

401. Studies in Medieval Literature. 3 credits. A course in the literature of England in the Medieval period. Repeatable when topics vary. F/S


403. Studies in Colonial American Literature. 3 credits. A course in the literature of America in the colonial period. Repeatable when topics vary. F/S

404. Studies in Late Renaissance Literature. 3 credits. A course in the literature of the English Renaissance, 1603-1660. Repeatable when topics vary. F/S, S

406. Studies in Nineteenth Century Literature. 3 credits. A course in literature in English of the Nineteenth Century. Repeatable when topics vary. F/S

407. Studies in Twentieth Century Literature. 3 credits. A course in literature in English of the Twentieth Century. Repeatable when topics vary. F/S

409. Art of the Cinematic Drama. 3 credits. Prerequisite: English 219. An investigation of the aesthetics of the film drama with 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

413. Studies in Literature for Young Readers. 3 credits. A course in literature for young people, examining the social, historical, and aesthetic significance of the works. Course may vary by reading level, genre, historical period, and theme. Repeatable when subject matter varies. S/F

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/S

442. History of the English Language. 3 credits. The development of the language from the earliest times to the present. This course is required of all English graduate students and is recommended for all prospective English teachers. S

499. Senior Honors Thesis. 1 to 15 credits; total not to exceed fifteen. Prerequisite: consent of the Department and approval of the Honors Committee. Supervised independent study culminating in a thesis. F,S

Family and Consumer Sciences

(FCS)

J. Bostrom (Chair), Askim, Crawford, Goodwin, Hall, Rude, and Uhlenberg

Family and Consumer Sciences

The mission of the Department of Family and Consumer Sciences is to offer theoretical and experiential preparation for professionals. The professional program offered:

B.S. in Family and Consumer Sciences: Coordinated Program in Dietetics

The Coordinated Program in Dietetics combines academic preparation with clinical experiences for students who wish to become Registered Dietitians (R.D.). Upon completion of this degree, students are eligible for membership in the American Dietetic Association and to take the examination for professional registration. Students work in a variety of settings to assist clients to improve or maintain nutritional health. Students apply for admission to the program during the second semester of the sophomore year or when they have completed the preprofessional requirements. A cumulative grade point of 2.60 or higher 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 American Dietetic Association Council on Education, a specialized accrediting body recognized by the Council on Postsecondary Accreditation and the United States Department of Education.

College for Human Resources Development

B.S. IN FAMILY AND CONSUMER SCIENCES: COORDINATED PROGRAM IN DIETETICS

Required 125 hours, including:

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

II. College for Human Resources Development Requirements, see page 49.

III. The Following Curriculum:

Pre-professional Requirements:

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>FCS 100</td>
<td>Introduction to Family and Consumer Sciences</td>
<td>3</td>
</tr>
<tr>
<td>FCS 231</td>
<td>Food Management</td>
<td>3</td>
</tr>
<tr>
<td>FCS 240</td>
<td>Fundamentals of Nutrition</td>
<td>3</td>
</tr>
<tr>
<td>CTL 252</td>
<td>Child Development</td>
<td>3</td>
</tr>
<tr>
<td>FCS 332</td>
<td>Principles of Food Science</td>
<td>3</td>
</tr>
<tr>
<td>FCS 335</td>
<td>World Food Patterns</td>
<td>3</td>
</tr>
<tr>
<td>Acc 206</td>
<td>Elements of Accounting</td>
<td>3</td>
</tr>
<tr>
<td>BEd 101</td>
<td>Introduction to Biology</td>
<td>4</td>
</tr>
<tr>
<td>or Anat 204 and 271</td>
<td>Anatomy for Medical Personnel</td>
<td>5</td>
</tr>
<tr>
<td>Chem 105, 106</td>
<td>General Chemistry I, II</td>
<td>8</td>
</tr>
<tr>
<td>Chem 212</td>
<td>Organic Chemistry</td>
<td>5</td>
</tr>
<tr>
<td>Math 103</td>
<td>College Algebra</td>
<td>3</td>
</tr>
</tbody>
</table>
University of North Dakota

Minor in Family and Consumer Sciences

Required: 20 hours

Upon consultation with an advisor in Family and Consumer Sciences, select 20 semester hours from Foods and Nutrition.

Courses

100. Introduction to Family and Consumer Sciences. 1 credit. The philosophy, history, present and future trends of Family and Consumer Sciences will be discussed. The career opportunities in Dietetics will be described. S/U grading only. F

231. Food Management. 3 credits. Management of personal and economic resources in planning and providing for food consumption by individuals and family groups. F,S

240. Fundamentals of Nutrition. 3 credits. Basic principles of nutrition with application for individuals and family groups. F,S

325. Introduction to Dietetics. 1 credit. Co-requisite: Admission to dietetic program. Study of the profession of dietetics, the employment opportunities and the dietetic program at UND. S-U grading only. F

340. Food Service Management. 3 credits. Prerequisites: FCS 231, 332. Principles of organization, management and promotion as applied to preparation, service, marketing and evaluation of foods with reference to quality and production costs; use and operation of equipment, quantity food production and analysis. F

341. Maternal and Child Nutrition. 2 credits. Prerequisites: FCS 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

342. Community Nutrition. 3 credits. Prerequisite: FCS 341, 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

345. Nutrition in the Aging Process. 2 credits. Prerequisite: FCS 240. Application of physiological, socio-psychological, and educational aspects of nutrition as it impacts the health and well-being of people as they age. S

348. Sports Nutrition. 3 credits. Prerequisites: FCS 240 and Phy 301. A study of nutrition designed to meet the specialized needs of the athlete. S

360. Consumer Issues. 3 credits. Analysis of consumer issues and decisionmaking with emphasis of antecedent conditions and consequences to consumers and to global environments. Development of skill in addressing issues. Includes discussion of U.S. consumption practices with comparisons from other cultural contexts. S

361. Personal and Family Finance. 3 credits. Analysis of personal and family financial decisions, resources, and planning as related to life cycle, socio-cultural, and economic contexts. Includes discussion of cash management, credit, insurance, investment, retirement and estate planning. F,S

362. Family Management. 3 credits. Analysis of how families manage resources. Includes identification of values and goals, communication, planning, implementation, and evaluation. Emphasis on the relationship of work and family roles. Field experience planned to meet individual student need. S

400. Professional Issues. 2 credits. Prerequisites: Senior status, FCS 100 and 365. Analysis of professional issues across family and consumer sciences related fields at macro and micro levels. Development of skills and formulation of strategies to address issues. Development of job seeking skills. F

414. History of Costume. 3 credits. A comparative study of dress from ancient to modern time with consideration of social, economic and political factors affecting dress, and the contributions to apparel design of the western world. S

420. Retail Buying. 3 credits. Prerequisite: Math 104, Accnt 200, FCS 311. Analysis of buying practices and techniques, with a focus on the impact of consumer buying power, market resources, governmental regulations, merchandise planning and control, pricing, purchase negotiations and open-to-buy. S

430. Experimental Foods. 3 credits. Prerequisite: FCS 332, Chem 106. Development of experimental food methods and techniques and their application to investigation in cookery processes. (Laboratory) F

436. Integration of Dietetic Knowledge and Practice. 3 credits. Prerequisites: FCS 340, 342, 442, 496, I, II, III. Synthesizes the skills of program supervised practice experiences and the didactic courses which present the knowledge component. S

441. Advanced Nutrition. 4 credits. Prerequisites: FCS 240, Chem 212. A comprehensive investigation of the nutritional needs of humans with emphasis on nutritional biochemistry and current issues. S

442. Medical Dietetics. 4 credits. Prerequisites: FCS 441, Phy 301. Application of nutritional intervention principles to disease states and appropriate therapeutic measures. F

486. Clinical/Community Experience. 1-8 credits (repeatable to 24 credits). Prerequisite: Consent of instructor one semester prior to enrollment. Development of professional skills by working directly in Dietetics and related programs and services integral to the community. Students in Dietetics will participate in clinical/community experiences appropriate to professional goals and college programs. F,S

495. Special Problems in Family and Consumer Sciences. 1-4 credits (repeatable to a maximum of 6 credits). Prerequisite: Consent of instructor. Special problems and/or independent study offered in selected content areas of family and consumer sciences. C,Demand

496. Contemporary Readings in Family and Consumer Sciences. 1-4 credits (repeatable to 6 credits). Prerequisite: Consent of the instructor. Recent developments, techniques and research findings. Offered to each of the content areas of family and consumer sciences. On demand.

498. Research in Family and Consumer Sciences. 1-4 credits (repeatable to 6 credits). Prerequisite: Consent of the instructor. Study of research procedures and designs appropriate to family and consumer sciences. On demand.

Family Medicine (FMEd)

Burrell, Cariveau, Greek, Halvorson, Heyde, Jensen, Mann, Paine, Peterson, Rudd, and Tsuchiya

The Department of Family Medicine offers the B.S. degree in Athletic Training under the auspices of the Division of Sports Medicine. This degree program was formally approved by the North Dakota Board of Higher Education in September, 1990. Athletic Training was recognized as an allied health field by the AMA in June, 1990. The degree program entails a four-year curriculum designed to prepare the student for an entry-level position in the field of athletic training. Upon completion of the curriculum, the student will be prepared to take the NATA Certification Examination. Admission to the curriculum is competitive. Students are selected using the following criteria: academic performance (2.75 GPA minimum), departmental application, references, 100 hours of directed observation, and completion of FMEd 101, 207, 207L, Biol 101 and 101L, and HPER 310. It is recommended that students applying for this program meet with the academic coordinator early in their freshman year.

Students 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.

School of Medicine

B.S. IN ATHLETIC TRAINING

Required 129 hours including:

1. 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 101. Introduction to Biology. (3)
Biol 201L. Introduction to Biology Lab. (1)

The student must earn B or better in the following courses to be admitted in the program.
FMed 101. Orientation to Athletic Training. (1)
FMed 207. Prevention and Care of Athletic Injuries. (2)
FMed 207L. Prevention and Care of Athletic Injuries Lab. (1)

At the time of application to the Athletic Training Program, the student must have completed or been 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. (2)

Core Courses
The following core courses are required for BS in Athletic Training:
**Chem 105. General Chemistry I. (4)**
Comm 161. Fundamentals of Public Speaking. (3)
CSci 101. Introduction to Computer Science. (2)
CSci 101L. Introduction to Computer Science Lab. (1)
**Eng 101. English Composition I. (3)**
**Eng 102. English Composition II. (3)**
OT 205. Medical Terminology. (1)
**Phys 101. Physics I. (4)**
**Phys 102. Physics II. (4)**
**Psy 101. Introduction to Psychology. (3)**
Psy 251. Developmental Psychology. (4)
**Soc 101. Introduction to Sociology. (3)**
**Arts & Humanities Requirement. (12)**
Elective. (13)

**indicates course satisfies General Education Requirements.

Professional Courses
The following are essential professional courses to become an entry-level athletic trainer:
Ana 204. Anatomy for Paramedical Personnel. (4)
Ana 204L. Anatomy Lab (for Ath. Tr. Students). (1)
FMed 208. Procedures in Athletic Training. (1)
FMed 208L. Laboratory Procedures in Athletic Training. (1)
FMed 200. Understanding Medicine. (3)
FMed 213. Beginning Practicum. (1)
FMed 312. Medical Aspects of Sports. (2)
FMed 313. Intermediate Practicum. (2)
FMed 320. Athletic Training Modalities. (2)
FMed 321. Athletic Training Rehabilitation Techniques. (2)
FMed 321L. Laboratory Athletic Training Rehab. Tech. (1)
FMed 343. Organizational Admin. in Athletic Training. (2)
FMed 413. Advanced Practicum. (3)
FMed 481. Athletic Injury Assessment. (4)
FMed 482. Internship in Athletic Training. (3)
FMed 495. Seminar in Athletic Training. (2)
HEc 240. Fundamentals of Nutrition. (3)
HPER 332. Biomechanics. (4)
HPER 402. Exercise Physiology. (4)
HPER 403. Health Education. (2)
PhTx 402. Principles of Pharmacology and Toxicology. (2)
PhTx 410. Drugs Subject to Abuse. (2)
Phy 301. Human Physiology. (4)

Courses

200. Understanding Medicine. 3 credits. An overview of the broad parameters of family medicine. Guest speakers are brought in to discuss various facets of medicine: S


207L. Laboratory Prevention and Care of Athletic Injuries. 1 credit. Corequisite: FMed 207. A practical laboratory to develop athletic training skills taught in FMed 207. F,S

208. Procedures in Athletic Training. 1 credit. Prerequisites: FMed 207, 207L, Anat 204, 204L. This course serves as an orientation course for incoming sports health majors. Policies and procedures as well as record keeping are covered. F

208L. Laboratory Procedures in Athletic Training. 1 credit. Prerequisites: FMed 207L, 207L, Anat 204, 204L. Corequisite: FMed 208. A course designed to allow students to get practical experiences in injury management, modality usage and record keeping skills taught in FMed 208. F

213. Beginning Clinical Practicum in Athletic Training. 1 credit. Prerequisites: FMed 208, 208L. A clinical course designed to allow the student to develop specified clinical competencies in a directed, progressive manner. S

312. Medical Aspects of Sports. 2 credits. Prerequisite: Permission of instructor. A course designed to introduce students to various medical specialities and medical problems and their effects on athletic participation. F

313. Intermediate Clinical Practicum in Athletic Training. 2 credits. Prerequisite: FMed 481. Corequisites: FMed 320, 321L, 321L. A clinical course designed to allow the students to develop specified clinical competencies in a directed progressive manner. S

320. Athletic Training Modalities. 2 credits. Prerequisite: FMed 481. A course designed to present the theoretical and applied principles and techniques for the application of modalities in sports injury care. S

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. S

321L. Laboratory Athletic Injury Rehabilitation Techniques. 1 credit. Prerequisite: FMed 481. Corequisite: FMed 321. A course designed to allow students practical skill development of rehabilitation techniques utilized in athletic injury care as taught in FMed 321. S

343. Organizational Administration of Athletic Training. 2 credits. Prerequisite: Senior standing or consent of the instructor. A course designed to acquaint students with the theories and principles of administration. Administrative functions as they relate to the athletic trainer will be explained. S

413. Advanced Clinical Practicum in Athletic Training. 3 credits. Prerequisite: FMed 313. A clinical course designed to allow the student to develop specified clinical competencies in a directed progressive manner. S

481. Athletic Injury Assessment. 4 credits. Prerequisite: FMed 213. A course designed to instruct the students in the theories and skills of injury evaluation. F

482. Internship in Athletic Training. 3 credits. Prerequisite: FMed 313. Off-campus athletic training experience designed to expose the student to alternate concepts of care. Repeatable up to 6 credits with instructor permission. F,S,SU

490. Directed Studies in Sports Medicine. 1-4 credits. (Repeatable to maximum of 6 credits.) Prerequisites: Upper level status in athletic training or other allied health field, PT students, fourth year medical students, or instructor permission. An in-depth study in a subject area selected by the student under tutorial supervision. F,S

495. Seminar in Athletic Training. 2 credits. Permission of instructor. Advanced work in athletic training to include surgical and conservative injury management, rehabilitation and injury. F,S

Finance (Fin)

T. Nelson (Chair), Escarraz, Lee, Markovich, and Potter

The Department of Finance offers a major in Financial Management, which covers the areas of managerial finance, investments, real estate, and insurance. The focus of managerial finance is internal to the enterprise with particular emphasis on problem-solving in small and medium sized firms and entrepreneurial enterprises. In portfolio and investment management courses enterprises are analyzed from the perspective of external investors considering securities of enterprises for inclusion in portfolios. Real estate courses expand the scope of the program to include real property analysis and investments. Insurance courses expand the risk management function to include a variety of insurance contracts. The Financial Management major has been designed to give students an appropriate balance between general background knowledge and particular decision-making skills. Foundation courses cover modern finance theory and modeling using information technologies and data bases. Particular decision-making skills are developed through case analyses. Upon completion of the Financial Management major, students are prepared for careers as financial managers, investment analysts, real property analysts, financial planners and a variety of sales careers in firms marketing stocks, bonds, options, real estate and insurance.
# B.B.A. WITH MAJOR IN FINANCIAL MANAGEMENT

Required 125 hours, including:

I. General Education Requirements, see pages 27-31.
II. The College of Business and Public Administration Requirements, see page 41.
III. The Following Curriculum (suggested sequence)

### Freshman Year

<table>
<thead>
<tr>
<th>First Semester</th>
<th>Credits</th>
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<tbody>
<tr>
<td>Engl 101*</td>
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<tr>
<td>One of the Following:</td>
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<tr>
<td>Psy 101</td>
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<tr>
<td>Soc 101</td>
<td>3</td>
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<tr>
<td>or Anth 170</td>
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<tr>
<td>PSci</td>
<td>3</td>
</tr>
<tr>
<td>Math 104</td>
<td>3</td>
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### Second Semester

| Engl 102*                  | 3       |
| or Engl 200*               | 3       |
| Comm 161                  | 3       |
| Math 204*                  | 3       |
| Lab Sci                   | 4       |
| Arts & Humanities         | 3       |

### Sophomore Year

<table>
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<tr>
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<tbody>
<tr>
<td>Acct 200</td>
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<tr>
<td>Acct 315</td>
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<tr>
<td>Econ 201*</td>
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<tr>
<td>Econ 210*</td>
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<tr>
<td>Econ 202*</td>
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<table>
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<tr>
<th>Second Semester</th>
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<tbody>
<tr>
<td>Acct 201*</td>
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<tr>
<td>BVED 217</td>
</tr>
<tr>
<td>Econ 202*</td>
</tr>
<tr>
<td>Arts &amp; Humanities</td>
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### Junior Year

<table>
<thead>
<tr>
<th>First Semester</th>
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<tbody>
<tr>
<td>Acct 301*</td>
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<td>Mgmt 300</td>
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<tr>
<td>Mkt 301*</td>
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<tr>
<td>Fin 310*</td>
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<tr>
<td>Fin 320</td>
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<table>
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<tr>
<th>Second Semester</th>
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</thead>
<tbody>
<tr>
<td>Mgmt 301*</td>
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<tr>
<td>Fin 340*</td>
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<tr>
<td>Fin 350*</td>
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<td>Econ 360</td>
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### Senior Year

<table>
<thead>
<tr>
<th>First Semester</th>
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<tbody>
<tr>
<td>Fin 410*</td>
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<tr>
<td>Fin 420*</td>
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<table>
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<tr>
<th>Second Semester</th>
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<tbody>
<tr>
<td>Fin 430*</td>
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<tr>
<td>Mgmt 475*</td>
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</table>

*These courses have prerequisites. Check course descriptions.

### Courses

#### 210. Personal Financial Management
3 credits. The personal financial planning and management process; goal identification and budgeting; minimizing tax liability; uses and costs of various forms of credit; buying, selling and/or leasing real estate, automobiles and other major items; life, health, property and income insurance; various investment options; the retirement planning process; and estate planning options. The role of financial planning professionals and financial planning as a career option are also discussed. F,S

#### 310. Principles of Financial Management
2 credits. Prerequisites: Acct 201, BVED 217, Econ 210. Corequisite: Fin 310L. This course introduces students to asset management, cost of capital, dividend policy, valuation, capital structure planning, and working capital management. Forms of business organization and financial statements are surveyed. Managerial implications of current developments in national and international capital markets are reviewed. F,S

#### 310L. Problems in Financial Management
1 credit. Prerequisites: Acct 201, BVED 217, Econ 210. Corequisite: Fin 310. Financial management problem solving in a laboratory setting utilizing computer applications and a financial calculator. F,S

#### 320. Principles of Real Estate
3 credits. Prerequisites: Real Estate Law I, 3 credits. Description of the role of financial planning professionals and financial planning as a career option are also discussed. F,S

#### 330. Real Estate Finance and Investment
3 credits. Prerequisite: Fin 320. 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. S

#### 333. Real Estate Law
3 credits. Corequisite: 3 credits. Prerequisites: Acct 200, 201; BVED 217; Econ 201, 202, and 210; approval of Department Chairperson. 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. Integrates 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. Includes formulation of investment strategy and analysis, design of portfolio for classes of individual investors and institutions, fundamental analysis, portfolio performance evaluation. Extensive use of financial databases and software. 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

#### 381. Internship in Finance
3.6 credits. Repeatable to 12 credits. Prerequisites: Acct 200, 201, BVED 217, Econ 201, 202, 210, and approval by department. Guided practical experience in managerial finance, investment management, real estate, and insurance with public and private sector enterprises. S/U grading only. F,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, financial institutions and related financing problems, taxation, working capital management. F,S

#### 420. Investment Analysis and Portfolio Management
3 credits. Prerequisites: Fin 340 and Fin 350. Comprehensive study of methods used to evaluate ownership, transfer, contracts, types of deeds, leases, restrictions, real estate brokerage, property management, land utilization. F,S

#### 430. 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

#### 437. Cooperative Education
1-4 credits. May be repeated to a total of 12 credits. Prerequisites: Acct 200, 201; BVED 217; Econ 201, 202, and 210; approval of Department Chairperson. On-the-job compensated work experience in various areas of Finance. S/U grading only. F,S

#### 439. Senior Topics in Finance
3 credits. Repeatable to 6 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. Prerequisites: Fin 340 and 350. Comprehensive study of methods used to evaluate ownership, transfer, contracts, types of deeds, leases, restrictions, real estate brokerage, property management, land utilization. F,S

#### 470. Strategic Management
3 credits. Prerequisites: Fin 340 and 350. Restricted to Financial Management and Banking and Financial Economics majors. Multiple sections covering different topics may be offered in any one semester. Designed for Financial Management majors. Provides opportunities for in-depth study beyond that of regularly scheduled courses. May be seminars, workshops, or lectures. F,S
Fine Arts (FA)

The College of Fine Arts and Communication as such has only two course numbers, all its other course offerings being listed under its departments: Music, School of Communication, Theatre Arts and Visual Arts. The following inter-arts courses are non-departmental and may be used in partial fulfillment of the requirements for the degree of Bachelor of Music or Bachelor of Fine Arts.

Courses

150. Introduction to the Fine Arts. 3 credits. Preparatory presentations and discussion sessions combined with attendance at a variety of campus arts events to provide understanding and appreciation of the fine arts and their importance to the individual and the community. F,S

495. Symposium in the Arts. 1-3 credits. Workshops and seminars in various specialized topics relating to the fine arts. Course varies with topic selected. May be repeated for credit up to 10 hours. On demand.

Geography (Geog)

M. Hemmasi (Chair), Goodman, Hammen, Munski, Seidel, and Todhunter

The Department of Geography offers major and minor programs in the College of Arts and Sciences. Specific programs of study which emphasize physical geography, cultural geography, regional geography, cartography, remote sensing and/or geographic information systems may be developed in consultation with an academic adviser.

A Major and Minor in geography offered through the Center for Teaching and Learning will prepare the student with the geography education necessary for a secondary school teaching career and the Bachelor of Science in Education degree.

Facilities

The Department of Geography operates the U.S. National Oceanographic and Atmospheric Service Weather Station at Grand Forks and maintains an extensive collection of climactic data for the Northern Plains region. In addition to well-equipped cartographic, photographic, and geographic information system facilities, the Department houses the University of North Dakota Institute for Remote Sensing.

College of Arts and Sciences

B.S. WITH A MAJOR IN GEOGRAPHY

Required: 125 hours including:

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

II. The Following Curriculum:

31 major hours including:

Geog 121. Physical Geography. 3 credits. A study of the pattern of distribution of the physical elements of man’s environment. The origin and characteristics of the terrestrial grid, earth-space relations, climate, landforms, vegetation, and soils. F,S,SS

Geog 121L. Physical Geography Laboratory. 1 credit. Corequisite or Prerequisite: Geog 121. 3 credits. The geographical basis for the production, exchange, and consumption of the earth’s resources and the relationships involved with people engaged in economic activity. F

Geog 150. Introduction to the Fine Arts. 3 credits. Preparatory presentations and discussion sessions combined with attendance at a variety of campus arts events to provide understanding and appreciation of the fine arts and their importance to the individual and the community. F,S

Geog 151. Cultural Geography. 3 credits. A study of the pattern of distribution of the physical elements of man’s environment. The origin and characteristics of the terrestrial grid, earth-space relations, climate, landforms, vegetation, and soils. F,S,SS

Geog 152. Economic Geography. 3 credits. A systematic analysis of people’s cultural regions including settlement patterns and change via migration and diffusion. F,S

Geog 154L. Introduction to Geographic Information Systems. 1 credit. A study of computer programs and their use in creating, manipulating, and displaying geographic information. F

Geog 161. World Regional Geography. 3 credits. Development of the concept of region with analysis of the relationship of physical and cultural features to the contemporary world situation. F,S

Electives in Geography. (15)

Electives must include a minimum of one course from each of the disciplines of cultural geography, physical geography, and regional geography.

MINOR IN GEOGRAPHY

Required 20 hours including:

Geog 121. Physical Geography. 3 credits. A study of the pattern of distribution of the physical elements of man’s environment. The origin and characteristics of the terrestrial grid, earth-space relations, climate, landforms, vegetation, and soils. F,S,SS

Geog 121L. Physical Geography Laboratory. 1 credit. Corequisite or Prerequisite: Geog 121. 3 credits. The geographical basis for the production, exchange, and consumption of the earth’s resources and the relationships involved with people engaged in economic activity. F

Geog 150. Introduction to the Fine Arts. 3 credits. Preparatory presentations and discussion sessions combined with attendance at a variety of campus arts events to provide understanding and appreciation of the fine arts and their importance to the individual and the community. F,S

Geog 151. Cultural Geography. 3 credits. A study of the pattern of distribution of the physical elements of man’s environment. The origin and characteristics of the terrestrial grid, earth-space relations, climate, landforms, vegetation, and soils. F,S,SS

Geog 154L. Introduction to Geographic Information Systems. 1 credit. A study of computer programs and their use in creating, manipulating, and displaying geographic information. F

Geog 161. World Regional Geography. 3 credits. Development of the concept of region with analysis of the relationship of physical and cultural features to the contemporary world situation. F,S

Electives in Geography. (10)

Electives must include a minimum of one course from each of the disciplines of cultural geography, physical geography, and regional geography.

B.S.ED. WITH A MAJOR IN GEOGRAPHY

Required 125 hours including:

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

II. The Center for Teaching and Learning Program in Secondary Education, see page 77.

III. The Following Curriculum:

30 major hours including:

Geog 121. Physical Geography. 3 credits. A study of the pattern of distribution of the physical elements of man’s environment. The origin and characteristics of the terrestrial grid, earth-space relations, climate, landforms, vegetation, and soils. F,S,SS

Geog 121L. Physical Geography Laboratory. 1 credit. Corequisite or Prerequisite: Geog 121. 3 credits. The geographical basis for the production, exchange, and consumption of the earth’s resources and the relationships involved with people engaged in economic activity. F

Geog 151. Cultural Geography. 3 credits. A study of the pattern of distribution of the physical elements of man’s environment. The origin and characteristics of the terrestrial grid, earth-space relations, climate, landforms, vegetation, and soils. F,S,SS

Geog 152. Economic Geography. 3 credits. A systematic analysis of people’s cultural regions including settlement patterns and change via migration and diffusion. F,S

Geog 154L. Introduction to Geographic Information Systems. 1 credit. A study of computer programs and their use in creating, manipulating, and displaying geographic information. F

Geog 161. World Regional Geography. 3 credits. Development of the concept of region with analysis of the relationship of physical and cultural features to the contemporary world situation. F,S

Electives in Geography. (10)

Electives must include a minimum of one course from each of the disciplines of cultural geography, physical geography, and regional geography.

MINOR IN GEOGRAPHY

Required 20 hours including:

Geog 121. Physical Geography. 3 credits. A study of the pattern of distribution of the physical elements of man’s environment. The origin and characteristics of the terrestrial grid, earth-space relations, climate, landforms, vegetation, and soils. F,S,SS

Geog 121L. Physical Geography Laboratory. 1 credit. Corequisite or Prerequisite: Geog 121. 3 credits. The geographical basis for the production, exchange, and consumption of the earth’s resources and the relationships involved with people engaged in economic activity. F

Geog 150. Introduction to the Fine Arts. 3 credits. Preparatory presentations and discussion sessions combined with attendance at a variety of campus arts events to provide understanding and appreciation of the fine arts and their importance to the individual and the community. F,S

Geog 151. Cultural Geography. 3 credits. A study of the pattern of distribution of the physical elements of man’s environment. The origin and characteristics of the terrestrial grid, earth-space relations, climate, landforms, vegetation, and soils. F,S,SS

Geog 154L. Introduction to Geographic Information Systems. 1 credit. A study of computer programs and their use in creating, manipulating, and displaying geographic information. F

Geog 161. World Regional Geography. 3 credits. Development of the concept of region with analysis of the relationship of physical and cultural features to the contemporary world situation. F,S

Electives in Geography. (10)

Electives must include a minimum of one course from each of the disciplines of cultural geography, physical geography, and regional geography.

Courses

The geography courses that may be used to satisfy the 4-credit General Education laboratory science requirement are Geog 121 and 134.

Geography courses that may be used to satisfy the 9-credit General Education social science requirement include: Geog 151, 152, 161, 262, 354, and 457.

121. Physical Geography. 3 credits. A study of the pattern of distribution of the physical elements of man’s environment. The origin and characteristics of the terrestrial grid, earth-space relations, climate, landforms, vegetation, and soils. F,S,SS

121L. Physical Geography Laboratory. 1 credit. Corequisite or Prerequisite: Geog 121. 3 credits. The geographical basis for the production, exchange, and consumption of the earth’s resources and the relationships involved with people engaged in economic activity. F

134. Introduction to Global Climate. 3 credits with an optional 1 credit lab. An introduction to basic atmospheric processes, weather and climate elements, and basic climatic distribution; emphasis is placed upon the factors which control climate, and climatic distributions. F,S

134L. Introduction to Global Climate Laboratory. 1 credit. Optional lab for geography 134. A basic physical science laboratory focused upon specific atmospheric-climatic phenomena; wet and dry lab experiments, plus written lab exercises. F,S

151. Human Geography. 3 credits. A systematic analysis of people’s cultural regions including settlement patterns and change via migration and diffusion. F,S

Economic Geography. 3 credits. The geographical basis for the production, exchange, and consumption of the earth’s resources and the relationships involved with people engaged in economic activity. F

World Regional Geography. 3 credits. Development of the concept of region with analysis of the relationship of physical and cultural features to the contemporary world situation. F,S

Geography of North America I. 3 credits. A spatial approach to the development of the United States and Canada which stresses changing cultural landscapes and assessing impacts of planning for resource utilization. F

Map Use and Interpretation. 3 credits. Map Use and Interpretation will cover basic map elements like map scale and projection, and introduce students to the design and construction techniques of thematic maps. It will give students an understanding of maps and their usefulness, and it will also serve as the foundation course for further study of cartography. F

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

Special Topics in Geography. 1-4 credits. Topic of course will change from semester to semester but will typically emphasize recent developments in geography. F,S,SS
319. Geography for Teachers. 2 credits. Geographical concepts and basic philosophies underlying the literature which form the basis for analysis and application of current techniques in the field of geography. S
334. Climatology. 4 credits. Prerequisite: Geol 134 or Metr 150. An overview of the field of climatology, emphasizing surface transfers of energy and water, the general circulation of the atmosphere, and climate change. Includes a weekly laboratory. S
337. Cooperative Education. 1-8 credits. May be repeated to a maximum of 24 credits. Prerequisite: 60 credits completed, minimum G.P.A. of 2.75. A practical work experience with an employer closely associated with geography. S-U grading only.
F,S,SS
354. Conservation of Resources. 3 credits. Geographic principles applied to the analysis of resources and their efficient utilization. Emphasis is on properly balanced development. F
362. Geography of Canada. 3 credits. A regional and topical analysis of the physical, cultural and economic features of Canada. S,SS
369. Geography of North Dakota. 3 credits. An analysis of the development and distribution of the physical, cultural and economic characteristics of the state. F
372L. Cartography Laboratory. 1 credit. Co-requisite: Geog 372. Mapping projects involving compilation, data processing, map design, and map production are introduced. F
373. Graphics and Air Photo Interpretation. 3 credits. Co-requisite: Geog 373L. Advanced techniques used in the compilation of maps and the cartographic presentation of data. Interpretation of aerial photographs, remote sensing, cartograms, geographic diagrams, and topographic quadrangles. Introduction to procedures utilized by governmental mapping agencies and private sector cartographic firms. S
373L. Air Photo Interpretation Laboratory. 1 credit. Co-requisite: Geog 373. A systematic coverage of laboratory techniques used in interpretation of aerial photographs. Emphasis is on direct experience with optical/mechanical instruments used in photo interpretation and on developing skills in data extraction from aerial photos. F
375. Remote Sensing Systems. 2 credits. Prerequisite: Geog 275 or consent of instructor. The study of current optical, infrared and microwave systems used in making remote observations of the earth and its atmosphere. On demand.
377. Quantitative Applications in Geography. 2 credits. Prerequisite: Math 103 or consent of instructor. Application of statistical and mathematical techniques to research topics in geography. S
377L. Spatial Analysis Laboratory. 1 credit. Prerequisite: Math 103. Corequisite: Geog 377. Practical applications of statistical and mathematical techniques for geographic problems. Students work on projects which involve solving problems by spatial-oriented computations. Use of relevant statistical programs on computers are emphasized. Once a year.
341. Seminar in Physical Geography. 3 credits. Prerequisites: Geog 334, or consent of instructor. A topic selected from hydrogeography, drought, climate change, applied climatology, and conservation is examined. F
422. Geography of Water Resources. 3 credits. Prerequisites: Geog 121 or Geol 101. A geographical approach to water resources issues in various regions of the United States. Water distribution and use, water quality, drainage basin management, land use hydrology, floods, and drought will be examined. F/S
452. Location of Economic Activity. 3 credits. Development of economic geography with an emphasis on location theory as applied to research in the discipline. S
453. Historical Geography. 3 credits. An examination of the relationships between the physical environment, the cultural patterns of settlement, and consequent occupancy. F
455. Political Geography. 3 credits. A geographic approach to the patterns of power and cooperation 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 the city, inter-city, and city-hinterland relationships including current urban geography theory and urban planning. S
462. Geography of North America II. 3 credits. Prerequisite: Geog 262 or consent of instructor. A regional and topical analysis of the physical, cultural and economic features of a selected region or group of regions within North America. F,SS
463. Regional Geography. 2-3 credits. A regional and topical analysis of the physical and cultural features with emphasis on one continent or region. May be repeated up to nine credits provided different regions and approaches are involved. S
471. Cartography and Computer-Assisted Mapping. 3 credits. Corequisite: Geog 471L. Principles of graphic communication and skills for producing maps and charts using computer technology. It involves creating both geographic and attribute databases for graphic display of points, lines, areas, and surfaces. Data analysis, classing techniques, history of cartography, and projections are also discussed.
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. Once a year.
472. Map Design. 3 credits. Prerequisite: Geography 372. A study of major elements of map design, data differentiation and symbolization, quantitative map symbols, the figure-ground relationship, map structure, lettering design, and color in cartography. With laboratory work in the darkroom. S
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. Remote Sensing Applications and Analysis. 2 credits. Applications and analyses of remotely sensed data as related to environmental and resource problems. Emphasis is placed on the selection of sensors and imagery for environmental monitoring and resource management. S

Resources

Geology and Geological Engineering

(geol and GeoE)

Kelley (Chair), Forsman, Gerla, Gosnold, Groenewold, Karon, Korom, LeBroney, Perkins, Reid, and Saluja

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 and a heat flow laboratory with divided-bar thermal conductivity apparatus, high-precision temperature logging system, and three solar-powered automated weather stations.

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 hours, including:

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

II. The Following Curriculum:

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Hours</th>
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<tbody>
<tr>
<td>Geol 101</td>
<td>Introduction to Geology</td>
<td>3</td>
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<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 Laboratory</td>
<td>1</td>
</tr>
<tr>
<td>Geol 214</td>
<td>Structural Geology</td>
<td>3</td>
</tr>
<tr>
<td>Geol 311</td>
<td>Geomorphology</td>
<td>4</td>
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<tr>
<td>Geol 318</td>
<td>Mineralogy</td>
<td>3</td>
</tr>
<tr>
<td>Geol 411</td>
<td>Sedimentology &amp; Stratigraphy</td>
<td>5</td>
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<tr>
<td>Geol 415</td>
<td>Invertebrate Paleontology</td>
<td>4</td>
</tr>
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<td>Geol 420</td>
<td>The Evolving Earth</td>
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</tr>
<tr>
<td>Geol 422</td>
<td>Seminar</td>
<td>1</td>
</tr>
<tr>
<td>Geol 456</td>
<td>Geoscience Lectures</td>
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Field Geology (Summer, not available at UND) (5)

3 hours from:

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<tr>
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<tr>
<td>Geol 321</td>
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<td>Geol 414</td>
<td>Geophysics</td>
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<td>Hydrogeology</td>
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4 hours from:

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<tr>
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<td>Calculus III</td>
<td>4</td>
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<td>Geol 322</td>
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<td>3</td>
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<td>Geol 318</td>
<td>Mineralogy</td>
<td>3</td>
</tr>
<tr>
<td>Math 212</td>
<td>Calculus II</td>
<td>4</td>
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<tr>
<td>Phys 203</td>
<td>General Physics</td>
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4 hours from:

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<tr>
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<td>General Chemistry I</td>
<td>8</td>
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<td>Engl 101</td>
<td>Composition I</td>
<td>3</td>
</tr>
<tr>
<td>Geol 102</td>
<td>The Earth Through Time Lab</td>
<td>3</td>
</tr>
<tr>
<td>Geol 214</td>
<td>Structural Geology</td>
<td>3</td>
</tr>
<tr>
<td>Geol 318</td>
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<td>Geol 320</td>
<td>Petrology</td>
<td>3</td>
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<td>Geol 420</td>
<td>The Evolving Earth</td>
<td>3</td>
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<td>Geol 456</td>
<td>Geoscience Lectures</td>
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</tr>
<tr>
<td>Geol 417</td>
<td>Hydrogeology</td>
<td>3</td>
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</table>

Required in other departments:

Chem 105, 106 General Chemistry I, General Chemistry II & Qualitative Analysis (8)

Math 103 College Algebra (3)

Math 105 Trigonometry (2)

Phys 203, 204 General Physics (8)

Geology Electives (300 level and above) (13)

*Biology 102 acceptable alternate course.

B.A. WITH MAJOR IN GEOLOGY

Required 125 hours, including:

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

II. The Following Curriculum:

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<td>Geol 102</td>
<td>The Earth Through Time</td>
<td>3</td>
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<tr>
<td>Geol 102L</td>
<td>The Earth Through Time Laboratory</td>
<td>1</td>
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<td>Geol 214</td>
<td>Structural Geology</td>
<td>3</td>
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<td>Geol 311</td>
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<td>4</td>
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<td>Geol 318</td>
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<td>3</td>
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<tr>
<td>Geol 411</td>
<td>Sedimentology &amp; Stratigraphy</td>
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<tr>
<td>Geol 415</td>
<td>Invertebrate Paleontology</td>
<td>4</td>
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<td>Geol 420</td>
<td>The Evolving Earth</td>
<td>3</td>
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<td>Seminar</td>
<td>1</td>
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<td>Geol 456</td>
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Field Geology (Summer, not available at UND) (5)

3 hours from:

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<th>Course Title</th>
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4 hours from:

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<td>Environmental Geology</td>
<td>3</td>
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<tr>
<td>Geol 318</td>
<td>Mineralogy</td>
<td>3</td>
</tr>
<tr>
<td>Math 212</td>
<td>Calculus II</td>
<td>4</td>
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<td>Phys 203</td>
<td>General Physics</td>
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4 hours from:

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<td>Geol 102</td>
<td>The Earth Through Time Lab</td>
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</tr>
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<td>Geol 318</td>
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4 hours from:

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4 hours from:

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<td>The Earth Through Time Lab</td>
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<td>Geol 214</td>
<td>Structural Geology</td>
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<td>Geol 318</td>
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<td>Math 212</td>
<td>Calculus II</td>
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4 hours from:

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<th>Course Title</th>
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<tbody>
<tr>
<td>Geol 102</td>
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MINOR IN GEOLOGY

Required: 20 hours including:

7-8 hours from:

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<tbody>
<tr>
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</tr>
<tr>
<td>Geol 101L</td>
<td>Introduction to Geology Laboratory</td>
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</tr>
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<td>Geol 203</td>
<td>Geology for Engineers</td>
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<td>Geol 102</td>
<td>The Earth Through Time Lab</td>
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6 hours from:

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<td>3</td>
</tr>
<tr>
<td>Geol 111</td>
<td>Views of the Earth and Planets</td>
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<tr>
<td>Geol 311</td>
<td>Geomorphology</td>
<td>4</td>
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<tr>
<td>Geol 316</td>
<td>Introduction to Oceography</td>
<td>3</td>
</tr>
<tr>
<td>Geol 322</td>
<td>Environmental Geology</td>
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Remaining electives chosen from Geology courses numbered 214 or higher, not including 303 or 305.

School of Engineering and Mines

The Geological Engineering curriculum gives the student a strong background in geology and engineering that serves as a foundation for meaningful professional practice. Geological engineering encompasses but is not limited to 1) environmental site planning and natural hazard investigations, 2) geomechanics, 3) hydrogeology, and 4) exploration and development of mineral and fuel deposits. To meet these demands, the curriculum contains a broad background in the physical and social sciences, humanities, mathematics, geology, and engineering topics. The program is accredited by action of the Engineering Accreditation Commission of the Accreditation Board for Engineering and Technology. Courses in the curriculum are arranged and integrated to provide the student with progressive preparation for engineering evaluation and design. To facilitate the transition from student to professional, the senior year has a capstone experience that incorporates student creativity and sociological and engineering criteria into a major design project.

B.S. IN GEOLOGICAL ENGINEERING

Required: 141 hours, including:

I. General Education Requirements, see pages 27-31 and page 45.

II. The Following Curriculum:

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<td>Composition I</td>
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<td>Geology for Engineers</td>
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Sophomore Year

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<td>Electrical Engineering Fundamentals</td>
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### B.S. IN ENVIRONMENTAL GEOLOGY AND TECHNOLOGY

**Required 125 hours, including:**

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

**II. The following Core Curriculum (64 hours):**

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<td>Elem. Differential Equations</td>
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<td>Chem 362</td>
<td>Organic Chemistry Lab II</td>
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<td>Soc 470</td>
<td>Social Science</td>
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<td>Geol 411</td>
<td>Sedimentology &amp; Stratigraphy</td>
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<td>Geol 323</td>
<td>Engineering Geology</td>
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<td>Geol 448</td>
<td>Geological Engineering Design</td>
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</tr>
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<td>Geol 413</td>
<td>Soil Mechanics Laboratory</td>
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<td>Math 351</td>
<td>Elem. Differential Equations</td>
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<td>Geol 455</td>
<td>Geomorphology</td>
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<td>Math 201</td>
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<td>Geol 204**</td>
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**Summer**

| Field Geology (South Dakota School of Mines and Technology) | (5) |

**Senior Year**

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<td>Hydrogeology</td>
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<td>Geological Engineering Design</td>
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<td>Soil Mechanics Laboratory</td>
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</tr>
<tr>
<td>Geol 311</td>
<td>Geomorphology</td>
<td>(1)</td>
</tr>
<tr>
<td>Geol 456</td>
<td>Geoscience Lectures</td>
<td>(2)</td>
</tr>
<tr>
<td>Biol 101**</td>
<td>Introduction to Biology</td>
<td>(6)</td>
</tr>
<tr>
<td>Biol 102**</td>
<td>Introduction to Biology</td>
<td>(2)</td>
</tr>
<tr>
<td>Chem 450</td>
<td>Physical Chemistry I</td>
<td>(2)</td>
</tr>
<tr>
<td>Chem 451</td>
<td>Physical Chemistry I</td>
<td>(2)</td>
</tr>
<tr>
<td>Chem 421</td>
<td>Hydrology</td>
<td>(1)</td>
</tr>
<tr>
<td>Chem 422</td>
<td>Hydrology</td>
<td>(1)</td>
</tr>
<tr>
<td>Chem 423</td>
<td>Hydraulic Engineering</td>
<td>(1)</td>
</tr>
<tr>
<td>GeoE 432</td>
<td>Environmental Engineering I</td>
<td>(1)</td>
</tr>
<tr>
<td>GeoE 418</td>
<td>Hydrogeological Field Methods</td>
<td>(2)</td>
</tr>
<tr>
<td>Chem 305</td>
<td>Organic Chemistry Lab I</td>
<td>(3)</td>
</tr>
<tr>
<td>Chem 351</td>
<td>Organic Chemistry I</td>
<td>(3)</td>
</tr>
<tr>
<td>Chem 352</td>
<td>Organic Chemistry I</td>
<td>(3)</td>
</tr>
<tr>
<td>Chem 353</td>
<td>Analytical Chemistry (Stats)</td>
<td>(2)</td>
</tr>
<tr>
<td>Chem 356</td>
<td>Organic Chemistry Lab I</td>
<td>(2)</td>
</tr>
<tr>
<td>Chem 450</td>
<td>Physical Chemistry I</td>
<td>(2)</td>
</tr>
<tr>
<td>Chem 451</td>
<td>Physical Chemistry I</td>
<td>(2)</td>
</tr>
<tr>
<td>Chem 354*</td>
<td>Conservation of Resources</td>
<td>(3)</td>
</tr>
<tr>
<td>Math 206</td>
<td>General Physics</td>
<td>(3)</td>
</tr>
</tbody>
</table>

**One of the following options is required:**

**A. ENVIRONMENTAL STUDIES OPTION: 61 Hours**

<table>
<thead>
<tr>
<th>Required Courses (24 hours):</th>
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</thead>
<tbody>
<tr>
<td>Geol 214</td>
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<tr>
<td>Biol 332</td>
</tr>
<tr>
<td>Comm 161</td>
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<tr>
<td>Comm 303</td>
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<tr>
<td>Math 103*</td>
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<td>Math 105*</td>
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<tr>
<td>Math 204</td>
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<tr>
<td>Math 203</td>
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<tr>
<td>General Electives (approved by advisor)</td>
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</tbody>
</table>

**B. WATER RESOURCES OPTION: 61 hours**

<table>
<thead>
<tr>
<th>Required Courses (41 hours):</th>
</tr>
</thead>
<tbody>
<tr>
<td>Geol 321</td>
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<tr>
<td>Geol 417</td>
</tr>
<tr>
<td>GeoE 418</td>
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<tr>
<td>CSci 300</td>
</tr>
<tr>
<td>Chem 106</td>
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<tr>
<td>Chem 212</td>
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<tr>
<td>Econ 210</td>
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<td>Math 211</td>
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<td>Math 212</td>
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<td>Math 213</td>
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<td>ME 306</td>
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<tr>
<td>Phys 204</td>
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<tr>
<td>Soc 430</td>
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<tr>
<td>V A 260</td>
</tr>
</tbody>
</table>

**General Electives (approved by advisor) | (8) |**

**Option Electives. Select 12 hours from list below (substitutions may be approved by advisor):**

<table>
<thead>
<tr>
<th>Required Courses (24 hours):</th>
</tr>
</thead>
<tbody>
<tr>
<td>Biol 332</td>
</tr>
<tr>
<td>Biol 332L</td>
</tr>
<tr>
<td>Biol 435</td>
</tr>
<tr>
<td>Biol 435L</td>
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<tr>
<td>Chem 351</td>
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<td>Chem 352</td>
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<td>Chem 353</td>
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<td>Chem 362</td>
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<tr>
<td>Chem 450</td>
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<tr>
<td>Chem 451</td>
</tr>
<tr>
<td>Chem 354</td>
</tr>
<tr>
<td>Chem 354*</td>
</tr>
</tbody>
</table>

**One of the following options is required:**

| Non-specified General Education Requirements | (13) |**
C. TECHNOLOGICAL STUDIES OPTION: 61 hours

Required Courses (137 hours):
Geol 214    Geophysics ..................................................(3)
Geol 414    Geophysics ..................................................(3)
Geol 417    Hydrogeology ................................................(3)
Chem 106    General Chemistry II and Qualitative Analysis .......(4)
Geol 300    Analytical Mechanics (Statics) ........................(2)
Econ 210    Introduction to Business and Economic Statistics .......(3)
Math 211    Calculus I ....................................................(4)
Math 212    Calculus II ....................................................(4)
Math 213    Calculus III ...................................................(4)
Phys 205    General Physics .............................................(4)

General Electives (as approved by advisor) ...........................................(9)

One of the following concentrations is required for option C:

C1. Mining and Reclamation

Option Electives — Select 15 hours from the list below (substitutions may be approved by advisor):
Biol 332L General Ecology ..................................................(3)
Biol 332L General Ecology Laboratory ...............................(1)
CiEn 301 Mechanics of Materials I ....................................(3)
CiEn 413 Soil Mechanics ...................................................(2)
CiEn 413 Soil Mechanics Laboratory .................................(2)
Econ 202 Principles of Macroeconomics ..............................(3)
Econ 475 Economics of Natural Resources and the Environment...(3)
Geol 301 Mining Engineering I .........................................(3)
Geol 302 Mining Engineering II ........................................(3)
Geol 401 Remote Sensing in Geology .................................(3)
Geol 405 Industrial Minerals ............................................(3)
Geol 406 Ore Deposits ....................................................(3)
Geol 432 Hydrogeological Field Methods ............................(2)
Geol 453 Explosives and Blasting Technology .......................(3)
Mer 470 Air Pollution ......................................................(3)
Phil 210 Contemporary Moral Issues ....................................(3)
Phil 370 Moral Questions and the Professions .......................(3)
Phys 206 General Physics ................................................(4)

C2. Geotechnical Studies

Option Electives — Select 15 hours from the list below (substitutions may be approved by advisor):
Biol 332L General Ecology ..................................................(3)
Biol 332L General Ecology Laboratory ...............................(1)
CiEn 301 Mechanics of Materials I ....................................(3)
CiEn 413 Soil Mechanics ...................................................(2)
CiEn 414 Foundation Engineering ......................................(3)
CiEn 421 Hydrology I .......................................................(3)
Econ 202 Principles of Macroeconomics ..............................(3)
Econ 475 Economics of Natural Resources and the Environment...(3)
Geol 418 Hydrogeological Field Methods ............................(2)
Geol 453 Explosives and Blasting Technology .......................(3)
Mer 470 Air Pollution ......................................................(3)
Phil 210 Contemporary Moral Issues ....................................(3)
Phil 370 Moral Questions and the Professions .......................(3)
Phys 206 General Physics ................................................(4)

C.2. Geotechnical Studies

Option Electives — Select 15 hours from the list below (substitutions may be approved by advisor):

Biol 332    General Ecology ..................................................(3)
Biol 332L    General Ecology Laboratory ...............................(1)
CiEn 301    Mechanics of Materials I ....................................(3)
CiEn 413    Soil Mechanics ...................................................(2)
CiEn 414    Foundation Engineering ......................................(3)
CiEn 421    Hydrology I .......................................................(3)
Econ 202    Principles of Macroeconomics ..............................(3)
Econ 475    Economics of Natural Resources and the Environment...(3)
Geol 418    Hydrogeological Field Methods ............................(2)
Geol 453    Explosives and Blasting Technology .......................(3)
Mer 470    Air Pollution ......................................................(3)
Phil 210    Contemporary Moral Issues ....................................(3)
Phil 370    Moral Questions and the Professions .......................(3)
Phys 206    General Physics ................................................(4)

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

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

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

111. Views of the Earth and Planets, 3 credits. An introduction to Earth and the Solar System. Coverage includes: the planets and their moons, comets, asteroids, impact craters, meteorites, the sun, the solar system’s origin, planetary atmospheres, the living Earth, the question of life elsewhere: S

111R. Views of the Earth and Planets Recitation, 1 credit. Corequisite: Geol 111. A recitation-discussion to complement Geol 111. S

203 (GeoE). Geology for Engineers, 3 credits. Corequisites: Geol 203L; Physical geology discussed from the engineering point of view. Required of students in civil engineering and geological engineering. Includes laboratory. F-S

214. Structural Geology, 3 credits. Mechanics of rock deformation, description of rock structures and tectonics. Includes laboratory. S

301 (GeoE). Mining Engineering I, 3 credits. Prerequisites: Geology 101 or GeoE 103. Geology 105. Surface mining and reclamation. History and evolution of mining methods practiced in the northern Great Plains; exploration; geologic and hydrologic aspects of mine design; and leasing. Permitting and bonding reclamation of abandoned mines; coal preparation and beneficiation. Field trip required. Includes laboratory. S

302. Selected Topics in Geology, 1-4 credits. Prerequisite: Geology 100, 101, 102 or consent of instructor. Each topic is concerned with a special aspect of geology. May be repeated up to a maximum of 8 hours. F-S

305. Geologic Field Methods, 2 credits. Prerequisite: Consent of instructor. Introduction to the techniques and equipment of geologic field work, intended to prepare the student for geology field camp. S

311. Geomorphology, 4 credits. Prerequisites: Geology 101 and 102. Dynamics of weathering, mass movement, running water, groundwater, waves, wind and ice in the production of landforms. Includes field trips and laboratory. F-S

316. Introduction to Oceanography, 3 credits. Prerequisite: Geology 101 or Geography 121. The ocean basins, their origin, structure, geomorphology and resources; the ocean’s water, its circulation, tides, waves, sediment, life and geological significance. F-S

318. Environmental Geology, 3 credits. Prerequisite: Geology 101 or GeoE 103. Earth as a chemical reactor. A description of the elements, chemical processes, and the development of the chemical environment of the Earth as the substance of life. Includes field trips. F-S

320. Petroleum, 3 credits. Prerequisite: Geology 318. Description, classification, and origin of igneous, metamorphic, and sedimentary rocks. Field and laboratory study of rocks. Engineering properties of earth materials. Advanced aspects of optical mineralogy. Includes laboratory. F

321. Geochemistry, 3 credits. Prerequisite: Geology 318, Chem 106 and Math 212, or consent of instructor. Application of the principles of chemistry to geologic and hydrologic problems. Origin and distribution of the chemical elements. Introduction to radiochemistry, isotopic geochronology, and stable-isotope geochemistry. S

322. Environmental Geology, 3 credits. Prerequisite: One introductory geology course or upper division standing; Math 103 recommended. Relationship of geology to society; natural hazards; misuse and repair of our natural environment; application of geology to engineering, land planning, and resource management. S

323 (GeoE). Engineering Geology, 3 credits. Prerequisites: One introductory geology course, Math 211, and upper division standing in geology or engineering. Application of geological and environmental principles to geotechnical engineering design, construction, and operation. On demand, offered alternate years. F-S

337 (GeoE) Cooperative Education. 1-8 credits (repeatable to 24 credits). For qualified students majoring in geological engineering, geology, or environmental geology and technology. A practical work experience with an employer closely associated with the student’s academic area. Positions may require student relocation for one or more semesters. Arranged by mutual agreement among student, department, and employer. Special permission required. F-S

351 (GeoE). Petroleum Development Engineering, 3 credits. Well spacing and location, drilling equipment and methods, fishing tools, casing, cementing, oil field hydrology, and well completion. F-S

352 (GeoE). Petroleum Production Engineering, 3 credits. Well inflow performance, production tubing selection, oil and gas pipelines design, design of artificial-lift production systems. F-S

360 (GeoE). Subsurface Disposal of Liquid Waste, 3 credits. Prerequisites: Geol 100 or 101, or GeoE 203; Math 211 or consent of instructor. Introduction to geologic requirements for subsurface disposal of liquid wastes and design, operation, and maintenance of deep injection wells. S

401. Remote Sensing in Geology, 3 credits. Prerequisite: Geology 311 or consent of instructor. Use of remotely-sensed imagery to interpret geological structures, processes, and resources. Includes laboratory. S

405 (GeoE). Industrial Minerals, 3 credits. Prerequisite: Geology 320 or consent of instructor: Geology and utilization of industrial minerals. F

406. Ore Deposits, 3 credits. Prerequisite: Geology 320 or consent of instructor. Origin of ore deposits, their geology, and their economic importance. S

411. Sedimentology and Stratigraphy, 5 credits. Prerequisite: Geology 320. Origin, transportation, deposition, and diagenesis of sediments; principles and applications of stratigraphy. Includes field trip and laboratory. F

414. Geophysics, 3 credits. Prerequisites: Geology 101, Mathematics 213, Physics 204 or 206. Principles of various geophysical methods and their application to geologic problems. F-S
Health, Physical Education, and Recreation (HPER)

W. Bolonchuk (Chair), D. Anderson, L. Anderson, Brinkert, Eklund, Humphries, Parker, Schroeder, Steen, Stiles, Watson, and Whitehead

The mission of the Department of Health, Physical Education, and Recreation is to offer challenging undergraduate and graduate programs. These programs aim to develop excellence in three main areas:

A. Education of students, who upon graduation are noted for their knowledge, professional skill, and future marketability.

B. Scholarly and creative activity which contributes notably to the field of knowledge in HPER.

C. Contribution of the department’s particular expertise and talents 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, athletic coaching, park and recreation administration, therapeutic recreation, recreation leadership or to continue their education in graduate studies.

Basic Instruction Courses — The Department of HPER also provides basic instruction for all students of the University in a wide variety of sport, aquatics, dance, and fitness classes. Activity courses in physical education may count toward the hours required for graduation. These credit hours may be earned by enrolling in HPER 101, 102 or 103. In some cases, equipment is provided by the department; however, there are fees assessed for certain specified activities.

College for Human Resources 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.

B. Minor in Athletic Coaching — offered to students who wish to prepare for athletic coaching.

C. Minor in Health Education — preparation for school health teaching.

B.S. IN PHYSICAL EDUCATION

Required 125 hours, including:

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

II. The College for Human Resource Development Requirements, see page 49.

III. Prerequisite courses, 19 hours including: (These credits may be used to satisfy the General Education requirements.)

Chen 104.........................Introductory Chemistry............................................(4)
Psy 101.........................Introduction to Psychology............................................(3)
Soc 101.........................Introduction to Sociology.............................................(3)
Anat 204, 204L .................Anatomy for Paramedical Personnel and Laboratory.....................................(5)
Phys 301 .........................Mechanics of Human Physiology............................(4)

IV. Required curriculum, 32 hours including:

HPER 107 ......................Introduction to Physical Education.............................................(3)
HPER 223 ......................Movement Performance and Analysis..............................(2)
HPER 276 ......................Motor Learning.................................................................(3)
HPER 332 ......................Bioscience.................................................................(4)
HPER 401 ......................Sports Sociology.........................................................(3)
HPER 402 ......................Exercise Physiology.......................................................(4)
HPER 440 ......................Sport Psychology..........................................................(3)

V. One of the following options:

A. Teacher Education Option

   Required 23 hours, including:
   HPER 205 .................Physical Education for the Elementary Grades.........................(3)
   HPER 310 ......................First Aid and CPR......................................................(2)
   HPER 323 ......................Intro to Teaching in Phys. Ed. and Sport Settings.........................(3)
   HPER 323L ......................Lab — Introduction to Teaching........................................(1)
   HPER 355 ......................Motor Development..................................................(3)
   HPER 400 ......................Methods and Mat. for Teaching Secondary Phys. Ed. (included in Secondary Education Certification Sequence, CTL).....................(0)
   HPER 400L ......................Lab — Methods and Materials........................................(1)
   HPER 403 ......................School Health Education..............................................(2)
MINOR IN ATHLETIC COACHING

Required 27 hours, including:

1. HPER 101 Introduction to Coaching .............................................(1)
2. Required 21 hours, including:
   - HPER 323 Intro to Teaching in Physical Ed. and Sport Settings. .............................................(3)
   - HPER 324 Sport Physiology ..................................................(3)
   - HPER 325 Youth and Children in Sport .............................................(3)
   - HPER 341 Organization & Administration of Athletics ......................(2)
   - HPER 433 Coaching Methods (2 hours each to coincide with sport specific HPER 223s) ...........(6)
3. HPER 486 Practicum in Coaching .............................................(2)

Students interested in a Minor in Athletic Coaching should consult with an advisor in Physical Education before beginning the Minor. This is necessary to ensure that courses are appropriately tracked toward the practicum.

MINOR IN HEALTH EDUCATION

Required 21 hours, including:

Biol 255 Human Environment ..................................................(2)
HPER 327 Fitness for Life ..................................................(3)
HPER 310 First Aid and CPR ..................................................(2)
HPER 403 School Health Education .............................................(2)
Psy 251 Developmental Psychology .............................................(4)

8-9 credits to include one course from each of the following groups:

Biol 250 Human Sexuality ..................................................(3)
FCS 252 Child Development ..................................................(3)
FCS 352 Family Relationships ..................................................(3)
Soc 355 The Family ..................................................(3)
PhTx 410 Drugs Subject to Abuse .............................................(2)
Soc 355 Drugs and Society ..................................................(3)
SWK 410 Drugs: Addiction Dynamics .............................................(2)
FCS 240 Fundamentals of Nutrition .............................................(3)
FCS 342 Community Nutrition ..................................................(3)

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.

Center for Teaching and Learning

B.S.ED. WITH A MAJOR IN PHYSICAL EDUCATION

The requirements are the same as those listed for the B.S. in Physical Education for the College for Human Resources Development. In addition, the Center for Teaching and Learning program in Secondary Education must be completed. See page 77. The student should notify the Center for Teaching and Learning if he/she is completing the CTL work for Teacher Certification in Physical Education.

B.S.ED. WITH A COMBINED MAJOR IN ELEMENTARY AND PHYSICAL EDUCATION

For curriculum outline see page 77 under the Center for 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: HPER 101 in the same activity or consent of the instructor. Instruction in aquatics, dance, fitness, individual sports, team sports, and outdoor pursuits at the intermediate level. F.S

103. Physical Education, 1 credit. Prerequisite: HPER 102 in the same activity or consent of the instructor. Instruction in aquatics, dance, fitness, individual sports, team sports, and outdoor pursuits at the advanced level. F.S

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.


201. Physical Education, 3 credits. Prerequisite: HPER 101. 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

212. Exercise Physiology, 1 credit. Prerequisite: HPER 101. The acute and chronic effects of the type, intensity and duration of exercise on physiological function. S

237. Cooperative Education in Recreation, 1-4 credits, repeatable to 16. Prerequisite: HPER 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 interscholastic athletic program.

355. Applied Motor Development, 3 credits. Changes in motor performance which occur with age, physical and mental development as they relate to these changes.


400L. Methods and Materials for Teaching Physical Education in the Secondary School—Laboratory, 1 credit. Prerequisite: HPER 323, 323L, 406, 406L. Corequisite: HPER 400. Supervised experiences in the secondary school for the purpose of developing teaching skills for physical education and sport settings. On demand.

401. Sport Sociology, 3 credits. Prerequisite: Soc 101. The critical exploration of the function of sports in American culture, in an interdisciplinary fashion, with a focus on the contemporary scene.

402. Exercise Physiology, 4 credits. Prerequisite: Phys 301. The acute and chronic effect of the type, intensity and duration of exercise on physiological function.
College for Human Resources Development

II. RECREATION AND LEISURE SERVICES PROGRAM

The Recreation and Leisure Services Program offers the following areas of professional preparation:

A. The major in Recreation and Leisure Services.

B. The emphasis area in Therapeutic Recreation designed to qualify students for certification by the National Council on Therapeutic Recreation Certification.

C. The minor in Recreation and Leisure Services.

B.S. IN RECREATION AND LEISURE SERVICES

Students may apply for admission to the Recreation and Leisure Services program at any time following the completion of 24 semester hours. A cumulative GPA of 2.20 or higher and successful completion of Psy 101, Soc 101 and Comm 161 are required for admission. Students interested in admission should consult with the Recreation and Leisure Services Program Director.

Required 125 hours, including:

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

II. The College for Human Resources Development Requirements, see page 49.

III. Recreation and Leisure Service Prerequisites:

Comm 161 Fundamentals of Public Speaking (3)
Psy 101 Introduction to Psychology (3)
Soc 101 Introduction to Sociology (3)

IV. Recreation and Leisure Services Major Core Requirements:

HPER 208 Leisure and Society (3)
HPER 321 Leisure Education and Counseling (3)
HPER 361 Principles of Therapeutic Recreation (3)
HPER 435 Practicum in Recreation (3)

V. Recreation and Leisure Services Emphasis Area (18 credits)

The emphasis area is developed along with the academic advisor to meet each student’s individual career goals. Some examples of emphasis areas which could be developed are: Recreation Administration, Outdoor Leadership, Prison Recreation, Tourism Administration, Commercial Recreation, and Therapeutic Recreation.

THERAPEUTIC RECREATION CERTIFICATION

The Council on Therapeutic Recreation Certification (NCTRC) certifies qualified individuals as Certified Therapeutic Recreation Specialists (CTRS). Although graduation with a B.S. in Recreation and Leisure Services and a therapeutic recreation emphasis does not guarantee NCTRC certification, it is intended to qualify the student to pass the certification exam. It is recommended that students interested in NCTRC certification become familiar with the requirements for that certificate.

MINOR IN RECREATION AND LEISURE SERVICES

Required for the Recreation and Leisure Services minor:

20 hours, including:

HPER 201 Leisure and Society (3)
HPER 222 Programming in Recreation (3)
HPER 360 Recreation and Leisure Services for Individuals with Disabilities (3)
HPER 385 Practicum in Recreation (2)

Effect 9 hours of Recreation and Leisure Services content courses in HPER as approved by a Recreation advisor.

Recreation Courses

201. Leisure and Society, 3 credits. Prerequisite: Soc 101 and Psy 101. Orientation to recreation and leisure, including sociological, psychological, historical, philosophical and professional implications and influences of recreation and leisure on society.

203. Recreation Games, 1 credit. Prerequisite: HPER 201. Emphasis on a wide variety of recreational games.

205. Program Planning in Recreation and Leisure, 3 credits. Development of programming skills for recreation programs in various settings, e.g. public; nonprofit; profit with emphasis on activity selections, scheduling and staffing.


271. Outdoor Recreation Planning Programs, 2 credits. An overview of the role of outdoor recreation agencies and their programs. A study of the principles and guidelines for outdoor recreation programming. F/S.

272. Recreation and the Natural Environment, 3 credits. An overview of the use of natural environments as formal and informal settings for leisure and recreation involvement and the interrelationship among people, the environment and leisure.

321. Human Resources for Recreation, 3 credits. Prerequisites: HPER 201. The supervision of human resources for the leadership of recreation and leisure services. F.

337. Cooperative Education in Recreation, 1-4 credits, repeatable to 16. Prerequisite: HPER 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-S.

359. Introduction to Therapeutic Recreation, 3 credits. Prerequisite: HPER 201. An overview of the nature and scope of therapeutic recreation by examination of the history, philosophy, service delivery system, and issues that confront the profession.

366. Recreational/Leisure Services and Individuals with Disabilities, 3 credits. Study of individuals with disabling conditions and their leisure-related needs with emphasis on integration strategies and legislation that facilitate community involvement.

361. Principles of Therapeutic Recreation, 3 credits. Prerequisite: HPER 359. In-depth examination of the therapeutic recreation process in clinical, residential and community settings.

362. Leisure Education and Counseling, 3 credits. Prerequisites: HPER 201, 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.

363. Therapeutic Recreation for the Elderly, 3 credits. Prerequisite: HPER 361. Leisure related needs of elderly, individuals and groups to meet those needs through the therapeutic recreation process in clinical, residential and community settings.

370. Principles of Tourism, 3 credits. Overview of tourism including travel behavior, tourism planning and policy, tourism impacts and promotion of tourism.

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: HPER 222 and 321. Independent and group study of professional placement and leadership in recreation and leisure services. Practical experiences in recreation settings within the community. Includes lectures, site visits, and fieldwork hours.

421. Evaluation and Research for Recreation, 3 credits. Prerequisite: HPER 222. Overview of evaluation and research methods utilized in the delivery of recreation and leisure services.

University of North Dakota
History (Hist)

R. Beringer (Chair), Berger, Ellis, Handy-Marchello, Howard, Iseminger, Mochoruk, Rowley, and Vivian

The History program at the University prepares one to understand oneself and one’s society, as well as other people in different cultures in the past and in the present. Beyond this the department trains students for the teaching of history at all levels, government service, and graduate studies in history. The study of history may serve as preprofessional training for other areas such as law or the ministry.

Two programs are offered for the History major. Plan 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 on a graduate level. Plan B is designed primarily for those who want to enter government service, business, or teaching at the secondary level. Students who wish to teach in the public schools should also get advisement from the Center for Teaching and Learning.

College of Arts and Sciences

B.A. WITH MAJOR IN HISTORY

Required 125 hours, including:

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

II. One of the Following Curriculum Options:

Option A

39 major hours, including:

9 hours from:........................................................................................................(9)

Hist 101 ...................... Western Civilization to 1500 ........................................(3)
Hist 102 ..................... Western Civilization since 1500 .......(3)
Hist 103 ..................... United States to 1877 ........................................(3)
Hist 104 ..................... United States since 1877 .....................(3)
Hist 240 ...................... The Historian’s Craft .............................................(3)
Hist 440 ...................... Research .................................................................(2)
Electives (16 must be upper level) .................................(21)

Maximum 6 hours of Hist 300.

Required in other departments:

Level IV proficiency in a foreign language.

Option B

35 major hours, including

Hist 101 ...................... Western Civilization to 1500 .................(3)
Hist 102 ..................... Western Civilization since 1500 .............(3)
Hist 103 ..................... United States to 1877 .........................(3)
Hist 104 ..................... United States since 1877 .................(3)
Hist 240 ...................... The Historian’s Craft .........................(3)
Hist 440 ...................... Research ...................................................(2)
Electives (16 must be upper level) .................................(18)

Of the 18 elective hours 12 must form a concentration in either World or American History.

Maximum 6 hours of Hist 300.

Required in other departments:

Hist 440. ............................ Research. ............................(2)

MINOR IN HISTORY

Required 20 hours, including:

9 hours from:.................................................................(9)

Hist 101 ...................... Western Civilization to 1500 .................(3)
Hist 102 ..................... Western Civilization since 1500 .............(3)
Hist 103 ..................... United States to 1877 .........................(3)
Hist 104 ..................... United States since 1877 .................(3)
History electives (Maximum: 4 hrs Hist 300) ..................(11)

RELATED FIELD CONCENTRATION IN INTELLECTUAL HISTORY, MINOR ONLY:

Required: 20 hours Upper Level work approved by the chairs of the History or Philosophy Departments.

Such courses as follows may be used:

Hist 330 ...................... The United States: Social and Cultural 19th Century .............................................(3)
Hist 331 ...................... The United States: Social and Cultural 20th Century .............................................(3)
Hist 341 ...................... Ancient and Medieval Science, Technology and Magic .............................................(3)
Hist 342 ...................... Modern Science and Technology .................(3)
Phil 300 ...................... Classical Greek and Hellenistic Philosophy .............................................(3)
Phil 301 ...................... Medieval Period .............................................(3)
Phil 302 ...................... Renaissance to Enlightenment .....................(3)
Phil 303 ...................... Kant and the Nineteenth Century Philosophy ..................................................(3)
Phil 304 ...................... Twentieth Century Philosophy .............................................(3)
Phil 309 ...................... American Philosophy .........................(3)
VA 210, 211 .................. Art History Survey .............................................(6)
VA 315 ...................... American Art and Architecture .........................(3)
VA 410 ...................... History of Art: Selected Subjects .........................(3)

Courses

101. Western Civilization to 1500. 3 credits. An interpretive survey of cultural continuity from 3000 B.C. to the end of the European Middle Ages. F.S

102. Western Civilization since 1500. 3 credits. An interpretive survey with emphasis on movements common to Western Europe from the Reformation through World War II. F.S

103. United States to 1877. 3 credits. A survey of early American history, including 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 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

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 during the past century. F
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University of North Dakota

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

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 which have shaped Canada in the modern era. S

208. U.S. 1832 to present. 3 credits. A survey of the Depression and New Deal, the Cold War, the consumer society and the travail of liberalism in recent America. Primarily for non-history majors. 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 influence of the Army on American society. Specific wars and battles are studied in terms of military tactics and strategy. F

214. Latin America to 1825. 3 credits. An examination of the historical evolution of the American hemisphere from pre-Columbian times to the collapse of the Spanish Empire, including the rise of indigenous cultures and civilizations, Spanish and Portuguese expansion and conquest, and the character of colonial rule. F

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

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’s story and the evolution of isolationist sentiment among North Dakotans. Recommended for Social Science major certification. F

221. The Scandinavian Countries Since 1500. 3 credits. A survey of Denmark, Norway, and Sweden from the Lutheran Reformation to the present. Emphasis is on popular movements of the nineteenth and twentieth centuries. S

231. History of the United States. 3 credits. A survey of the rise of the city and the development of urban life from ancient times to the present. F/S

239. World War II. 3 credits. A brief survey of the background, strategy and major campaigns of World War II including some of the diplomatic and political problems encountered by the major belligerents. The course includes extensive use of documentary film. S

240. The Historian’s Craft. 3 credits. An introduction to the nature of history—how it should be read, understood, researched, reported and written. F/S

300. Topics in History. 1-3 credits. Repeatable to 12. Selected topics in history which allow the student to study a specialized subject. 4 credits may apply to the history minor; 6 credits to the history major; 12 credits to degree requirements. F/S

311. 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 development. F

325. The United States: Nineteenth Century American West. 3 credits. An examination of major issues in the American West beginning with the trans-Appalachian West and proceeding to the trans-Mississippi West. The course will examine social, political, military, and economic developments in the context of the Western environment. F

326. The United States: The Twentieth Century American West. 3 credits. An examination of the major issues in the trans-Mississippi West during the twentieth century. This course will examine social, political and economic developments in the context of the western environment. S

330. The United States: Social and Cultural, 19th Century. 3 credits. A survey of the contributions of social institutions (such as the family, school, and church) to the development of a national culture. The colonial background is considered briefly, but emphasis is given to the first half of the nineteenth century. Changing attitudes toward social reform, intellectualism, class status, and minorities (such as children, women, blacks, and Indians) are examined. Competing regional trends in economics, social, political, and intellectual attitudes and institutions provide the dynamics for understanding the failure of nationalism during the antebellum period. F

331. The United States: Social and Cultural, 20th Century. 3 credits. A survey of the growth of government action in social welfare. Emphasis is given to the advent and growth of a mass, popular culture. S

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

333. Women in American History Since 1865. 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

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 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.

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. 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 development of Vietnamese culture and nationalism, the history of French imperialism in Indochina as background to an examination of the development of the Vietnamese independence movement, the origins of Vietnamese communism, the war for independence from France, and the violent and tragic relationship between the U.S. and Vietnam from the end of World War II to the final departure of American forces from Saigon. S

341. Ancient and Medieval Science, Technology and Magic. 3 credits. A survey of the origins and development of scientific thought in Greek, Danic, European medieval, and Renaissance cultures.

342. Modern Science and Technology. 3 credits. A survey of the revolution in scientific thought in the age of the Renaissance, the Copernican Revolution, and the development of physics, chemistry, geology, biology, etc. into modern times. S/2

343. Ancient Greece. 3 credits. A study of Greek prehistory and history to the end of the Hellenistic era. Greek achievements in art, commerce, literature, politics, religion, science and technology are surveyed. S

344. Ancient Rome. 3 credits. A survey of the prehistory, historical development, and ultimate decline in Rome. In addition to inquiries into the military, political, cultural, economic, and religious experiences of the people of Rome, this course will attempt to delineate those qualities of life that were particularly Roman. S

345. The Ancient Near East. 3 credits. A course intended to acquaint the student with cultures of the ancient Western world: Egypt, Iran, Iraq, Turkey, and the Levant are the areas emphasized. F

350. Europe: The Reformation, 1500-1648. 3 credits. A survey of events and ideas in Europe from the beginning of the Reformation to the end of the religious wars. F

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

352. European Revolution and Napoleonic Era, 1789-1815. 3 credits. A course which serves as an admirable vehicle to observe human nature at its best and worst, as people responded to unprecedented and unexpected problems and opportunities. Study of this classic revolution compels a conclusion on how revolutions begin and, once begun whether they move under their own momentum to excess and then reaction. F/S

353. Europe: 1815-1918. 3 credits. A survey developing the theme that from 1815 to 1848 idealistic and utopian means were employed by those who sought to change frontiers, institutions, or governments. These methods were largely ineffective. With the 1848 revolutions, “a new toughness of mind” emerged, and those seeking to effect change became more pragmatic and realistic, as manifested, for example, in Marxism and Realpolitik. F

355. Europe Since 1918. 3 credits. A course divided into two equal parts—1919-1929 and 1929-1939. Until 1929 the postwar settlement—with its institutions, values, agencies, and hopes—appeared to be working. After 1929 it obviously was not. The conclusion of the course is that postwar problems were not resolved in their fundamentals and that World War II was but a continuation of World War I, after a twenty-year armistice. S

362. Modern China. 3 credits. A survey of the political, economic, social, and intellectual history of China from the Opium War (1842) until the present. Special attention will be paid to the problems of modernization in traditional societies and to the nature of fundamental social revolution. S/F

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 given to the changes in the political, intellectual, and social attitudes toward the Japanese people and to the international context of Japan’s military tragedy and economic success. S

403. The United States: Colonial Period. 3 credits. A survey of a background of British colonization, the development of diverse colonial cultures, and the transformation in maturing provincial societies of the European heritage. The seventeenth-century Age of Faith and the eighteenth-century Age of Reason are contrasted to illustrate the changing attitudes of Americans toward themselves and Britain. The under-lying theme is long-range causes of American independence. S

405. The United States: Age of Jefferson and Jackson, 1789-1850. 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; the Indian role 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

407. The United States: Revolutionary Era, 1760-1789. 3 credits. A survey 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

406. The United States: Civil War and Reconstruction, 1850-1877. 3 credits. A study of the acceleration of the forces of sectionalism and racism which caused the temporary breakdown of the American democratic process and the tragedy of Civil War and Reconstruction. S

407. The United States: Rise of Industrial America, 1877-1917. 3 credits. A survey of the rise of America to industrial and world power. Emphasis is placed upon the great changes which the Industrial Revolution brought and the American response to these changes. Detailed attention is given to the Populist and Progressive movements. F
040. The United States, 1920-1945. 3 credits. A study of American society from the end of World War I through World War II. Emphasis will be placed upon the Republican 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.

049. History of Argentina. 3 credits. The course examines the development of Argentina from its colonial foundations to contemporary times. Emphasis is placed upon political consolidation, economic growth and expansion, social integration, and democratic leadership patterns.

050. History of Mexico. 3 credits. The study of modern Mexico from Independence to contemporary times, with concentration on the Revolution of 1911 and after, national integration, industrialization, and political consolidation.

061. 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.

062. U.S., Foreign Relations Since 1900. 3 credits. An advanced survey of the major policies advanced and pursued by the U.S. during the 20th century.

073. 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.

074. France Since 1815. 3 credits. A survey of the Red versus Black tradition during the nineteenth century and its repudiation in the twentieth century.

075. Germany Since 1815. 3 credits. An interpretation of the Second Reich, Weimar, and the Third Reich.

076. 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 revolution.

077. Russia Since 1855. 3 credits. A survey of Russia and the Soviet Union, emphasizing failed reforms, successful revolutions, and the establishment of the Soviet State.

081. Great Britain Since 1815. 3 credits. A survey developing the theme of the pragmatic response of the British people to the problems and opportunities provided by the Industrial Revolution. The conclusion presented is that the Welfare State established after World War II is the logical culmination of this pragmatic response.

083. History of the Great Plains. 3 credits. A historiographic and thematic approach to the area west of the 98 meridian and east of the Rocky Mountains, including the Canadian prairie provinces, from the period of Plains Indians to the present.

140. Introduction to Research. 2 credits. A methodology course. Though designed primarily for history majors, History 440 may prove very useful for students in other of the social science fields. Through discussion and working in the library, the students develop, compose, both in the compiling of a bibliography and in the use of journals, newspapers, government documents, manuscript collections, pictorial materials, etc. Each student writes a paper that demonstrates the use and evaluation of these historical source materials.

170. 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 relationships between the U.S., Canada, and Great Britain. On demand.

171. Introduction to Public History. 3 credits. An introduction to public history at federal, state, and local levels. Emphasis is given to archival theory, oral history, museum studies and historic preservation, with attention to public awareness of historical resources.

172. Public History Practice. 3 credits. A practicum in which the student learns through experience the techniques of public history work.

249. Senior Honors Theses. 1-15 credits; total not to exceed fifteen. Prerequisite: consent of the Department and approval of the Honors Committee. Supervised independent study culminating in a thesis.

Honors Program.

J. Anderegg, Program Coordinator

For a full description of the Honors Program, see page 5.

Graduation as a scholar in the Honors Program

Required 125 hours, including 24 credits from the following:

- Hon 101, Inquiry in the Humanities
- Hon 102, Inquiry in the Social Sciences
- Hon 103, Inquiry in the Sciences
- Hon 250, Sophomore Honors Essay
- Hon 291, Colloquium in the Humanities
- Hon 292, Colloquium in the Social Sciences
- Hon 293, Colloquium in the Sciences
- Hon 301, Honors Mode
- Hon 391, Advanced Colloquium in the Humanities
- Hon 392, Advanced Colloquium in the Social Sciences
- Hon 393, Advanced Colloquium in the Sciences
- Hon 399, Independent Study
- Hon 499, Senior Honors Thesis

II. The Honors Program General Education Requirements in lieu of University General Education Requirements

A balance of work to cover each of the following areas:

1. Fine Arts and Humanities
2. Natural Science, Math, Technology
3. Business, Social Science

III. The Honors Program English Composition Requirement

Any two of the following courses (Honors sections preferred):

- Engl 101, Composition I
- Engl 102, Composition II
- Engl 203, Composition III
- Engl 209, Technical and Business Writing
- Engl 308, Composition IV

101. Inquiry in the Humanities. 3 credits. Prerequisite: admittance to the Honors Program. Reading and discussion of selected works of humanistic value; orientation to methods of Honors work. Normally taken by first-year students in the Honors Program.

102. Inquiry in the Social Sciences. 3 credits. Prerequisite: admittance to the Honors Program. Readings and discussion of selected works that reflect the methodology and concerns of the social sciences; orientation to methods of Honors work. Normally taken by first-year candidates of the Honors Program.

103. Inquiry in the Sciences. 3 credits. Prerequisite: admittance to the Honors Program. Readings and discussion of selected works that reflect the methodology and concerns of the sciences; orientation to methods of Honors work. May include laboratory component. Normally taken by first-year candidates of the Honors Program.

250. Sophomore Honors Essay. 1-3 credit. Prerequisite: admittance to the Honors Program. An in-depth essay used to evaluate writing and organizational skills at the sophomore level.

291. Colloquium in the Humanities. 2-4 credits, repeatable. Prerequisite: admittance to the Honors Program. Interdisciplinary courses on varying topics related to the humanities; student participation in the form of writing, research, and discussion is stressed.

292. Colloquium in the Social Sciences. 2-4 credits, repeatable. Prerequisite: admittance to the Honors Program. Interdisciplinary courses on varying topics related to the social sciences; student participation in the form of writing, research, and discussion is stressed.

293. Colloquium in the Sciences. 2-4 credits, repeatable. Prerequisite: admittance to the Honors Program. Interdisciplinary courses on varying topics related to the sciences; student participation in the form of writing, research, and discussion is stressed.

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 standard course to an Honors quality course. It provides an intellectual enhancement to a standard course.

391. Advanced Colloquium in the Humanities. 2-4 credits. Repeatable. Prerequisite: admission to the Honors Program. Advanced interdisciplinary courses on varying topics in the humanities.

392. Advanced Colloquium in the Social Sciences. 2-4 credits. Repeatable. Prerequisite: admittance to the Honors Program. Advanced interdisciplinary courses on varying topics in the social sciences.

393. Advanced Colloquium in the Sciences. 2-4 credits. Repeatable. Prerequisite: admittance to the Honors Program. Advanced interdisciplinary courses on varying topics in the sciences.

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 Program.

499. Senior Honors Thesis. 3-15 credits; total not to exceed fifteen. Prerequisite: consent of the Department and approval of the Honors Committee. Supervised independent study culminating in a thesis.

Human Resources Development (HRD)

The College for Human Resources Development offers a limited number of non-departmental courses. Special Topics 250 and Special Topics 495 are nondepartmental and are intended to serve a variety of purposes. These courses are provided on demand in areas of particular relevance when students or faculty initiate them. No more than 12 credits may be earned in any combination of these courses over four years.
Humanities (Hum)

P. Sanborn (Coordinator), Barrenteine, and Rand

The University requires twelve hours in arts and humanities for any baccalaureate degree. See page 28.

A Related Fields Concentration in Humanities is offered as a major in the College of Arts and Sciences. The student must complete 18 credit hours in each of at least two humanities disciplines; of these, at least 27 must be in upper level work. Level IV proficiency in a language other than English, preferably Greek, Latin, French or German, is required.

101. Introduction to Humanities. 4 credits. This course is designed to introduce beginning university students to the major disciplines of the Humanities: literature, philosophy, history, religion, drama, music, and art. The literature chosen each semester will vary, often focusing on a central theme. Class time will be used to discuss the texts and students will be expected to attend events in the fine arts.

102. Introduction to Humanities. 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.

The Humanities Program also administers the Integrated Studies Program, which is an interdisciplinary multi-course program for first year students. See page 118 for further information.

Indian Studies (IS)

M. J. Schneider (Chair), and Hans

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 hours, including:

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

II. The Following Curriculum:

36 major hours, including:

- IS 121 Introduction to Indian Studies
- IS 207 History of the Three Affiliated Tribes
- IS 311 Traditions Indian Culture
- IS 352 American Indian Philosophical Thought
- IS 330 Contemporary Plains Indian Culture
- IS 341 Urban Indians
- IS 344 Contemporary American Indian Issues
- IS 346 Contemporary Indian Women
- IS 363 Native American Child Development
- IS 371 Reservation Government and Politics
- IS 375 History of Federal Indian Law and Policy
- IS 495A Special Problems
- IS 495B Special Problems

6 hours from Arts, Literature and Language:

- Engl 361 American Indian Languages
- Engl 362 American Indian Languages
- Engl 367 American Indian Literature
- Engl 369 Traditional Amer. Indian Lit.
- IS 255 Survey of Native American Arts
- Anthropology 220 Native American Technology

3 hours from History:

- IS 203 Introductory Survey of Chippewa History
- IS 207 History of the Three Affiliated Tribes
- IS 301 History of Western Sioux
- IS 331 Traditional Plains Indian Culture
- IS 352 American Indian Philosophical Thought

6 hours from Contemporary Social Issues:

- IS 330 Contemporary Plains Indian Culture
- IS 341 Urban Indians
- IS 344 Contemporary American Indian Issues
- IS 346 Contemporary Indian Women
- IS 363 Native American Child Development
- IS 371 Reservation Government and Politics
- Elective

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 379, 491 and 497.

A concentration in an area or field other than Indian Studies is also required of all majors. This concentration may be met in the following ways:

(1) Proficiency in a language (equivalent to Level IV in a Native American or other language)
(2) A minor in another subject matter field
(3) In special instances, a supplementary concentration of at least 24 hours can be arranged between the student and the faculty of the Department. These concentrations are designed for students to obtain course work in areas which complement the major.
(4) Certification for teaching in the public schools. (It should be noted that at present Indian Studies is not a certifiable major. Thus, one must complete the requirements for a composite Social Science or another certifiable teaching major, as well as take the professional education foundations courses required of teacher candidates. Courses in Indian Studies may serve as an area of concentration in the Social Science major.)

MINOR IN INDIAN STUDIES

Required 22 hours including:

- IS 121 Introduction to Indian Studies
- IS 207 History of the Three Affiliated Tribes
- IS 375 History of Federal Indian Law and Policy
- Anthropology 220 Native American Technology

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.

207. History of the Three Affiliated Tribes. 3 credits. A survey of the history of the Mandan, Hidatsa, and Anishkota 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.

235. Cross-Cultural Seminar. 2 credits. Cross-Cultural awareness through the use of audio-visual materials, simulation games, and resource people who are able to present various perspectives of American Indian culture. (May be repeated to a total of four credits).
The Occupational Safety & Environmental Health (OSEH) Program is designed for individuals interested in careers in safety and health. The OSEH degree is for preparation of managers in the safety, industrial hygiene, hazardous materials, and occupational safety and environmental health fields.

In addition, the Department of Industrial Technology offers interdisciplinary courses designed to enhance technological literacy to contribute toward the fulfillment of university general education requirements, to provide courses for a related fields concentration program in Graphic Communication through the College of Arts and Sciences, and to offer energy and electronics courses for the Airway Science Electronic Systems program through the Center for Aerospace Sciences.

College of Business and Public Administration
B.S. INDUSTRIAL TECHNOLOGY DEGREE PROGRAM

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

II. Industrial Technology Major Requirements:

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>IT 101</td>
<td>Introduction to Energy and Power Systems</td>
<td>(1)</td>
<td></td>
</tr>
<tr>
<td>IT 102</td>
<td>Introduction to Graphic Communication</td>
<td>(1)</td>
<td></td>
</tr>
<tr>
<td>IT 103</td>
<td>Introduction to Manufacturing</td>
<td>(1)</td>
<td></td>
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<tr>
<td>IT 201</td>
<td>Electro-mechanical Fundamentals</td>
<td>(3)</td>
<td></td>
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<td>IT 202</td>
<td>Technical Drawing</td>
<td>(3)</td>
<td></td>
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<tr>
<td>IT 203</td>
<td>Principles of Graphic Design and Layout</td>
<td>(3)</td>
<td></td>
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<tr>
<td>IT 312</td>
<td>Computer-Aided Design/Drafting</td>
<td>(3)</td>
<td></td>
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<tr>
<td>IT 300</td>
<td>Computer Applications in Industrial Technology</td>
<td>(3)</td>
<td></td>
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<tr>
<td>IT 330</td>
<td>Technology, Society and the Individual</td>
<td>(2)</td>
<td></td>
</tr>
<tr>
<td>IT 310</td>
<td>Industrial Planning and Control</td>
<td>(2)</td>
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<tr>
<td>IT 331</td>
<td>Traditional Plains Indian Culture</td>
<td>(3)</td>
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<tr>
<td>IT 403</td>
<td>Product Research and Development</td>
<td>(3)</td>
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<tr>
<td>IT 404</td>
<td>Materials Testing</td>
<td>(3)</td>
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<td>IT 423</td>
<td>Computer-Integrated Manufacturing</td>
<td>(3)</td>
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<tr>
<td>IT 211</td>
<td>Electric Circuits and Devices</td>
<td>(3)</td>
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<tr>
<td>IT 301</td>
<td>Microelectronic Circuits</td>
<td>(3)</td>
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<tr>
<td>IT 341</td>
<td>Digital Integrated Circuits</td>
<td>(3)</td>
<td></td>
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<tr>
<td>IT 401</td>
<td>Electronic Communication Systems</td>
<td>(2)</td>
<td></td>
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<tr>
<td>IT 416</td>
<td>Transportation Technology</td>
<td>(2)</td>
<td></td>
</tr>
<tr>
<td>IT 441</td>
<td>Computer-Aided Circuit Analysis and Design</td>
<td>(3)</td>
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</tbody>
</table>

Industry Technology

M. Bender (Chair), Diez, Holten, Nwoke, Patrick, Smart, and Wang

The Department of Industrial Technology offers three four-year undergraduate degree programs (Bachelor of Sciences) and a graduate program leading to the Master of Science degree (thesis and non-thesis options). The baccalaureate degrees programs offered through the College of Business and Public Administration include Industrial Technology, Technology Teacher Education, and Occupational Safety and Environmental Health.

Industrial Technology is a field of study designed to prepare technical/management-oriented professionals for employment in business, industry, and government. The curriculum is organized into three integrated technological system areas: Graphic Communication, Energy & Electronics, and Manufacturing. The program is accredited by the National Association of Industrial Technology (NAIT). NAIT accreditation recognizes the attainment of professional standards for industrial technology.

The Technology Teacher Education program includes a major and minor designed for individuals interested in teaching technology education at secondary and post-secondary levels. Teacher certification is granted through the Center for Teaching and Learning.
I. University General Education Requirements:

- English Composition .............................................. (6)
- Social Sciences .......................................................... (9)
- Arts and Humanities .................................................. (12)
- Mathematics, Science & Technology ............................ (12)

II. OSEH Major Admission Requirements

A. Completion of the following courses with a minimum grade of C:

- Chemistry 105 & 106 ................................................. (8)
- Math 103 ................................................................. (3)
- IT 101 ................................................................. (3)

B. Completion of at least 15 hours in residence at the University of North Dakota with a minimum of 2.2 GPA.

III. OSEH Major:

- General Core (27 semester hours required)
  - Math 204 ............................................................... (3)
  - Anat 204 ............................................................... (3)
  - Econ 210 ............................................................... (3)
  - Psy 301 ................................................................. (3)
  - IT 312 ................................................................. (3)
  - IT 315 ................................................................. (3)
  - IT 316 ................................................................. (3)
  - IT 300 ................................................................. (3)
  - CSci 110 ............................................................... (3)
  - CSci 111 ............................................................... (3)
  - CSci 112 ............................................................... (3)

- Eight (8) hours selected from the following:
  - IT 315 ................................................................. (3)
  - IT 316 ................................................................. (3)
  - IT 300 ................................................................. (3)

- The following thirteen (13) hours:

  A. Industrial Safety Concentration (Option I)
  - Required: 21 hours including:
    - Math 103 ............................................................... (3)
    - Math 204 ............................................................... (3)
    - Anat 204 ............................................................... (3)
    - Econ 210 ............................................................... (3)
    - Psy 301 ................................................................. (3)
    - IT 312 ................................................................. (3)
    - IT 315 ................................................................. (3)
    - IT 316 ................................................................. (3)
    - IT 300 ................................................................. (3)
    - CSci 110 ............................................................... (3)
    - CSci 111 ............................................................... (3)
    - CSci 112 ............................................................... (3)

  B. Occupational Safety & Environmental Health (OSEH)

  I. University General Education Requirements:

   - English Composition .............................................. (6)
   - Social Sciences .......................................................... (9)
   - Arts and Humanities .................................................. (12)
   - Mathematics, Science & Technology ............................ (12)

  II. OSEH Major Admission Requirements

   A. Completion of the following courses with a minimum grade of C:
      - Chemistry 105 & 106 ................................................. (8)
      - Math 103 ................................................................. (3)
      - IT 101 ................................................................. (3)

   B. Completion of at least 15 hours in residence at the University of North Dakota with a minimum of 2.2 GPA.

   NOTE: After the above admission requirements are met, students must apply for admission to the OSEH major program.

   III. OSEH Major:

      A. General Core (27 semester hours required)
         - Math 204 ............................................................... (3)
         - Anat 204 ............................................................... (3)
         - Econ 210 ............................................................... (3)
         - Psy 301 ................................................................. (3)
         - IT 312 ................................................................. (3)
         - IT 315 ................................................................. (3)
         - IT 316 ................................................................. (3)
         - IT 300 ................................................................. (3)
         - CSci 110 ............................................................... (3)
         - CSci 111 ............................................................... (3)
         - CSci 112 ............................................................... (3)

      B. Eight (8) hours selected from the following:
         - IT 315 ................................................................. (3)
         - IT 316 ................................................................. (3)
         - IT 300 ................................................................. (3)

      C. The following eight (9) hours:
         - IT 212 ................................................................. (3)
         - IT 400 ................................................................. (3)
         - IT 415 ................................................................. (3)
         - IT 440 ................................................................. (3)

      D. Eight (8) hours selected from the following:
         - IT 212 ................................................................. (3)
         - IT 400 ................................................................. (3)
         - IT 415 ................................................................. (3)

      E. Eight (8) hours selected from the following:
         - IT 212 ................................................................. (3)
         - IT 400 ................................................................. (3)
         - IT 415 ................................................................. (3)
## Graduation Requirements for the BS OSEH Degree

Students must achieve the following to graduate with the Bachelor of Science in Occupational Safety and Environmental Health administered through the Department of Industrial Technology and the College for 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 midprogram review portfolio and the written report.

## Retention Standards for the BS OSEH Degree

To remain a student in good standing, the student must attain the following:

1. A cumulative GPA of 2.20 and a minimum GPA of 2.50 in the major program of study.
2. Submit a portfolio of materials upon completion of 24 hours in the major for a mid-program evaluation of successful progress. Included in this portfolio will be a position paper related to the goals, objectives, and responsibilities of the safety and health professional.
3. Upon completion of 35 semester hours 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 midprogram review or not achieving a satisfactory review of the written report, will be placed on probation for one semester. At the conclusion of that semester, the student will be reinstated or 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.

### MINOR IN GRAPHIC COMMUNICATION TECHNOLOGY (20 credits)

<table>
<thead>
<tr>
<th>Course Number</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>IT 101</td>
<td>Introduction to Graphic Communication</td>
<td>(1)</td>
</tr>
<tr>
<td>IT 212</td>
<td>Principles of Graphic Design and Layout</td>
<td>(3)</td>
</tr>
<tr>
<td>IT 240</td>
<td>Technology, Society and the Individual</td>
<td>(2)</td>
</tr>
<tr>
<td>IT 322</td>
<td>Fundamentals of Photography</td>
<td>(3)</td>
</tr>
<tr>
<td>IT 302</td>
<td>Applied Graphic Design and Layout</td>
<td>(3)</td>
</tr>
<tr>
<td>IT 312</td>
<td>Computer Aided Design/Layout</td>
<td>(3)</td>
</tr>
<tr>
<td>IT 412</td>
<td>Design/Drafting</td>
<td>(3)</td>
</tr>
<tr>
<td>IT 442</td>
<td>Desktop Publishing</td>
<td>(3)</td>
</tr>
<tr>
<td>IT 497</td>
<td>Directed Studies in Industrial Technology</td>
<td>(1-3)</td>
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</tbody>
</table>

### MINOR IN MANUFACTURING TECHNOLOGY SYSTEMS (20 credits)

<table>
<thead>
<tr>
<th>Course Number</th>
<th>Course Title</th>
<th>Credits</th>
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</thead>
<tbody>
<tr>
<td>IT 101</td>
<td>Introduction to Manufacturing</td>
<td>(1)</td>
</tr>
<tr>
<td>IT 202</td>
<td>Technical Drawing</td>
<td>(3)</td>
</tr>
<tr>
<td>IT 203</td>
<td>Production Processes: Manufacturing</td>
<td>(3)</td>
</tr>
<tr>
<td>IT 300</td>
<td>Technology, Society and the Individual</td>
<td>(2)</td>
</tr>
<tr>
<td>IT 104</td>
<td>Industrial Materials</td>
<td>(3)</td>
</tr>
<tr>
<td>IT 213</td>
<td>Production Processes: Construction</td>
<td>(3)</td>
</tr>
<tr>
<td>IT 330</td>
<td>Quality Assurance</td>
<td>(3)</td>
</tr>
<tr>
<td>IT 383</td>
<td>Robotics and Automation</td>
<td>(2)</td>
</tr>
<tr>
<td>IT 403</td>
<td>Product Research and Development</td>
<td>(3)</td>
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<tr>
<td>IT 404</td>
<td>Material Testing</td>
<td>(3)</td>
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<tr>
<td>IT 420</td>
<td>Industrial Facility Design</td>
<td>(2)</td>
</tr>
<tr>
<td>IT 423</td>
<td>Computer Integrated Manufacturing</td>
<td>(3)</td>
</tr>
<tr>
<td>IT 497</td>
<td>Directed Studies in Manufacturing</td>
<td>(1-3)</td>
</tr>
</tbody>
</table>

### MINOR IN ENERGY/ELECTRONICS TECHNOLOGY SYSTEMS (20 credits)

<table>
<thead>
<tr>
<th>Course Number</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>IT 101</td>
<td>Introduction to Energy and Power</td>
<td>(3)</td>
</tr>
<tr>
<td>IT 201</td>
<td>Electromechanical Fundamentals</td>
<td>(3)</td>
</tr>
<tr>
<td>IT 211</td>
<td>Electric Circuits and Devices</td>
<td>(3)</td>
</tr>
<tr>
<td>IT 300</td>
<td>Technology, Society and the Individual</td>
<td>(2)</td>
</tr>
<tr>
<td>IT 301</td>
<td>Microelectronic Circuits</td>
<td>(3)</td>
</tr>
</tbody>
</table>

### Courses

1. **Introduction to Energy & Power Systems.** 1 credit. Energy resources and forms; emphasis on technological aspects of conversion, transmission, and utilization with ramifications of ecological, economic, and social concerns for conservation. F

2. **Introduction to Graphic Communication.** 1 credit. Introduction to systems used in graphic communication; includes man to man, man to machine, machine to man, and machine to machine. F

3. **Introduction to Manufacturing.** 1 credit. The study of input, processes, and output fundamental to manufacturing and construction, emphasizing the economical and orderly methods of fabrication within a system. F

4. **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 composites. F

5. **Electromechanical Fundamentals.** 3 credits. Prerequisites: Math 103, Phys 101 & 102. The study of fundamental, mechanical, hydraulic and pneumatic, and electrical apparatus used in power systems. F

6. **Technical Drawing.** 3 credits. Prerequisite: Math 103. The study of technical drawing techniques to include various projections, pictorials, dimensioning, development and tolerancing used in business and industry. S

7. **Production Processes: Manufacturing.** 3 credits. Prerequisite: IT 103. Fundamental concepts of processing industrial materials, especially those utilized in manufacturing products, with emphasis on tools and techniques. S

8. **Recreational Crafts.** 3 credits. Basic techniques in a variety of craft processes with emphasis on recreational, educational, and therapeutic values. Principles of organization and administration of recreational craft programs for schools, communities and other specialized programs. S

9. **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

10. **Principles of Graphic Design and Layout.** 3 credits. Basic concepts, processes, and techniques involved in image generation, image reproduction, bindery, and estimating. F

11. **Production Processes: Construction.** 3 credits. Prerequisites: IT 103 or 104 or consent of instructor. A study of material processing methods and techniques utilizing tools and machines leading to the production of constructed assemblies. F/S

12. **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

13. **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, driver improvements and state/national laws. F/S

14. **Computer Applications in Industrial Technology.** 3 credits. Overview of software and computer hardware applications used in industrial technology to include computers, peripheral devices, and network systems. Also covered are main-frame and mini computer applications. S

15. **Technology, Society and the Individual.** 2 credits. An introductory lecture-recitation course emphasizing technology effects on the individual-society-technology matrix of various cultures. F/S

16. **Microelectronic Circuits.** 3 credits. Prerequisite: IT 211. Study of electronic components and circuits (discrete and integrated) and their functional and operational characteristics. F

17. **Applied Graphic Design and Layout.** 3 credits. Prerequisite: IT 212 or consent of instructor. Photo and computer graphics concepts and techniques; emphasis on message preparation, photo conversion and image transfer through offset and screen processes. S

18. **Fire Safety.** 2 credits. Prerequisites: Chem 106. 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, applications, and situations. F/S

19. **Industrial Organization Planning and Control.** 2 credits. An analysis of the systematic direction and control of the processes that transform inputs into finished goods and services. Emphasis is on the flow and application activities, forecasting, allocating resources, designing products and services, and ensuring quality F

20. **Computer Aided Design/Drafting.** 3 credits. Prerequisite: IT 202 or consent of instructor. The study of the application of computer graphics to computer aided design and drafting activities in industry. F/S

21. **Construction Materials and Processes.** 3 credits. Prerequisite: Upper division majors or consent of instructor. The study of construction materials and processes, assemblies, and sub-assemblies of modular components with emphasis on the environmental impact of construction. Introduction to structural analysis. S/S

22. **Topics in Occupational Safety and Environmental Health.** 1-6 credits. Prerequisites: Math 204 and Chem 212, Anat 204, HPER 310, IT 440, and Chem 104 (depending on the topic). Studies of selected topics in Occupational Safety and Environmental Health. Topics include: Toxic Substances, Emergency Response, Inspections, Radiation Safety, and Asbestos. Credit will apply to the three concentrations within the Occupational Safety and Environmental Health major. SS
### 315.01, Topics in Occupational Safety and Environmental Health: Toxic Substances

1 credit. Prerequisite: Chem 212. Students will gain information in environment health and occupational safety in the use of toxic substances. This topic will be approached by looking at classes of elements as found in the periodic chart. SS

### 315.02, Topics in Occupational Safety and Environmental Health: Emergency Response

1 credit. Prerequisites: Anat 204, HPER 310. Emphasis is given to addressing problems associated with the proper and safe response to various types of emergencies, including medical emergencies in the workplace. Additional attention will be directed toward accidents or incidents involving fires and hazardous substances. Consideration is given to the regulatory requirements that might be faced by those responding to these types of emergencies. SS

### 315.03, Topics in Occupational Safety and Environmental Health: Inspections

1 credit. Prerequisite: IT 440. Special consideration is given to the problems associated with interactions between the workplace and regulatory agencies. An awareness of the various laws and regulations that affect the workplace are part of the overview presented by this course. SS

### 315.04, Topics in Occupational Safety and Environmental Health: Radiation Safety

1 credit. Prerequisite: Chem 106. Special emphasis is given to the problems associated with the proper and safe handling of Radioactive Materials in both sealed and unsealed forms. Consideration is given to the regulatory requirements that might face a licensee. SS

### 315.05, Topics in Occupational Safety and Environmental Health: Asbestos

2 credits. A study of asbestos; its characteristics; the rules and regulations regarding asbestos abatement; and the tools, protective equipment, and procedures utilized for asbestos abatement. SS

### 316, Technology Education for Teaching and Learning

2 credits. A study of industrial technology, its tools, materials and processes as they relate to curricular areas of the elementary school. Emphasis is upon the development of knowledge and skills that interface with creative expression, communication, human relations, mathematics, and science. Strategies for integrating technology into the elementary school curriculum are explored for the purpose of enhancing and enriching the teaching and learning process. F

#### 322. Fundamentals of Photography

3 credits. Fundamentals of Photography is a lecture/laboratory course designed to introduce students to the art and science of black and white photography. F,S

#### 330. Quality Assurance

3 credits. Prerequisite: Econ 210 or consent of instructor. Theoretical and laboratory study of industrial quality control methods, instrument and systems measurement techniques, and data handling procedures. F

#### 333. Hazardous Materials

2 credits. Attention will be given to the problems associated with the proper and safe handling of hazardous materials, understanding regulatory requirements, personal hazards faced by employees, personnel exposure limits, and protective measures to be employed. Laboratory demonstrations for protective measures of hazardous materials will show how these measures are implemented. S

#### 337. Cooperative Education

1-8 credits repeatable to 24. Prerequisites: Junior standing; a 2.5 overall GPA, and departmental approval. A practical work experience with an approved industrial enterprise. Arranged by the student, department and employer. F,S,SS

#### 340. Manufacturing Cost Estimating

2 credits. Prerequisite: Econ 210, Math 204, or equivalent. The principles and techniques necessary for the economic analysis and evaluation of industrial design and projects. F

#### 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

2 credits. Prerequisites: IT 203 and Econ 210. The systematic determination of preferable work methods, with the appraisal, in terms of time, of the value of work involving human activity. Emphasis on the development of material requirement to make practical use of these data. F/S

#### 353. Computer Numerical Control

2 credits. Prerequisites: IT 203, 312. Fundamentals of computer-aided manufacturing to include programming languages, process interface, hardware, numerical control systems, canned cycles, interpolation. Variable and computer assisted parts programming, numerical controlled lathe and mill. F/S

#### 383. Robotics and Automation

2 credits. Prerequisites: IT 201 and 203. The study of mechanical and electrical configurations of industrial robots, their applications in industrial automation, including associated control systems and manufacturing technology. S

#### 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. S

#### 400. Teaching Technology Education

3 credits. An analysis of various methods employed in teaching technology education. Emphasis placed on development of critical attitudes toward precision-teaching through ordering knowledge based upon behavioral objectives. S

#### 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 market methods and processes and prototype development. F

#### 404. Materials Testing

3 credits. Prerequisites: IT 201, 202, 203, 212, Chem 103 or equivalent. An introduction to the properties (i.e., physical, mechanical, thermal, electrical, optical, acoustic, and chemical) of industrial materials are tested for determination of applications. F/S

### 405. Industrial Hygiene

3 credits. Prerequisites: Anat 204, Chem 106. Hazards as they relate to human health will be addressed. The course will include the recognition, evaluation, and control of hazards in the industrial setting. F/S

### 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. Selected topics included are the design process, material selection, fabrication process and ergonomics. F/S

### 415. Waste Handling/Disposal

2 credits. Prerequisites: IT 335, Chem 209. Regulatory and environmental protection issues will be addressed as they relate to current industrial operations. Emphasis will be placed on proper methods of waste disposal. SS

### 420. Industrial Facility Design

2 credits. Prerequisites: Math 204 or 211, IT 312. Principles and applications of designing industrial facilities with emphasis on site location, environmental consideration, qualitative and quantitative modeling. The course utilizes computers in facility planning and quantitative analysis. F,S

### 422. Systems Design

3 credits. Prerequisite: IT 312 or instructor consent. The study of technological systems design, from problem conception to preproduction planning, including graphic representations and specifications. 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 manufacturing systems and how systems can be integrated through data communications networks. F/S

#### 432. Fundamentals of Color Photography

3 credits. Prerequisite: LSAV 470 or IT 312 or consent of the instructor. Fundamentals of Color Photography is an introductory course to the techniques, images, and history of color photography. The course is designed to provide the student with a strong conceptual base from the aesthetic and technical explorations conducted throughout the course. S

### 440. Industrial Safety

2 credits. Prerequisite: Upper Division Students only. The major safety concerns and problems commonly associated with the industrial and occupational environment are addressed. Emphasis is placed on management of technology and people for optimum safety conditions and productivity. S

#### 441. Computer-Aided Circuit Analysis and Design

3 credits. Prerequisites: IT 301. An in-depth study of the concepts and 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

#### 442. Desktop Publishing

3 credits. Prerequisites: IT 212, 302 or consent of instructor. The course is designed to provide students with the understanding of computer-aided publishing. It consists of lecture, discussion, and practical laboratory activities in the areas of current developments in hardware and software, input/output equipment materials, and processes of electronic publishing. S

#### 485. Field Experiences in Industrial Technology

1-6 credits. Prerequisite: Junior standing or instructor consent. Provides students with the opportunity to work in an industrial or business enterprise to acquire employment competencies in an industrial/business setting. The nature of the field experience will be determined by advisement. F,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. Prerequisite: Junior standing and instructor consent. Studies in topics pertinent to the students’ needs in selected topics including (a) Curriculum Innovation, (b) Energy/Power, (c) Graphic Communication, (d) Production, and (e) Materials Science. F,S

### Integrated Studies

**P. Sanborn (Coordinator)**

The permanent faculty is supplemented by faculty from other University departments.

The Integrated Studies Program was established in 1986 as a means for students to fulfill general education requirements. In Integrated Studies students and faculty work together in small groups to complete the requirements of the courses offered by examining a single theme designed to show how all the subjects interrelate. Students receive a full semester’s credit in all areas of the University’s general education requirements. (Section 27.5.7 for information on these requirements.)

Students in the program obtain information and ideas through reading texts, attending lectures, participating in laboratories, and viewing films. Small groups working with this information and these ideas improve student skills in thinking, reading, writing, and oral communication.
International Studies
(A&S)

The Related Fields Concentration in International Studies is designed to offer students an opportunity to gain global perspectives, to pursue greater understanding of our interconnected world, and to prepare to apply those insights in a variety of professions. The subject matter is vast and the professional and personal opportunities for utilizing it are rich and varied. Therefore, the program is designed to provide considerable latitude in matching the specific content of individual programs to the needs and goals of students. Thus, students will be required to work closely with their academic advisers to plan the best possible programs within the possibilities provided by the Related Fields Concentration.

College of Arts and Sciences

B.A. WITH MAJOR IN INTERNATIONAL STUDIES

Required 125 hours including:

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

II. The Following Curriculum:

   The following is the General Education Curriculum:

   Total of 30 Hours Plus Language Requirement:

   Geog 161 .............................. World Regional Geography ...............(3)
   PSci 220 .............................. International Politics ....................(3)
   Anth 171 .............................. Cultural Anthropology .................(3)
   History 102 ............................ Western Civilization since 1500 ....(3)
   PSci 225 .............................. Comparative Politics ..................(3)
   Religious Studies 203 .............. World Religions ........................(3)
   Three (3) Hours From the Following:
   Hist 106 .............................. Middle Eastern Civilization ............(3)
   Hist 215 .............................. Latin America since 1825 .............(3)
   Hist 362 .............................. Modern Chinese Civilization .......(3)
   Hist 364 .............................. Modern Japanese Civilization ........(3)

   World Regional Geography

   Language

   Level Four Proficiency and additional three hours

International Studies Minor Requirements

1. Required Courses
   Geog 161 .............................. World Regional Geography ...............(3)
   PSci 220 .............................. International Politics ....................(3)
   Anth 171 .............................. Cultural Anthropology .................(3)
   History 102 ............................ Western Civilization since 1500 ....(3)
   Religion 203 ........................ World Religions .............................(3)

2. One Additional Course selected from the following:
   Hist 106 .............................. Middle Eastern Civilization ............(3)
   Hist 215 .............................. Latin America since 1825 .............(3)
   Hist 362 .............................. Modern Chinese Civilization .......(3)
   Hist 364 .............................. Modern Japanese Civilization ........(3)

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 Advisor in International Studies.

4. Other courses may be substituted only with the consent of the Advisor in International Studies.

5. Language required: Level III proficiency.

Languages: Department of Modern and Classical Languages & Literatures
(Lang)

K. Hall (Chair), Bakken, Benoit, Berne, Boswa, Bouzrara, Defilippo, DuBois, Dufner, King, Koprince, Lebugle, Nelson, and Tschacher

The Department of Modern and Classical Languages and Literatures offers study in French, Italian, German, Greek, Latin, Norwegian, Russian, and Spanish. Chinese, although not listed here, is currently offered under Arts & Sciences 250 or Languages 333. Depending on student demand and faculty resources, instruction has been offered in Arabic and Japanese under Arts and Sciences 250. See English 361 and 362 for study of North Dakota Native American languages. Students may elect French, German, Latin, Norwegian, or Spanish as their major field of study. Minors are offered in French, German, Greek, Latin, Norwegian, Scandinavian studies, Russian, and Spanish. Majors and minors for a bachelor’s degree in Languages may be taken in either the College of Arts and Sciences or the Center for Teaching and Learning.

Course work is divided into Lower and Upper Divisions. The courses offered in the Lower Division (100-200) develop an increasing facility for understanding and using a second language and a progressively greater awareness of cultural contrasts between the United States and other countries. The curriculum in the Upper Division (300-400) continues to develop language skills as well as the literary, linguistic, and cultural foundations for a variety of careers, for graduate study, and for an appreciation of cultural achievements.

The major normally includes a minimum of twenty to twenty-two Upper Division credit hours in a single language, plus in some cases approved course work in related fields. A minor consists of a minimum of ten or twelve Upper Division credit hours in a single language. Since the schedule for courses in related fields can vary from semester to semester, students must consult their faculty advisor for those courses approved for each semester. Students are responsible for planning their own programs of study to fit their needs, interests, and objectives. They are also responsible for consulting with their faculty advisor each semester and for obtaining the advisor’s approval of the courses elected.

Students’ suggestions are solicited for topics and areas of study which can be included in the department’s special courses. The Honors Tutorial and Honors Work courses offer students the opportunity to work in areas of mutual interest to them and to members of the departmental faculty. These courses enable students to qualify for graduation with the distinction of Senior Honors in their major field.

The Department encourages study in other countries and is able to recommend academic credit for approved study by its students at foreign institutions. It also recommends students for various awards for superior academic performance, especially the Amenberg and the Larsen Foreign Travel Scholarships.

Language Placement

All students with a background in a second language for which they wish to receive credit or in which they wish to continue or establish proficiency must take a Language Placement Test. It is recommended that this be done during pre-registration or registration, and in no case later than the end of their first semester in residence. First semester students enrolled in a language who wish to take a Placement Test in the same language must take the Placement Test during the first two weeks of the semester. Students may receive advanced standing and from 4 to 16 hours credit toward graduation in each language.

Credit which a student has earned through College Level Examination Program (CLEP) tests may, in certain circumstances, be recognized by UND. See Admissions Office for requirements.

Students who have completed French, German, Latin, or Spanish Advanced Placement (AP) courses with appropriate scores may also receive credit. This credit is normally equivalent to Levels I and II in that language. See pages 23.
College of Arts and Sciences

B.A. WITH A MAJOR IN A LANGUAGE

Required 125 hours, including:

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

II. Completion of the Center for Teaching and Learning program in Secondary Education, including for students seeking certification in French, German or Spanish at least two credits of CTL 390 supervised by Language Department faculty. See page 77.

III. The Following Curriculum:

Courses and credit hours required for B.A. major in a language; students seeking 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 or required for students seeking certification in French, German or Spanish. Eight hours of approved course work in related fields is required in German; Western Civilization 101, 102 and four hours in English beyond Composition II must be included under either the requirements in General Education or course work in related fields. See the section for each language for specific required courses.

MINOR IN A LANGUAGE

Required: A minimum of 10 or 12 Upper Division credit hours in a single foreign language. See the section for each language for specific required courses.

College of Arts & Sciences or Center for Teaching and Learning

B.A. OR B.S.ED. WITH A MAJOR IN LANGUAGE — Teacher Certification Preparation

Required 125 hours, including:

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

II. Completion of the Center for Teaching and Learning program in Secondary Education, including for students seeking certification in a foreign language. French, German or Spanish at least two credits of CTL 390 supervised by Language Department faculty. See page 77.

III. The Following Curriculum:

Courses and credit hours required for B.A. major in Teaching and Learning; students seeking 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 or required for students seeking certification in French, German or Spanish. Eight hours of approved course work in related fields is required in German; Western Civilization 101, 102 and four hours in English beyond Composition II must be included under either the requirements in General Education or course work in related fields. See the section for each language for specific course requirements.

MINOR IN A LANGUAGE

Required: A minimum of 10 or 12 Upper Division credit hours in a single foreign language. See the section for each language for specific required courses.

CLASSICAL LANGUAGES

Greek

A minor in Greek shall consist of 8 credit hours of Greek at the 300 level or above, plus at least 2 additional hours selected from the following:

Greek courses numbered 300 or above

Classical Literature 161, 363

History 343

Philosophy 300

Other courses in related areas with permission of the department.

Courses

251. Introduction to Greek, 4 credits. Reading of selections based on Attic Greek authors and introduction to grammar and syntax. F
364. Special Topics in Classical Literature. 3 credits. May be repeated, with change of topic, up to 9 hours. Study of a specific author, genre (e.g. epic, tragedy, comedy), or special theme (e.g. war, the perception of women) in Greek and/or Latin literature. On demand.

MODERN LANGUAGES

French

A.B.A. or B.S.Ed. with a major in French includes the following courses beyond Lower Division work, i.e., 200 level: 301, 302, 304, 305, 306, 307, 371, 372, 373, 413; a minimum of three credit hours selected from Upper Division courses (a total of 29 credits).

A B.A. or B.S.Ed. with a standard French minor consists of 301, 302, 304, 305, 306, and a minimum of three additional credit hours selected in Upper Division French courses (a total of 15 credits).

Students interested in business may obtain a minor in French by taking 301, 302, 305, 306, 340, and a minimum of two additional credit hours in Upper Division French courses (a total of 15 credits).

Courses

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. Beginning French. 4 credits. Prerequisite: French 101 with a grade of C or better. Continued study of fundamentals of French grammar, oral use of the language and reading of easy French. Attendance in the language laboratory required. F/S

201. Second-Year French. 4 credits. Prerequisite: French 102 or equivalent. Review of the structure of the language; readings in French, practice in oral and written expression F

202. Second-Year French. 4 credits. Prerequisite: French 201 or equivalent. Review of the structure of the language; readings in French, practice in oral and written expression S

301. Third-Year French. 3 credits. Prerequisite: French 202 or equivalent. Grammar review and introduction to literature. Emphasis on reading and writing skills. F

302. Third-Year French. 3 credits. Prerequisite: French 301 or equivalent. Grammar review and introduction to literature. Emphasis on reading and writing skills. S


305. French Conversation and Culture. 2 credits. Prerequisite: French 202 or consent of instructor. A conversational approach to civilization and contemporary culture. Emphasis on oral skills. F

306. French Conversation and Culture. 2 credits. Prerequisite: French 202 or consent of instructor or French 305. Contemporary world issues from a French perspective. S

307. A Social and Cultural History of Quebec. 3 credits. Prerequisites: French 202 or consent of instructor. This course focuses on the topics of geography, history, language, ideology, politics, and religion in their relationship to architecture, painting, popular culture, song, film, and literature in Quebec. F

340. Business French. 3 credits. Prerequisite: French 301. French 302 recommended. 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. S

371. History of French Literature. 3 credits. Prerequisite: French 302 or consent of instructor. French literature from its origins to 1700; representative works with lectures, outside readings and reports. On demand.

372. History of French Literature. 3 credits. Prerequisite: French 302 or equivalent. French literature from 1700 to the present day; representative works with lectures, outside readings and reports. S

373. French-Canadian and Quebec Literature and Thought. 3 credits. Prerequisites: French 302. A survey of French-Canadian and Quebec authors who express the consciousness and universal themes associated with being French in North America. On demand.


471. Seminar in French. 1-2 credits. Prerequisite: Any one of French 371, 372, 373. Advanced work in French language, literature or culture. May be repeated up to 12 credits. On demand.

490. Individual French Readings. 1-3 credits. Prerequisite: French 302 or equivalent. Topics vary with individual interests and needs. May be repeated to a total of six hours. May be taken only with the consent of the department. F/S

German

A major in German for both the Bachelor of Arts (B.A.) and the Bachelor of Science in Education (B.S.Ed.) degrees includes a minimum of 22 semester credit hours of Upper Division (300-400) course work: 301, 302, 304, 305, 306, 410, 413, and no less than six credit hours from other Upper Division German courses. 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 student majoring in German also assembles an individual Portfolio of work in consultation with his/her faculty advisor.

A minor in German consists of at least eleven credit hours: 301, 302, 305, 306, and a minimum of three additional credit hours in Upper Division German courses.

Students interested in business may obtain a minor in German by completing 301, 305, 306, 340, and a minimum of two additional credit hours in Upper Division German courses.

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 Stoltz and the Rogers scholarships are awarded exclusively to qualified students of German.

Courses

101. Beginning German. 4 credits. Fundamentals of German grammar, oral use of the language and reading of easy German. F/S

102. Beginning German. 4 credits. Prerequisite: German 101 with a grade of C or better. Continued study of fundamentals of German grammar, oral use of the language and reading of easy German. F/S

201. Second-Year German. 4 credits. Prerequisite: German 102, 103 or equivalent. Review of the structure of the language, practice in oral and written expression and reading in German. F/S

202. Second-Year German. 4 credits. Prerequisite: German 201 or equivalent. Review of the structure of the language, practice in oral and written expression and reading in German. F/S

301. Introduction to German Literature. 2 credits. Prerequisite: German 202 or equivalent. Representative selections of German literature are read and discussed. Emphasis: German literature to ca. 1800. Required of all majors. F

302. Introduction to German Literature. 2 credits. Prerequisite: German 301 or equivalent. Representative selections of German literature from ca. 1800 to the present day are read and discussed. Required of all majors. S

304. German Phonetics. 3 credits. Prerequisite: German 202 or equivalent. Intensive pronunciation practice leading to proper German sound articulation and a thorough knowledge of the principles of German pronunciation and intonation. Required of all majors. S

305. German Composition and Conversation. 2 credits. Prerequisite: German 202 or equivalent. Written composition and oral practice, with a review of grammar. Required of all majors. F

306. German Composition and Conversation. 2 credits. Prerequisite: German 305 or equivalent. Written composition and oral practice, with a review of grammar. Required of all majors. S

312. German Civilization (Kulturkunde). 3 credits. Prerequisite: German 202 or equivalent. A study of various aspects of German culture through the centuries. S/2

340. Business German. 3 credits. Prerequisite: German 305. German 306 recommended. 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. S

410. History of German Literature. 3 credits. Prerequisite: German 302 or equivalent. The development of German Literature from its beginning to the present. Required of all majors.

413. Advanced German Grammar Review. 3 credits. Prerequisite: German 306 or equivalent. Written composition and oral practice, with a review of those aspects of grammar which need most practice on the advanced level. Required of all majors. F

421. German Literary Periods. 3 credits. Prerequisite: German 302 or equivalent. May be repeated to a total of twelve hours. A different literary period is studied each semester, for example: Early German Literature to 1700, the Age of Goethe, German Romanticism and Realism, Modern German Literature. On demand.

423. German Literary Genres. 3 credits. Prerequisite: German 302 or equivalent. May be repeated to a total of twelve hours. A different literary genre is studied each semester: the drama, the novel, the short story and novelle, and lyric poetry. On demand.

490. Individual German Readings. 1-3 credits. May be repeated to a total of six hours. Prerequisite: German 302 or equivalent. May be taken only with the consent of the department. F/S

Italian

101. Beginning Italian. 4 credits. Course seeks to develop students’ ability to speak, write and comprehend functional Italian through the fundamentals of grammar and to present aspects of Italian culture and civilization. On demand.

102. Beginning Italian. 4 credits. Prerequisite: Italian 101 with a grade of C or better. Continued study of pronunciation and fundamentals of grammar, application of oral, written, and comprehensive skills, continued exploration of Italian culture and civilization. On demand.
Norwegian

A major in Norwegian includes the following Upper Division courses: 301, 302, 401, 402; a minimum of 8 credit hours selected from 403, 404 and 490; and at least 8 credit hours of approved course work in related fields.

A minor in Norwegian includes 301, 302, and 401 or 402, plus a minimum of one additional credit hour in Upper Division Norwegian courses.

Courses

101. Beginning Norwegian. 4 credits. Introduction to the basic Norwegian language skills: reading, writing, speaking and listening; fundamentals of grammar. Language laboratory attendance required. F

102. Beginning Norwegian. 4 credits. Prerequisite: Norwegian 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. 4 credits. Prerequisite: Norwegian 201 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. 4 credits. Prerequisite: Norwegian 201 or equivalent. Selected cultural and literary readings, continued review of the structure of the language and development of language skills. S

301. Advanced Norwegian. 3 credits. Prerequisite: Norwegian 202 or equivalent. Reading of selected works by leading Norwegian authors, interpretation and discussion. F

302. Advanced Norwegian. 3 credits. Prerequisite: Norwegian 301 or equivalent. Reading of selected works by leading Norwegian authors, interpretation and discussion. S

401. Norwegian Literature. 3 credits. Prerequisite: Norwegian 302 or equivalent. Norwegian literature, with special attention given to recognized masterpieces, past and present. On demand.

402. Norwegian Literature. 3 credits. Prerequisite: Norwegian 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.

404. Ibsen. 3 credits. Prerequisite: Norwegian 403 or equivalent. 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.

490. Individual Norwegian Readings. 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

The courses for the related fields concentration in Russian Studies are given on page 545.

A minor in Russian includes 301, 302, and 305 or 306, plus a minimum of two additional credit hours in Upper Division Russian courses.

Courses

101. Beginning Russian. 4 credits. Fundamentals of Russian grammar, oral use of the language and reading of easy Russian. Attendance in the language laboratory required. F

102. Beginning Russian. 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

201. Second-Year Russian. 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. 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 the ability to read Russian texts rapidly and with thorough comprehension. F

302. Third-Year Russian. 3 credits. Prerequisite: Russian 301 or equivalent. Intensive oral drill, short readings, systematic review of grammar. Emphasis on the ability to read Russian texts rapidly and with thorough comprehension. S

305. Russian Reading and Composition. 2 credits. Prerequisite: Russian 301 and 302 or equivalent (may be elected simultaneously with Russian 301). Readings from a variety of sources. Review of selected grammatical topics. Emphasis on developing the ability to read Russian texts rapidly and with thorough comprehension. S

306. Russian Reading and Composition. 2 credits. Prerequisite: Russian 305 or equivalent (may be elected simultaneously with Russian 302). Readings from a variety of sources. Review of selected grammatical topics. Emphasis on developing the ability to read Russian texts rapidly and with thorough comprehension. S

490. Individual Russian Readings. 1-3 credits. Prerequisite: Russian 302 or equivalent. May be repeated to a total of six hours. May be taken only with the consent of the department. F/S

Spanish

A major in Spanish includes the following courses beyond Lower Division work: 303 or 304, 307, 308, 309, 310, 311, 408, 409, 410, 440, 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: 303, 304, 307, 308, 309, 310, 311, 408, 409, 440, and a minimum of six credit hours selected from other Upper Division courses (300/400 level).

A Spanish minor consists of 303, 307, and three courses from among 310, 311, 408, and 409, 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

101. Beginning Spanish. 4 credits. Pronunciation and fundamental grammatical principles introduced through the development of skill in listening comprehension and speaking, followed by practice in reading and writing. Language laboratory attendance required. F

102. Beginning Spanish. 4 credits. Prerequisite: Spanish 101 with a grade of C or better. Continued study of pronunciation and fundamental grammatical principles through the development of skill in listening comprehension and speaking, followed by practice in reading and writing. Language laboratory attendance required. S

201. Second-Year Spanish. 4 credits. Prerequisite: Spanish 102 or 103 or equivalent. Review of the structure of the language, readings in Spanish, practice in oral and written expression. F

202. Second-Year Spanish. 4 credits. Prerequisite: Spanish 201 or equivalent. Review of the structure of the language, readings in Spanish, practice in oral and written expression. S

303. Spanish Grammar Review. 3 credits. Prerequisite: Spanish 202 or equivalent or permission of instructor. An in-depth examination of the grammar of the Spanish language. Emphasis will be placed on those elements of Spanish which present the greatest difficulties for native speakers of English. F

304. Spanish Phonetics. 3 credits. Prerequisite: Spanish 202 or equivalent or permission of instructor. A scientific approach to the pronunciation and enunciation of Spanish. On demand.

307. Literary Analysis. 3 credits. Prerequisite: Spanish 202 or equivalent or permission of instructor. An introduction to the analysis of Hispanic literature, with particular emphasis on poetry, novel, and drama. F/S

308. Spanish Conversation. 3 credits. Prerequisite: Spanish 202 or equivalent. Practice in a variety of forms of oral Spanish. F

309. Spanish Composition. 3 credits. Prerequisite: Spanish 303 or permission of instructor. Practice in a variety of forms of written Spanish. S

310. Spanish Civilization and Culture. 3 credits. Prerequisite: Spanish 202 or equivalent or permission of instructor. Readings, lectures and discussions in Spanish civilization and culture. On demand.

311. Spanish American Civilization and Culture. 3 credits. Prerequisite: Spanish 202 or equivalent or permission of instructor. Readings, lectures and discussions in Spanish American civilization and culture. On demand.

312. History of Spanish Literature. 3 credits. Prerequisite: Spanish 307 or permission of instructor. A study of the development of the peninsular literary tradition from the Middle Ages to the present, with lectures, reading and analysis of representative texts. F/S

313. History of Spanish American Literature. 3 credits. Prerequisite: Spanish 307 or permission of instructor. Literature of the Spanish American countries written in the Spanish language, from the Conquest to the contemporary period. With lectures and readings. F/S

314. Cervantes and the Golden Age. 3 credits. Prerequisite: Spanish 408 or permission of instructor. A study of the writings of Cervantes and his contemporaries. Topic will vary. Repeatable with new topic. On demand.


316. Topics in Spanish Literature. 3 credits. Prerequisite: Spanish 408. Selected topics dealing with author, period, movement or genre of peninsular literature excluding the Golden Age. Repeatable with different topic. On demand.

317. Topics in Spanish American Literature. 3 credits. Prerequisite: Spanish 409 or permission of instructor. Topics, on an alternating basis, include: Pre-Columbian Literature and Culture, Boom and Postboom Narrative, Chronicles of the Conquest, Modernismo, 19th-Century Novel, Novel of the Mexican Revolution. Repeatable with different topic. On demand.

318. Senior Seminar. 3 credits. Prerequisite: Spanish 408 and 409 and permission of the instructor. Advanced work in Spanish literature. Required of seniors, who will present a research paper from the course to the Spanish faculty as part of graduation requirement. S

461. Seminar in Hispanic Linguistics. 3 credits. Prerequisite: Spanish 303 or 304 or permission of instructor. Advance work in a variety of alternating topics related to
Hispanic linguistics such as syntax, morphology, dialectology, and history of the Spanish language. Repeatable with different topic. On demand.

462. Seminar in Hispanic Literature. 3 credits. Prerequisite: Spanish 408 or 409 depending on topic or permission of instructor. Advanced work on a specific aspect of the Hispanic literary tradition. Repeatable with different topic. On demand.

490. Individual Hispanic Readings. 1 to 3 credits. Prerequisite: Spanish 307 or equivalent. May be repeated to a total of six hours. May be taken only with the consent of the department. F/S

SPECIAL COURSES

207. Introduction to Linguistics. 3 credits. An introduction to the nature of language, phonology, grammar, semantics, and historical, geographical, social and educational aspects of language. Same course as English 207.

331. Foreign Literature in Translation. 1 to 3 credits, may be repeated to a maximum of 6 credits. The faculty in the various foreign languages will lead reading and discussion in English of representative translations from their fields of specialty. Course may be taken in partial fulfillment of the Humanities requirement, but would not apply toward a language major or minor. Topics to be announced F/S.

333. Colloquium in Language and Letters. 1 to 3 credits, may be repeated to a maximum of 12 hours. 333a, regular grading; 333b, S/U grading. Prerequisites: Language 102 or equivalent. Special subjects to be announced. F/S.

399. Honors Tutorial. 2 to 4 credits. Prerequisites: Language 302 or equivalent and consent of the department. Supervised independent study of topics of mutual interest to students and members of the departmental faculty. May apply toward graduation with Senior Honors. On demand.

400. Methods and Materials in Foreign Languages. 3 credits. Offered under the CTL 400 series F.

499. Senior Honors Thesis. 1 to 15 credits; total not to exceed fifteen. Prerequisite: consent of the Department and approval of the Honors Committee. Supervised independent study culminating in a thesis. F/S.

Linguistics

S. Marlett (Director of SIL), Quakenbush, Rhodes, Tuggy, and Weber

At present, the University has no undergraduate degree programs in linguistics. It is, however, possible for students to have a concentration in languages and linguistics as English majors. (See also the Graduate catalog for the M.A. program in Linguistics and for graduate-level courses not listed here.)

Other courses which carry graduate credit are offered through the Department of English. English 417, 419, and 522 are recommended.

Linguistics courses are taught by the Summer Institute of Linguistics (SIL) during a nine-week summer session. Students wishing to take SIL courses should apply directly to SIL, preferably by April 15 (April 1 for non-U.S. citizens). Write to the SIL Admissions Office, 7500 W. Camp Wisdom, Dallas, TX 75236 (214/709-2400 ext. 2236) for an SIL catalog, application forms, and further information about the program. During the summer, further information is available from SIL (phone the English Department at 777-3321). 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: English 207, 309, 361, 362, 370, 417, 419, 442; German 401, 402; Language 304, 413 (French, German, Spanish); CD 323.

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

Management (Mgmt)

B. Eberhardt (Chair), Chong, Dougan, Lawrence, Moser, Park, Porter, Vitton, Yang, and Zahrly

The Department of Management offers one comprehensive program in management. This program is designed to provide a background of professional education for careers in business, industry, and public service and to furnish a foundation for graduate study in business and other professional fields. More specifically, 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 service institutions.

B.B.A. WITH MAJOR IN MANAGEMENT

Required 125 hours, including:

I. General Education Requirements, see pages 27-31.
II. The College of Business and Public Administration Requirements, see page 42.
III. The Following Curriculum: (Suggested Sequence)

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<th>Second Semester</th>
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<tr>
<td>Engl 101, 102* Composition I, II</td>
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<td>Psci 101 American Government I</td>
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<td>Math 104 Finite Mathematics</td>
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<td>Psy 101 Introduction to Psychology</td>
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<td>Arts and Humanities</td>
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<td>Comm 161 Fundamentals of Public Speaking</td>
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<td>Soc 101 Introduction to Sociology</td>
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<td>or Anth 171 Introduction to Cultural Anthropology</td>
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<td>Math 204* Survey of Calculus</td>
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<td>Sophomore Year</td>
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<td>Econ 201* Principles of Microeconomics</td>
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<td>Econ 202* Principles of Macroeconomics</td>
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<td>Acc 200, 201* Elements of Accounting I &amp; II</td>
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<td>Econ 210* Introduction to Business and Economic Statistics</td>
<td>(3)</td>
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<td>Arts and Humanities</td>
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<td>BVED 217 Fund of Management Information Systems</td>
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<td>Lab Science</td>
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<td>Junior Year</td>
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<td>Acc 315 Business in the Legal Environment</td>
<td>(3)</td>
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<td>Econ 303 Money and Banking</td>
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<td>(3)</td>
</tr>
<tr>
<td>Mgmt 300 Principles of Management</td>
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</tbody>
</table>

Courses
Mgmt 301*...........Production Management................. (3)
Mkt 301*.............Principles of Marketing................. (3)
BVED 320..............Business Communications............. (3)
Fin 310*..............Principles of Financial Management (2)
Fin 310L..............Problems in Financial Management (1)
Mgmt 302*...........Human Resource Management............ (3)
Mgmt 309*...........Quantitative Approaches to Business Decisions............ (3)
Mgmt 310*...........Organizational Behavior................. (3)

Senior Year
Mgmt 400*...........Organizational Theory and Analysis................. (3)
Mgmt 475*...........Strategic Management................. (3)

Plus Major Electives Requirements: Minimum of 8 elective credits from the following:
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
Acct 207..............Managerial Accounting............. (2)
Acct 218..............Computer Applications in Business........... (2)
Acct 301..............Intermediate Accounting I............. (4)
BVED 305..............Microcomputer Applications for Business........... (3)
BVED 308..............Office Management...................... (3)
BVED 315..............Introduction to Records 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 Investments........... (3)
Mkt 310..............Buyer Behavior.......................... (3)
Mkt 315..............Retail Management...................... (3)
Mkt 320..............Marketing Research I Design........... (3)
Mkt 430..............Small Business Projects............ (3)

Plus 9 hours of non-business electives and 10 hours of business or non-business electives to bring the total hours to 125.

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 leadership and organizing. This emphasis involves coverage of managerial decision making, motivation, interpersonal communication, staffing human resources, organizational structure, design, 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 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, motivating, working groups, authority, personnel staffing, leadership, change/conflict, communications, and controlling are explored in the context of supervisory personnel development. F S

309. Quantitative Approaches to Management Decisions, 3 credits. Prerequisite: Econ 210. This course teaches the application of quantitative techniques which are useful in the decision-making process. Specific areas included are: decision theory, simulation, inventory models, linear programming, queuing, economic evaluation, game theory and Markov process. F S

310. Organizational Behavior, 3 credits. Prerequisites: Econ 210, Mgmt 300. The objective of this course is to allow the student to become acquainted with and experience various ways of thinking about and responding to the issues of human relations and management. The course is designed to survey the following topics at the individual, group, and organizational levels: individual perceptions, attitudes, values, motivation, leadership, communication, group dynamics, and problem solving. F S

337. Cooperative Education in Management, 1-6 credits, repeatable to a maximum of 12 credits. Prerequisites: Mgmt 300, 302, 2.50 GPA, and consent of coordinator. On-the-job compensated experience in general management or management of human resources. S/U grading only. F S S S

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. Emphases are placed on the analyses of systems pertaining to structure, process, and context. F S

405. Entrepreneurship and Small Business Management, 3 credits. Prerequisites: Fin 310, Mgmt 300, Mkt 301. This course involves students in starting businesses, in buying businesses, in selling businesses, in assessing the possibility of new venture and in solving problems of small businesses. A term project is required. F S

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/or 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 essential components of the successful multinational management equation. On demand.

475. Strategic Management, 3 credits. Prerequisites: Mgmt 300, 301, Fin 310, Mkt 301, and 105 credits. This is the capstone course in business. Students apply the knowledge gained in accounting, economics, finance, management, and marketing to develop business policies. Case studies, games, and other exercises are used to develop executive skills. F S

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 chair of department. Selected readings in management. F S
Mathematics

301. Principles of Marketing. 3 credits. Required of all students in Business and Public Administration. Prerequisite: Econ 201. An overview of the scope and nature of marketing exchange and the buyer’s pivotal role. F,S

311. Personal Selling. 3 credits. Prerequisite: Mrkt 301. Theoretical and applied analysis of consumer and organizational buying behavior. F,S

312. Advertising. 3 credits. Prerequisite: Mrkt 311. 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 310, 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,S

320. Marketing Research I: Design. 3 credits. Prerequisites: Mrkt 301, and Econ 210. The research process from a marketing perspective. Addresses problem formulation, research design, methodology, and appropriate statistical methods. F,S

325. International Marketing. 3 credits. Prerequisite: Mrkt 301. Fundamentals of conducting marketing operations across national boundaries; market potential estimation, entry strategies, program management and control. F,S

337. Cooperative Education in Marketing. 1-8 credits, repeatable only to maximum of 9 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

390. Internship in Marketing. 1-3 credits. Prerequisites: Mrkt 301, and Consent of Chair. Compensated, practical experience with selected participating firms. S/U grading only. F, S, SS

396. Directed Studies in Marketing. 1-3 credits. Prerequisites: Mrkt 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 301. The practice of sales management including sales force recruitment, 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

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 301. An examination of emerging worldwide economic, political, and cultural trends and the resulting challenges to international marketing. Students will be introduced to major international organizations and regional trade blocs to explore their implications on global marketing and trade.

430. Small Business Projects. 3 credits. Prerequisite: Senior Standing. Offered only 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 301, 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. F

450. Marketing Management. 3 credits. Prerequisites: Mrkt 310, Mrkt 320, and Senior Standing. Case study addressing the firm’s micro and macro environments from a strategic marketing decision making perspective. F,S

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 he/she should also have taken a selection of courses from other disciplines. A student who plans to continue beyond the bachelor’s degree in mathematics should also acquire a reading knowledge of at least one and preferably two of the foreign languages in which much of the current literature in mathematics is written, namely, German, Russian, and French. All students should, of course, acquire fluency in the written and oral expression of ideas in English.

The main fields of opportunity in mathematics today are teaching, mathematical statistics, mathematics in industry, mathematics in government and actuarial mathematics. The Mathematics Department provides a test center for Actuarial Examinations and offers several courses which enable the student to prepare for them.

Students may pursue either the B.S. or B.A. degree with a major in mathematics through the College of Arts and Sciences or a B.S.Ed. degree through the Center for Teaching and Learning. Teacher certification is possible with these degrees provided appropriate requirements are met.

Elective courses to be taken toward the bachelor’s degree are decided in consultation with an adviser from the Mathematics Department, and vary according to the needs of the student, consistent with the particular objective of the general education and educational preparation 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 enter level mathematics courses, courses numbered 102 through 211 and 277 depending on their scores on the ACT Mathematics test and/or a combination of scores on tests from the Placement Testing Program (PTP) sponsored by the Mathematical Association of America.

Anyone without the required prerequisites enrolling in a mathematics course may be cancelled from the class by the instructor.
College of Arts and Sciences

B.A. OR B.S. WITH MAJOR IN MATHEMATICS

Required 125 hours, including:

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

II. Non-Mathematics Requirements: Computer Science 110 and a writing course above those required under I. (Possible courses might be English 209, 203, 305 or BVED 320).

III. The Following Curriculum:

36 major hours including:

Math 211, 212, 213...... Calculus I, II, III............................(12)
Math 342 ...... Elementary Linear Algebra...............................(3)
Math 442 ...... Linear Algebra...............................................(3)
Math 351 ...... Elementary Differential Equations.......................(3)

Two full two-semester sequences from the list below.

At least one sequence must include two 400 level courses. (when appropriate)............................(12)
Electives (math courses numbered 208 and above, excluding 277, 377, 477).............................(6)

Two Semester Sequences

Math 208 & 408 ...... Discrete Mathematics & Discrete Structures
Math 352 & 412 ...... Advanced Engineering Mathematics I
Math 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

Students wishing certification in secondary teaching must also complete the CTL program in Secondary Education. See page 77. Students planning to attend graduate school are urged to take a full year of Advanced Calculus, Math 431, 432.

All students are urged to take courses in disciplines which make use of mathematics such as Physics, Chemistry, Engineering, Computer Science and Biology.

MINOR IN MATHEMATICS

Required 20 hours, including:

Math 211, 212, 213...... Calculus I, II, III............................(12)

All electives must be chosen from courses numbered 208 and above, not including 277, 377, or 477.

MINOR IN STATISTICS (Plan A)

T. Harris (Advisor)

Required 3 semesters of calculus (Math 211, 212, 213) as prerequisite.

Required: 9 hours, including:

* Math 421, 422 ...... Statistical Theory I, II............................(6)

3 hours from:

Biol 470 ...... Biometry.........................................................(3)
CTL 513 ...... Basic Computer Applications in Education............(2)
CTL 514 ...... Small System Computer Applications in Education...(3)
CTL 516 ...... Statistics II.......................................................(3)
CTL 517 ...... Non-parametric Statistics.................................(3)
*CHS515 ...... Design of Engineering Experiments......................(3)
Econ 310 ...... Intermediate Business and Economic Statistics......(3)
Econ 510 ...... Econometrics...................................................(3)
*EE 411 ...... Communications Engineering............................(3)
*Math 321 ...... Applied Statistics.............................................(3)
*Math 403 ...... Theory of Probability.......................................(3)
*Math 415 ...... Topics in Applied Math (when appropriate).......(3)
Math 416 ...... Topics in Statistics...........................................(3)
Psy 541 ...... Advanced Univariate Statistics...........................(3)
Psy 542 ...... Test Construction and Multivariate Analysis..........(3)
Psyc 543 ...... Experimental Design........................................(3)
Soc 521 ...... Advanced Analytical Methods............................(3)

*Indicates calculus as a prerequisite.

MINOR IN STATISTICS (Plan B)

Requires Math 104, Finite Mathematics, and Math 204, Survey of Calculus, as prerequisites.

Required: 12 hours from:

Biol 470 ...... Biometry.........................................................(3)
CTL 513 ...... Basic Computer Applications in Education............(2)

B.S.ED WITH MAJOR IN MATHEMATICS

Required 125 hours, including:

I. General Education Requirements see pages 27-31.

II. Non-Mathematics Requirements: Csci 110 and a writing course above those required under I. (Possible courses might be English 209, 203, 305 or BVED 320).

III. Completion of the Center for Teaching and Learning program in Secondary Education. See page 77.

IV. The Following Curriculum:

36 major hours including:

Math 211, 212, 213...... Calculus I, II, III............................(12)
Math 208 ...... Discrete Math...................................................(3)
Math 321 ...... Applied Statistical Methods.............................(3)
Math 330 ...... Set Theory and Logic.......................................(3)
Math 342 ...... Elementary Linear Algebra.............................(3)
Math 442 ...... Linear Algebra...................................................(3)
Math 499 ...... Geometry.........................................................(3)
Math 441 ...... Abstract Algebra...............................................(3)
Electives (300 level and above math courses, excluding 377 and 477)............................(6)

Courses

NOTE: PTP* indicates an appropriate score in the Placement Testing Program (PTP) is required.

102. Intermediate Algebra. 3 credits. (Does not count toward graduation at UND.) Prerequisite: PTP*. Equations, exponents, quadratic equations, lines, graphs, inequalities. MU grading only. F.S.SS

103. College Algebra. 3 credits. Prerequisite: PTP* or Math 102. Sections meeting 5 days per week are offered for students determined eligible by the Math Department. Polynomial and rational functions, inverse functions, exponential and logarithmic functions, simple conics, systems of equations, determinants, arithmetic and geometric sequences, the Binomial Theorem. F.S.SS

104. Finite Mathematics. 3 credits. Prerequisites: PTP* or Math 102. An elementary introduction to some of the mathematical techniques which have applications in the management, life, and social sciences. Topics covered include systems of linear equations and inequalities, matrices, linear programming, mathematics of finance, and elementary probability. F.S.SS

105. Trigonometry. 2 credits. Prerequisite: PTP* and one year of high school geometry. Angles, trigonometric functions and their inverses, solving triangles, trigonometric identities. F.S.SS

204. Survey of Calculus. 3 credits. Prerequisite: PTP* or Math 103 and 104. A nonrigorous introduction to differential and integral calculus. Topics include limits, continuity, differentiation and integration techniques, and applications. F.S.SS

208. Discrete Mathematics. 3 credits. Prerequisite: PTP* or Math 103. Introduction to set theory, functions and relations, permutations and combinations, logic, Boolean algebra, induction, difference equations. Other topics from Graphs, Finite Automata and Formal Languages. F.S.SS

211. Calculus I. 4 credits. Prerequisites: PTP* or Math 103 and 105. Limits, continuity, differentiation, Mean Value Theorem, integration, Fundamental Theorem of Calculus. F.S.SS
212. Calculus II. 4 credits. Prerequisite: Completion of Math 211 with a grade of C or better or permission of the Mathematics Department. Techniques and applications of integration, exponential and logarithmic functions, parametric equations, infinite sequences and series. F,S,SS

213. Calculus III. 4 credits. Prerequisite: Math 212. Multivariate and vector calculus including partial derivatives, multiple integration, line and surface integrals, Green’s Theorem, Stokes’ Theorem, and the Divergence Theorem. F,S,SS

277. Math for Elementary School Teachers. 3 credits. Prerequisite: PTPP or Math 103. For elementary education majors only. Development of the number systems used in elementary schools. Includes some methods and work with laboratory materials. F, S

321. Applied Statistical Methods. 3 credits. Prerequisite: Math 212. Introductory statistics for students with a background in single-variable calculus. Topics include descriptive statistics, continuous and discrete probability density functions, sampling distributions, point and interval estimation, and tests of hypotheses. F, S

330. Set Theory and Logic. 3 credits. Prerequisite: Math 212 or consent of instructor. Axioms and operations on sets, mathematical logic, relations and functions, development of the natural and real number systems. F, S

337. Cooperative Education. Prerequisites: 15 completed credits in Math including Math 213. 3 credits. A practical work experience with an employer closely associated with the student’s academic area. 1-8 credits repeatable to 18. Arranged by mutual agreement among student, department, and employer. A maximum of 6 cooperative education credits may be applied against requirements for a Math major. S/U grading only. F,S,SS

342. Elementary Linear Algebra. 3 credits. Prerequisite: Math 212. A practical treatment of systems of linear equations, finite dimensional vector spaces, linear transformations, determinants, matrices, eigenvalues, and eigenvectors. F, S


353. Advanced Engineering Mathematics II. 3 credits. Prerequisite: Math 351. An introduction to several topics in applied mathematics, such as numerical analysis, statistics and complex variables. F, S

403. Theory of Probability. 3 credits. Prerequisite: Math 213. Sets, sample spaces, discrete probability, distribution functions, density functions, characteristic functions, study of normal, Poisson, binomial and other distributions with applications. S

405. Selected Topics in Mathematics. 1-3 credits. Prerequisite: permission of the Mathematics Department. May be repeated to maximum of 6 credits. On demand. F, S

408. Discrete Structures. 3 credits. Prerequisites: Math 206 and Math 212. This course introduces the techniques and types of reasoning needed in combinatorial problem-solving. The course includes topics from graph theory and combinatorics. S

409. Geometry. 3 credits. Prerequisite: Math 212. Metric and synthetic approach to Euclidean geometry. The usual topics in elementary geometry treated in a mathematically logical way. Topics include congruence, inequalities, parallelism, similarity, area, solid geometry and the circle. F


415. Topics in Applied Mathematics. 1-3 credits. Prerequisite: Math 213 and consent of instructor. An introduction to selected areas in applied mathematics chosen from a variety of topics including: Applied 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.

416. Topics in Statistics. 1-3 credits. Prerequisites: An elementary statistics course and either Math 204 or Math 211, or consent of instructor. An introduction to a variety of topics in statistics including: Linear models in categorical analysis, Bayesian methods, Decision theory, Rige Regression, Non-parametric techniques, stochastic games and models. The number of topics to be considered during a semester may be limited to permit greater depth of coverage and sufficient practical illustrations. May be repeated for credit with consent of instructor up to six credits. On demand.

421, 422. Statistical Theory I and II. 3 credits each. Prerequisite: For 421, Math 213; for 422, Math 421. Discrete and continuous random variables, expectation, moments, moment generating functions, properties of special distributions, introduction to hypothesis testing, sampling distributions, central limit theorem, curve of regression, correlation, empirical regression by least squares, maximum likelihood estimation, Neyman-Pearson lemma, likelihood ratio test, power function, chi-square tests, change of variable, “F” and “T” tests, one and two ANOVA, nonparametric methods. F

431, 432. Advanced Calculus I and II. 3 credits each. Prerequisite: for 431, Math 330 or consent of instructor; For 432, Math 431. Real number system, functions, sequences, limits, continuity, differentiation, integration, partial differentiation, infinite series, power series and vector analysis. F, S

435. Theory of Numbers. 3 credits. Prerequisite: Math 212. Basic properties of numbers, including divisibility, primes, congruences, Diophantine equations and residue theory. F

441. Abstract Algebra. 3 credits. Prerequisite: Math 330 or consent of instructor. Ring, field, integral domain, group theory.

442. Linear Algebra. 3 credits. Prerequisite: Math 213 and Math 330 or consent of instructor. A theoretical treatment of systems of linear equations, matrices, vector spaces, linear transformations and elementary canonical forms. S

450. Elements of Topology. 3 credits. Prerequisite: Math 330 or consent of instructor. Set operations, mappings, functions, continuity, compactness, connectedness and topological spaces with special emphasis on topologies of the real line. On demand.

460. Mathematical Modeling. 3 credits. Prerequisite: Math 351 and either 342 or 442, or consent of instructor. The primary goal of the course is to present the mathematical analysis provided in scientific modeling. Topics may include population modeling, mechanical vibrations, traffic flow, epidemic modeling, queues and decay processes. F/S

461, 462. Numerical Analysis I and II. 3 credits each. Prerequisite: Math 351, and either 342 or 442, and a scientific programming language. Prerequisite for 462 is Math 461. Numerical techniques for: the solution of equations in one or several unknowns, approximate integration, differential equations, approximation theory, optimization theory and matrix analysis. Corresponding error analysis will be investigated. F, S

465. Operations Research. 3 credits. Prerequisite: A linear algebra course. This course has as its major emphasis, linear programming and its applications. Topics include the simplex method, duality, sensitivity analysis, the transportation problem and network flow. S/S

471. Introduction to Complex Variables. 3 credits. Prerequisite: Math 213 and Math 330 or consent of instructor. The complex plane, analytic functions, complex integration, power series, the theory of residues and contour integration, conformal mapping, Fourier and Laplace transformations, and applications. F

477. Topics in Elementary School Mathematics. 1-3 credits. May be repeated for credit up to six credits. For elementary education majors only. Selected topics from Mathematical Concepts appropriate to the elementary school curriculum. On demand.

491. 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, S, S

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Mechanical Engineering

(ME)

D. Moen (Chair), Bandyopadhyay, Bibel, Goddard, Grewal, Mathisen, Naismith, Stanlake, Tolbert, and Vermeersch

Mechanical Engineering is a broad, flexible, highly individualistic profession. This program is directed toward the design, production and operation of energy systems and machines and toward the processing of materials into products. Graduates are well qualified for professional practice or for additional professional or graduate education.

School of Engineering and Mines

B.S. IN MECHANICAL ENGINEERING

Required 139 hours, 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>
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<tbody>
<tr>
<td>Chem 105</td>
<td>General Chemistry</td>
<td>(4)</td>
</tr>
<tr>
<td>Engl 101</td>
<td>Composition I</td>
<td>(3)</td>
</tr>
<tr>
<td>Engl 209</td>
<td>Technical &amp; Business Writing</td>
<td>(3)</td>
</tr>
<tr>
<td>Engl 101</td>
<td>Engineering Graphics</td>
<td>(2)</td>
</tr>
<tr>
<td>Engl 102</td>
<td>Descriptive Geometry</td>
<td>(2)</td>
</tr>
<tr>
<td>Eng 201</td>
<td>Computer Programming</td>
<td>(2)</td>
</tr>
<tr>
<td>Math 211, 212</td>
<td>Calculus I, II</td>
<td>(4) (4)</td>
</tr>
<tr>
<td>Phys 205</td>
<td>General Physics</td>
<td>(4)</td>
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<tr>
<td>Arts and Humanities</td>
<td>(See page xx)</td>
<td>(3)</td>
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<table>
<thead>
<tr>
<th>Sophomore Year</th>
<th>First Semester</th>
<th>Second Semester</th>
</tr>
</thead>
<tbody>
<tr>
<td>CE 300</td>
<td>Analytical Mechanics (Statics)</td>
<td>(2)</td>
</tr>
<tr>
<td>CE 401</td>
<td>Mechanics of Materials I</td>
<td>(3)</td>
</tr>
<tr>
<td>CE 305</td>
<td>Analytical Mechanics (Dynamics)</td>
<td>(3)</td>
</tr>
<tr>
<td>Econ 201</td>
<td>Principles of Microeconomics</td>
<td>(3)</td>
</tr>
<tr>
<td>EE 206</td>
<td>Electrical Engineering</td>
<td>(3)</td>
</tr>
<tr>
<td>Math 213</td>
<td>Calculus III</td>
<td>(4)</td>
</tr>
<tr>
<td>Math 351</td>
<td>Elem. Differential Equations</td>
<td>(3)</td>
</tr>
</tbody>
</table>
Courses

203. Mechanical Design Fundamentals. 3 credits. Prerequisite: Engr 101, Phys 205 or CE 300 and CE 305. Corequisite: EM 460. Descriptive and analytical study of manufacturing methods and economics as they pertain to casting, welding and forming processes. Includes laboratory. F or S.

204. Manufacturing Processes I. 3 credits. Prerequisites: ME 301 and CE 301. Corequisite: EM 460. Descriptive and analytical study of manufacturing methods and economics as they pertain to machining, metrology and automation. Includes laboratory. F or S.

205. Cooperative Education. 1-3 credits repeatable to 24. Prerequisite: 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. F,S,SS.

341. Thermodynamics. 3 credits. Prerequisite: Math 351, Math 352. Fundamental concepts of thermal energy relationships, processes and cycles. F,SS.

342. Thermodynamics. 3 credits. Prerequisite: Math 301. Real gases, gas-vapor mixtures, power and refrigeration cycles. F,SS.

401. Dynamic Systems Analysis. 3 credits. Prerequisites: Math 351, CE 305. Study of single- or multi-degree-of-freedom systems, multi-degree-of-freedom systems, continuous systems, feedback control, system stability, control actions, block diagrams and computer simulation. S.

413. Engineering Materials. 3 credits. Prerequisite: ME 301. Atomic structure, bonding, equilibrium diagrams, physical and mechanical properties of metals and metallographic examination of metals. Includes laboratory. S.

414. Advanced Manufacturing Processes. 3 credits. Prerequisites: ME 311, ME 318. Individual projects involving the manufacturing economics and flow charts for selected products and basic technical principles of manufacturing processes. Includes laboratory. On demand.

421. Mechanical Design II. 3 credits. Prerequisite: CE 301*, ME 322. Co-requisite: ME 401. Analysis and design of common machine elements to guard against fatigue failure, shafts, bearings, stock drives, and bolted joints. Includes laboratory. S.

420. Computer Aided Design. 3 credits. Prerequisite: Engr 201*, ME 322, ME 421. Computer aided design topics including interactive graphics, engineering drafting, solids modeling, analysis and design of machine components, numerical methods, CAD hardware and software. On demand.

422. Experimental Stress Analysis. 3 credits. Prerequisite: CE 301*. Experimental stress analysis using brittle lacquer, electrical resistance strain gage and photostatic techniques. Includes laboratory. On demand.

426. Vibrations and Acoustics I. 3 credits. Prerequisites: Math 351, CE 301*. Basic vibration and acoustical theory. Includes the formulation and solution of dynamic equations for single and multi-degree-of-freedom systems as well as basic principles of noise transmission and suppression. On demand.

431. Design Optimization. 3 credits. Prerequisites: Engr 201*, Math 351. Principles of design strategy, mathematical modeling, systems analysis and process optimization are presented and applied to the solution of steady state engineering design problems. On demand.

445. Energy Technology. 3 credits. Prerequisite: ME 342. Study of energy sources, energy conversion systems and related economics. On demand.


451. Heating and Air Conditioning. 3 credits. Prerequisites: ME 341, Math 351. Analysis of heating, cooling, and ventilation systems. On demand.

454. Refrigeration. 3 credits. Prerequisites: ME 341. Study of basic refrigeration and air conditioning. On demand.

462. Introduction to Nuclear Engineering. 3 credits. Prerequisites: Math 351, Math 208 or permission of instructor. Nuclear fission, reactor physics, reactor engineering, radiation protection, nuclear power environmental impact, and nuclear power economics. On demand.

474. Fundamentals of Heat and Mass Transfer. 3 credits. Prerequisites: Math 351, ME 306 and ME 341. Convection, conduction, radiation, dimensional analysis and design of heat transfer equipment. F.

486. Mechanical Engineering Practice. 3 credits. Prerequisites: ME 483 and ME 474. Continuation of ME 483 with emphasis shifted to instrumentation, operation, and analysis of mechanical equipment and processes. S.
487. Engineering Design. 2 credits. Prerequisites: EM 460, ME 342, ME 421. The first course of a 2 course sequence in Engineering Design, establish concepts and important features of the machine or system, do market analysis, establish design objectives, explore alternatives, conduct research, specify constraints, F.

488. Engineering Design. 3 credits. Prerequisites: ME 322, ME 474, ME 480, ME 483, and 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.

*Course must be completed with a “C” grade or better.

Meteorological Studies (Metr)

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 Meteorological Studies. The degree is awarded in the Center for Aerospace Sciences. A minimum of a 2.50 GPA is required for admission into the program and for graduation.

Facilities

The Department of Atmospheric Sciences provides several unique research and teaching facilities in support of the Meteorological Studies program. These include the Regional Weather Information Center, which supports the Department’s operational weather analysis, forecasting, and broadcasting activities, and several laboratories for use in cloud physics, air chemistry, and radar meteorology teaching and research. In addition to academic activities, the Department’s two primary research facilities, a 5-cm Doppler weather radar and an instrumented Cessna Citation II research jet aircraft, have been deployed in numerous national and international research programs. Students are provided opportunities to participate in these research activities at the undergraduate level. Current research areas are atmospheric chemistry, air pollution, acid rain, radar meteorology, agricultural meteorology, cloud physics, aviation meteorology, and weather modification.

Center for Aerospace Sciences

B.S. IN METEOROLOGICAL STUDIES

Requires 125 hours including:

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

II. Center for Aerospace Sciences requirements, see page 36.

III. The Following curriculum:

First Semester Second Semester

Metr 110 ............... Meteorology I ............... (4) (4)
Metr 120 ............... Synoptic Meteorology I .......... (4) (4)
Engl 101, 102 ........... Composition I, Technical & Bus. Writing ............... (3) (3)
Chem 105 ............... General Chemistry ............... (4) (4)
Phy 206, 208 ............ General Physics ............... (4) (4)
Prt 250 .................... Meteorological Instrumentation ............... (3) (3)
Free Electives ............... (2) (2)

First Semester Second Semester

Sophomore

Metr 210 ............... Meteorology II ............... (4) (4)
Metr 220 .................... Synoptic Meteorology II ............... (4) (4)
Metr 260 ............... Meteorological Instrumentation ............... (3) (3)
Free Electives ............... (2) (2)

First Semester Second Semester

Junior

Metr 310 ............... Meteorology Electives ............... (4) (4)
Metr 320 .................... Advanced Engineering ............... (3) (3)
Engl 101, 102 ........... Composition I, Technical & Bus. Writing ............... (3) (3)
Chem 105 ............... General Chemistry ............... (4) (4)
Phys 206, 208 ............ General Physics ............... (4) (4)

Senior

Metr 320 .................... Advanced Engineering ............... (3) (3)
Free Electives ............... (2) (2)

First Semester Second Semester

Juniors

Metr 320 .................... Advanced Engineering ............... (3) (3)
Free Electives ............... (2) (2)

Senior

Metr 320 .................... Advanced Engineering ............... (3) (3)
Free Electives ............... (2) (2)

First Semester Second Semester

First Semester Second Semester

Courses

110. Meteorology I. 4 credits. Elements of the atmosphere with emphasis on those processes that affect the global atmospheric circulation. Includes laboratory. F,S.

110. Meteorology II. 4 credits. Prerequisite: Metr 110 and Math 204 or 211. The analysis and portrayal of synoptic weather information. Kinematic flow analyses of barotropic and baroclinic systems. Introduction to many of the products produced by NWS. F,S.

231. Aviation Meteorology I. 4 credits. Prerequisite: Metr 110. A study of weather hazards, meteorological flight planning, aviation weather equipment and human factors in weather flying safety. F,S.

240. Meteorological Instrumentation. 4 credits. Prerequisites: Metr 150 and Math 103. A study of the theory, design, and accuracy of instrumentation for the measurement of temperature, pressure, humidity, wind, and radiation. In addition, topics such as radar, and the use of aircraft and balloons as instrument platforms are also discussed. Includes laboratory. S.

250. Introduction to Weather Modification. 3 credits. Prerequisite: Metr 150. Provides a comprehensive introduction to basic concepts of weather modification as currently undertaken and researched around the world. It includes application of fundamental meteorological processes to weather modification, a study of cloud physics and seeding theory, an introduction to the principles of weather radar, a review of past and current programs, and a discussion of related legal, societal, economical and environmental issues. F,

251. Advanced Weather Modification. 3 credits. Prerequisites: Metr 250 or Avit 330. Provides students exposure to the practical aspects of weather modification operations. Instruction is given in the following areas: program design and evaluation, care and use of seeding materials and equipment, identification of seeding opportunities, and airborne delivery of seeding materials. Emphasis is given to safety, both on the ground and in the air. Flight training in seeding techniques is provided to students with commercial, instrument and multi-engine pilot ratings. S.

310. Weather Operations. 3 credits. Prerequisite: Metr 210. An operations approach to application of practical methodologies of weather analysis using computer textural and graphic analysis systems. Involves routine weather laboratory activities commonly found within the operational sector of meteorology. F,S.

320. Synoptic Meteorology I. 4 credits. Prerequisite: Metr 110 and Phy 205. Atmospheric processes important to large-scale flow. Geostrophic and gradient winds, thermal wind, isallobaric winds. Advection, vorticity, divergence, and quasi-geostrophic flow. Includes laboratory. F.

331. Aviation Meteorology II. 4 credits. Prerequisite: Metr 231. A study of aviation weather topics related to flight in high performance and air transport category aircraft. Includes a treatment of high altitude weather features, airborne weather radar, international weather, ground ice-ting procedures and other topics. F,S,S,S

337. Cooperative Education. 1-8 credits, may be repeated to a total of 12 credits. Prerequisites: Metr 210, and overall GPA of at least 2.5, and approval of the Coordinator of Meteorology Cooperative Education. The student will receive credit for on-the-job compensated work experience in various areas of meteorology available within the government, university or private sectors. F,S,S,S

340. Introduction to Radar Meteorology. 4 credits. Prerequisites: Phys 206 and Metr 210. Introduction to principles and theory of microwave radar and its use as a meteorological observation or research tool. Includes Laboratory. F.

350. Atmospheric Thermodynamics. 3 credits. Prerequisites: Metr 210, Math 212. An introduction into the theory and application of atmospheric thermodynamics used in synoptic, meso- and microscale meteorology. The course covers the principles of classical thermodynamics and how they are applied to atmospheric processes. S.

353. Physical Meteorology. 3 credits. Prerequisites: Metr 210 and Physics 206. A study of atmospheric processes and properties from a physical standpoint. Includes
boundary layer and upper atmosphere processes, cloud microphysics and electrification, and atmospheric radiation. S

360. Dynamic Meteorology, 4 credits. Prerequisites: Metr 210 and 350. Pre- or corequisite: Math 351. Basic equations of motion, atmospheric thermodynamics, balanced motions, and atmospheric disturbances are examined on an introductory level. S

370. Computer Concepts in Meteorology, 3 credits. Prerequisites: Metr 210 and an approved computer language course. Examines the need for and use of computers in atmospheric science. Topics will include the application of various computer concepts, such as numerical solution of linear and differential equations and numerical integration, to special meteorology problems, such as numerical weather prediction and numerical modeling techniques. F

420. Synoptic Meteorology II, 3 credits. Prerequisites: Metr 360 and Math 352. Application of quasi-geostrophic theory to the synoptic atmospheric including analysis and forecasting. Introduction to numerical weather prediction. S

441. Radar Meteorology, 4 credits. Prerequisites: Metr 340 and Metr 360. Advanced radar theory, including basic radar principles, digital processing of radar signals, Doppler radar principles, displays and characteristic returns. Includes laboratory. S

450. Introduction to Cloud Physics Meteorology, 4 credits. Prerequisite: Metr 350 and Metr 353. A study of the physics of clouds with emphasis on micro-physical processes involved in cloud formation, precipitation production, and dissipation. Includes laboratory: F

470. Air Pollution Meteorology, 3 credits. Prerequisites: Chem 105 or 151, Metr 350. Fundamentals of air pollution, the physical chemical processes which govern the life cycle of pollutants, the regulatory environment, permitting legislation on air pollution as it relates to the meteorologist. On demand.

490. Topics in Meteorology, 2-4 credits. Consent of instructor. This course will cover one or more topics in meteorology of special interest to upper division students. Course may be repeated up to a maximum of 6 credits. F,S

497. Senior Project, 2 credits. Pre or Corequisite: Math 461. Senior status in meteorology, consent of advisor required. Original student investigation of field or laboratory problems, after conference with a supervising faculty member of the department. F,S,SS

498. Special Studies in Meteorology, 1-4 credits. Prerequisites: Upper division status and consent of instructor. May be repeated with change of subject matter to a maximum of four credit hours. Designed for those students who wish to pursue advanced topics in meteorology on an individual basis. F,S,SS

499. Internship, 1-4 credits. Prerequisites: Upper division status and consent of instructor. Field experiences in several areas of meteorology including weather modification, radar and rawinsonde operations, and cloud physics will be offered as available. F,S,SS

Microbiology and Immunology (MBio)

J. Kelleher (Chair), Reinitz, Spanier, and Young

**Courses**

202. Introductory Medical Microbiology Lecture, 3 credits. Prerequisite: Chem 107. Three hours of lecture per week. An introductory medical microbiology course primarily for nursing students, but open to allied health students with permission of the instructor. The course provides a background in all aspects of microbial agents and diseases. F

202L. Introductory Medical Microbiology Laboratory, 2 credits. Corequisite: MBio 202. Four hours laboratory per week. An introductory laboratory course in the isolation and identification of all types of microorganisms with an emphasis on those that cause disease. S

302. General Microbiology Lecture, 2 credits. Prerequisite: Biol 101 or permission of instructor. Two hours lecture per week. An introduction to general microbiology with emphasis on the morphology, classification, and physiology of bacteria, molds, and viruses. The significance of microorganisms in food processing, waste disposal, and in maintaining our environment is discussed. S

302L. General Microbiology Laboratory, 2 credits. Prerequisite or corequisite: MBio 302. Four hours laboratory per week. The growth, isolation, and identification of microorganisms from a variety of sources using procedures such as staining, microscopy, pure culture techniques, and biochemical tests. S

328. Introduction to Immunology, 2 credits. Prerequisites: BCh 301 or equivalent. Five week course in immunology beginning the first Monday in August. Eight hours lecture per week. An introduction to the fundamentals in immunology including immunohistochemistry, 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 402L or 508 or equivalent. Corequisite: MBio 402L. Methods in the isolation and identification of disease causing microorganisms. S

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**Military Science**

**Military Science (MSCI)**

W. Kloster (Chair), Allen, Hargrove, Richter, Trask, and Wold

The Army Reserve Officer Training Corps (ROTC) offers a program of instruction designed to mold young men and women into responsible, self-disciplined leaders. Students seeking a commission as a second lieutenant in the United States Army can expect to learn and develop the following skills: time management, oral and written communication, leadership, management, administration, problem solving and decision making. Selection for active Army duty and for commissioning as a regular Army officer is competitive. Students commissioned as reserve officers may request active duty or may serve with the Army Reserve or National Guard after a short period of active duty for officer training. The program is voluntary and is open to both male and female students. Enrollment in Military Science I (freshman year) entails no military service obligation. This offers the student an opportunity to explore military science subjects and is a basis upon which to decide about further enrollment in military science including entering competition for an ROTC scholarship. Winners of three or four year ROTC scholarships incur a military obligation when they enter their MS II (sophomore) year. Other students incur no obligation until their MS III (junior) year. Successful completion of MS I and MS II is a prerequisite to enrollment in MS III and MS IV; however, placement credit procedures are available for veterans, Junior ROTC participants, and transfer students formerly enrolled in other ROTC programs, or by completion of a summer basic camp. Questions concerning placement eligibility should be directed to the Military Science Department. Financial assistance is available in the form of two, three, and four year ROTC scholarships. These scholarships pay tuition, laboratory fees and a flat rate for textbooks and equipment and a modest monthly cost of living allowance. All ROTC scholarship students and each non-scholarship junior and senior are paid a cost of living allowance. The advance course may be taken for credit only by nonobligated students with prior arrangement through the Department of Military Science. The Military Science Department is housed in the University Armory which contains a library, physical fitness center, and rifle range for the use of enrolled students.

Professional Military Education—Requirements:

In addition to successfully completing the ROTC curriculum and earning a baccalaureate degree a cadet must complete at least one undergraduate course from each of five designated fields of study to meet the requirements for commissioning. Usually, meeting the general university requirements and specific major area requirements will satisfy most of the Professional Military Educational requirements. Specifically, cadets must take a course in written communication, military history, human behavior, computer literacy, math reasoning, management*, and national security affairs*.

* Optional

**MINOR IN MILITARY SCIENCE**

Required 20 hours, including:

- **Msci 303** Military Science III ..................................................(3)
- **Msci 302** Military Science III ..................................................(3)
- **Msci 403** Military Science IV ..................................................(2)
- **Msci 402** Military Science IV ..................................................(2)
- **HIPER 102** Finance Military Physical Conditioning .................(1)
- **Hist 210** Military History .......................................................(3)

3 hours from the following:

- **Psci 220** International Politics ..................................................(3)
- **Psci 225** Comparative Politics ..................................................(3)
- **Hist 239** World War II ............................................................(3)
Courses

101. Introduction to Military Science I. 2 credits. An introductory course including: analysis of the organization and functions of the Army, the role and organization of ROTC, marksmanship and leadership. F


201. Military Science II. 2 credits. A course designed to acquaint the student with the various types of charts and maps available, and introduce them to the basic analysis and interpretation of this media of communication. F

202. Military Science II. 2 credits. Corequisite: Leadership Laboratory. A course designed to give practical experience in: receiving/issuing of operation orders and fragmentary orders, briefings, battle planning, logical thinking, and leadership/followership. This will be accomplished through daily exercise of these facets during war gaming activities based upon historical readings. F,S

215. Conflict Simulation. 1 credit. A course analyzing military strategy and tactics through the use of war gaming activities based upon historical renderings. F,S

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. F

301. Military Science III. 3 credits. Prerequisite: ROTC Basic Course or advanced placement credit. A course analyzing combat organization, combat orders, and small unit tactical operations. Course includes military teaching principles. Course includes leadership laboratory and field exercise. F

302. Military Science III. 3 credits. Prerequisite: same as MSci 301. A course designed to prepare the student/cadet for participation in the ROTC Advanced Camp. Course includes leadership, small unit tactics, and branch (e.g., infantry, aviation, etc.) orientation. Course includes leadership laboratory and field exercise. S

401. Military Science IV. 2 credits. Prerequisite: Military Science III, Instruction in the functions of a military staff, military writing and ethics. Course includes leadership laboratories and field exercise. S

402. Military Science IV. 2 credits. Prerequisite: Military Science III. Instruction in professionalism and military justice, logistics and personnel systems. Course includes leadership laboratories and field exercise. F

495. Special Topics. 1-3 credits. Special Topics for the Department of Military Science. F,S

Music (Mus)

Miller (Chair), Einarsen, Fry, Jacobson, Koozin, Lewis, Mannion, Norman, Rheude, Rodde, Sedgwick, and Solose

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 courses for credit are offered to music majors and minors, although talented non-majors may audit for lessons (Music 105) and are accepted in proportion to faculty loads.

Prior to admission to any of the music degree programs, students’ performance 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 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 addition 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, 112, 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 (Bachelor of Music in the College of Fine Arts, Bachelor of Arts in the College of Arts and Sciences, and Bachelor of Science in the Center for Teaching and Learning).

The Bachelor of Music degree program in the College of Fine Arts and Communication offers majors in Music Performance and in Music Education. The Performance major is designed for the student who wishes to pursue a career in performance and who has the ability and commitment to achieve that goal. Students accepted for this program must demonstrate exceptional potential for performance excellence. The Performance student is expected to pass a Qualifying Examination on the major instrument or voice by the end of the second year, to present a shared recital during the third year, and to present a full recital during the fourth year.

The Music Education major, also in the College of Fine Arts and Communication, 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 addi-
University of North Dakota

tion, each degree program has a specific piano study and piano proficiency requirement. Bachelor of Music students must complete all levels of the Piano Proficiency Sequence prior to graduation or prior to registration for student teaching in the case of music education students. Bachelor of Arts degree students must pass the first level Piano Proficiency. At the end of the fourth semester of music study, students are subject to a mid-program review and, prior to graduation, students must complete a portfolio review as part of the Department assessment procedure.

Individual Lessons and Ensembles may be repeated for credit without limitation. A maximum of 12 hours of credit in ensembles, however, may apply toward graduation.

A Department of Music Student Handbook is available to all students as a supplement to this catalog. That volume includes the most recent updates of policies and procedures of the Department in much greater detail than can be listed here.

**College of Fine Arts and Communication**

**BACHELOR OF MUSIC WITH A MAJOR IN PERFORMANCE**

Required 132 hours:

I. General Education Requirements, see pages 27-31.
II. College of Fine Arts Requirements, see page 47. ... (6)

III. The Following Curriculum:

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Total Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mus 100</td>
<td>Introduction to the Understanding of Music</td>
<td>(3)</td>
</tr>
</tbody>
</table>

Core Courses:

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Total Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mus 111, 112, 211, 212</td>
<td>Theory I, II, III, IV</td>
<td>(12)</td>
</tr>
<tr>
<td>Mus 113, 114, 213, 214</td>
<td>Ear Training &amp; Sight Singing I, II, III, IV</td>
<td>(4)</td>
</tr>
<tr>
<td>Mus 227</td>
<td>Popular and Classical Musics of the World</td>
<td>(3)</td>
</tr>
<tr>
<td>Mus 330, 331, 332</td>
<td>Music History Survey I, II, III</td>
<td>(9)</td>
</tr>
</tbody>
</table>

Mus 340 | Basic Conducting | (2) |

Performance Courses:

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Total Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>Major Instrument</td>
<td>(24)</td>
<td></td>
</tr>
<tr>
<td>Secondary Instrument</td>
<td>(4)</td>
<td></td>
</tr>
<tr>
<td>Ensembles, Large and Small</td>
<td>(12)</td>
<td></td>
</tr>
</tbody>
</table>

Mus 450 | Applied Music Pedagogy | (2) |

**VOCAL MAJORS**

Other Supportive Courses:

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Total Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>Theory and Composition</td>
<td>(6)</td>
<td></td>
</tr>
<tr>
<td>Music Electives (Other than performance)</td>
<td>(3)</td>
<td></td>
</tr>
<tr>
<td>Foreign Language Requirement</td>
<td>(8)</td>
<td></td>
</tr>
<tr>
<td>French 101, 102 or German 101, 102 or Italian 101, 102</td>
<td>(8)</td>
<td></td>
</tr>
</tbody>
</table>

Electives in other disciplines other than the major

**INSTRUMENTAL MAJORS**

Other Supportive Courses:

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Total Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>Theory and Composition</td>
<td>(6)</td>
<td></td>
</tr>
<tr>
<td>Music Electives (Other than performance)</td>
<td>(3)</td>
<td></td>
</tr>
<tr>
<td>Music 425</td>
<td>(required for Keyboard Performance majors)</td>
<td>(3)</td>
</tr>
</tbody>
</table>

Electives in disciplines other than the major.

**BACHELOR OF MUSIC WITH A MAJOR IN MUSIC EDUCATION**

(Instrumental or Choral Emphasis)

Required 132 hours:

I. General Education Requirements, see pages 27-31.
II. College of Fine Arts Requirements, see page 47. ... (6)

III. The Following Curriculum:

<table>
<thead>
<tr>
<th>Course</th>
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<th>Total Hours</th>
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<tbody>
<tr>
<td>Mus 100</td>
<td>Introduction to the Understanding of Music</td>
<td>(3)</td>
</tr>
</tbody>
</table>

(May be waived by examination)

Core Courses:

<table>
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<th>Total Hours</th>
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</thead>
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<td>Theory I, II, III, IV</td>
<td>(12)</td>
</tr>
<tr>
<td>Mus 113, 114, 213, 214</td>
<td>Ear Training &amp; Sight Singing I, II, III, IV</td>
<td>(4)</td>
</tr>
<tr>
<td>Mus 227</td>
<td>Popular and Classical Musics of the World</td>
<td>(3)</td>
</tr>
<tr>
<td>Mus 330, 331, 332</td>
<td>Music History Survey I, II, III</td>
<td>(9)</td>
</tr>
</tbody>
</table>

Mus 340 | Basic Conducting | (2) |

**MINOR IN MUSIC**

Required 21 hours:

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Total Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mus 100</td>
<td>Introduction to the Understanding of Music</td>
<td>(3)</td>
</tr>
</tbody>
</table>

(May be waived by examination)

Core Courses:

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<tr>
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<tbody>
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<td>Mus 111, 112</td>
<td>Theory I, II</td>
<td>(6)</td>
</tr>
<tr>
<td>Mus 113, 114</td>
<td>Ear Training and Sight Singing I, II</td>
<td>(2)</td>
</tr>
<tr>
<td>Mus 330, 331, or 332</td>
<td>Music History Survey I, II, III</td>
<td>(3)</td>
</tr>
</tbody>
</table>

Additional Courses in Music:

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Total Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>Performance</td>
<td>(Applied music, conducting, ensembles)</td>
<td>(4)</td>
</tr>
<tr>
<td>Electives in History/Literature/Theory/Composition</td>
<td>(6)</td>
<td></td>
</tr>
</tbody>
</table>

(In may apply, but not limited to other courses in music major Core, such as 211, 212, 227, 330, 331, 332, 340)
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 GER credit. F,S

109. Creative Music. 3 credits. Understanding of musical elements and their organization through involvement with creative processes in music; individual and group experiments with sound utilizing a variety of sound sources including environmental sounds. Open to non-majors for humanities credit. F,S

201. Diction for Singers. 1 credit. Prerequisite: 2 semesters of private voice lessons. Rules for and practical applications of pronunciation of one of the major languages used in song literature: French, German, or Italian. May be repeated for credit up to 3 hours. S/2

301. Special Topics. 1 to 3 credits. Consent of instructor required. Specially arranged seminars or courses on variable topics not covered by regular departmental offerings. May be repeated for credit up to 6 hours. F,S

490. Individual Research in Band Literature and Method Books. 1 credit. For summer camps and workshops only. Independent study in some area of band literature and instrumental literature. On demand.

494. Senior Project. 2 credits. Prerequisite: Senior standing. Presentation of a recital, research paper, original composition, or similar project that meets the approval of the department. F,S

498. Special Projects. 1 to 3 credits. Individual study in an approved area of interest to the student. May be repeated for credit up to 8 hours. F,S

Music Theory and Composition

111,112. Theory 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. Ear Training and Sight Singing I, II. 2 credits. 113 is prerequisite for 114. 111 is a co-requisite for 113 and 112 is a co-requisite for 114. Training in reading at sight and in aural recognition involving dictation, keyboard and singing skills. F,S

211. Theory III. 3 credits. Prerequisites: Music 112, 114. Compositions selected from various periods are used to gain experiences with rhythmic, melodic, harmonic, and contrapuntal aspects of music. Keyboard applications and original writing. F,S

212. Theory IV. 3 credits. Prerequisites: 213, 211. Continuation of Theory III with primary emphasis on 20th century musical thought and techniques. S

213,214. Ear Training and Sight Singing III, IV. 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 212. 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/2

414. Analysis of Musical Form. 2 credits. Analysis of the principal forms of musical composition. S/2


416. Composition. 2 credits. Prerequisite: Music 212. Original composition in smaller forms for vocal and instrumental solos and ensembles. S

Music History and Literature

220. Music in America. 3 credits. A historical survey of music in America from pre-contact times to the twentieth century, including Classical, Ethnic, Folk, and Poplar Traditions. Designed for non-majors; will include listening techniques and writing about music.

226. Rock Music and Popular Culture. 3 credits. Rock and other popular musics are examined in relation to historical and social world trends since the mid-twentieth century. The course focuses on how contemporary issues including civil rights, the peace movement, global political change, and new technology have paralleled developments in rock music. S

227. Popular and Classical Musics of the World. 3 credits. A study of the music of selected cultures of the world and ethno sub-cultures in America, includes Native American, Jazz, Poplar, and World music. F

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, Baroque eras and other selected compositions which are rarely performed. On demand.

330. Music History Survey I, II, III. 3 credits. Prerequisites: 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 I. 3 credits. Prerequisites: 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

332. Music History Survey III. 3 credits. Prerequisites: Music 100 or permission of the instructor. A historical survey of western 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. F

Center for Teaching and Learning

B.S.ED. WITH COMBINED MAJOR IN ELEMENTARY AND SECONDARY MUSIC EDUCATION

Required 132 hours.

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

II. CTL General Graduation Requirements see page 54.

III. The Following Curriculum:

   Core Courses
   - Mus 110, 112, 211, 212. Theory I, II, III, IV. (12)
   - Mus 227. Popular and Classical Musics of the World. (3)
   - Mus 340. Basic Conducting. (2)
   - Other Studies
     - Mus 411. Instrumental and Choral Arranging. (2)
     - Mus 427. Seminar in Music History. (3)
     - Electives in Theory/Composition or History/Literature. (2)
   - Performance
     - Major Instrument. (7)
     - Mus 341, 342. Choral, Instrumental Conducting. (4)
     - Ensembles. (7)
     - Electives in Performance. (4)
   - (preferably piano, secondary instrument or voice)
   - Music Education
     - Mus 131, 132. Class Lessons (including piano, brass, woodwind/percussion, voice & string classes). (6)
     - Mus 227. Music for Elementary Teachers. (3)
   - Music Technology
     - Mus 318 Introduction to MIDI Technology. (Credits apply toward CTL 390). (2)
   - PROFESSIONAL EDUCATION*

*See Department of Music Adviser for professional education course sequence.

Center for Teaching and Learning

B.S.ED. WITH COMBINED MAJOR IN ELEMENTARY EDUCATION AND MUSIC

Required 127-134 hours.

I. The Center for Teaching and Learning Program for Elementary Education, see page 75.

II. The Following Curriculum:

   Core Courses
   - Mus 100. Introduction to the Understanding of Music. (3)
   - Mus 111, 112, 211, 212. Theory I, II, III, IV. (12)
   - Mus 227. Popular and Classical Musics of the World. (3)
   - Mus 340. Basic Conducting. (2)
   - Performance
     - Major Instrument. (4)
     - Ensembles. (4)
     - Voice lessons. (1)
     - Music Education
       - Mus 131 or 132. Voice or Piano Class. (1)
       - CTL 420F. Methods & Materials in Elementary Music. (3)
   - Electives in Music. (3)

MINOR IN MUSIC

Required 23 hours.

   Core Courses in Music
     - Mus 100. Introduction to the Understanding of Music. (3)
     - Mus 111, 112. Theory I, II. (6)
     - Mus 113, 114. Ear Training and Sight Singing I, II. (2)
     - Mus 340. Basic Conducting. (2)
   - Additional Courses in Music
     - Applied Music. (4-5)
     - Ensembles. (2-3)
     - CTL 420F. Elementary Music Methods and Materials. (3)
<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
<th>Prerequisites</th>
</tr>
</thead>
<tbody>
<tr>
<td>425</td>
<td>Song Literature</td>
<td>2</td>
<td>Music 295, Voice</td>
</tr>
<tr>
<td>426</td>
<td>Stringed Instrument Literature</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>427</td>
<td>Seminar in Music History</td>
<td>3</td>
<td>3 hours of music history and literature. On demand.</td>
</tr>
<tr>
<td>428</td>
<td>Choral Literature</td>
<td>2</td>
<td>3 hours of Music History and Literature. On demand.</td>
</tr>
<tr>
<td>429</td>
<td>Instrumental Literature</td>
<td>2</td>
<td>Wind instrument literature from the Renaissance.</td>
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<tr>
<td></td>
<td><strong>Music Education</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>131</td>
<td>Class Lessons</td>
<td>1</td>
<td>Beginning class instruction in any of the following instrumental classes: Brass, Woodwind, Percussion, and String Class; Piano Class; Voice Class; Guitar Class. May be repeated for credit without limitation. F,S</td>
</tr>
<tr>
<td>132</td>
<td>Class Lessons</td>
<td>1</td>
<td>Intermediate class instruction in any of the following instrumental classes: Brass, Woodwind, Percussion, and String Class; Piano Class; Voice Class; Guitar Class. May be repeated for credit without limitation. F,S</td>
</tr>
<tr>
<td>237</td>
<td>Music for Elementary School Teachers</td>
<td>3</td>
<td>Not open to Music Majors or Minors. Survey of elementary school music. Development of teacher skills and knowledge emphasizing conceptual understandings and music competencies essential in the musical growth of children. F,S</td>
</tr>
<tr>
<td>318</td>
<td>Introduction to MIDI Technology</td>
<td>2</td>
<td>Prerequisite: Music 212, 214. Introduction to the use of computers and digital synthesizers in composition, performance, and music education. S</td>
</tr>
<tr>
<td>431</td>
<td>Stage Band Techniques</td>
<td>2</td>
<td>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.</td>
</tr>
<tr>
<td>432</td>
<td>Instrumental Methods</td>
<td>3</td>
<td>F,S</td>
</tr>
<tr>
<td>433</td>
<td>Orchestra Directors’ Course</td>
<td>1</td>
<td>Organizational and administrative problems of the orchestra director such as curriculum, recruiting, scheduling, programming, promotion of the string program, and literature. On demand.</td>
</tr>
<tr>
<td>437</td>
<td>Music Education Special Topics</td>
<td>1 to 3</td>
<td>F,S</td>
</tr>
<tr>
<td>439</td>
<td>Choral Methods</td>
<td>3</td>
<td>F,S</td>
</tr>
<tr>
<td></td>
<td><strong>Music Performance</strong></td>
<td></td>
<td></td>
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<tr>
<td></td>
<td><strong>a. Conducting</strong></td>
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</tr>
<tr>
<td>340</td>
<td>Basic Conducting</td>
<td>2</td>
<td>Prerequisite: Music 112, 114. Development of basic conducting techniques, baton technique, and use of the left hand. Reading of choral and instrumental scores. F</td>
</tr>
<tr>
<td>341</td>
<td>Choral Conducting</td>
<td>2</td>
<td>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,F,S</td>
</tr>
<tr>
<td>342</td>
<td>Instrumental Conducting</td>
<td>2</td>
<td>Prerequisite: Music 340. Instrumental conducting, rehearsal techniques, and score reading through the use of instrumental literature of various styles and periods. S,F,S</td>
</tr>
<tr>
<td></td>
<td><strong>b. Pedagogy</strong></td>
<td></td>
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<tr>
<td>438</td>
<td>Music in the Junior High School</td>
<td>1 to 4</td>
<td>F,S</td>
</tr>
<tr>
<td>450</td>
<td>Applied Music Pedagogy</td>
<td>2</td>
<td>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,F,S, Voice F,F,S, Strings S,F,S</td>
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<tr>
<td></td>
<td><strong>c. Music Ensembles</strong></td>
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<tr>
<td></td>
<td>A maximum of twelve hours of credit in ensembles may apply towards graduation.</td>
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<tr>
<td>260</td>
<td>Concert Choir</td>
<td>1</td>
<td>F,S</td>
</tr>
<tr>
<td>261</td>
<td>University Chamber Chorale</td>
<td>1</td>
<td>F,S</td>
</tr>
<tr>
<td>263</td>
<td>Varsity Bands</td>
<td>1</td>
<td>F,S</td>
</tr>
<tr>
<td>264</td>
<td>Women’s Chorus</td>
<td>1</td>
<td>F,S</td>
</tr>
<tr>
<td>269</td>
<td>Opera Project</td>
<td>1</td>
<td>F,S</td>
</tr>
<tr>
<td></td>
<td><strong>d. Wind Ensemble</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>270</td>
<td>Wind Ensemble</td>
<td>1</td>
<td>F,S</td>
</tr>
<tr>
<td>271</td>
<td>University Band</td>
<td>1</td>
<td>F,S</td>
</tr>
<tr>
<td>272</td>
<td>Marching Band</td>
<td>1</td>
<td>F,S</td>
</tr>
<tr>
<td>273</td>
<td>Instrumental Jazz Ensemble</td>
<td>1</td>
<td>F,S</td>
</tr>
<tr>
<td>274</td>
<td>Symphony Orchestra</td>
<td>1</td>
<td>F,S</td>
</tr>
<tr>
<td>275</td>
<td>University Chamber Orchestra</td>
<td>1</td>
<td>F,S</td>
</tr>
<tr>
<td>276</td>
<td>Collegium Musicum</td>
<td>1 to 4</td>
<td>F,S</td>
</tr>
<tr>
<td>279</td>
<td>Chamber Music Groups</td>
<td>1</td>
<td>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</td>
</tr>
<tr>
<td></td>
<td>*<em>Applied Music (Individual Lessons)</em></td>
<td></td>
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</tr>
<tr>
<td>105</td>
<td>Individual Lessons</td>
<td>1</td>
<td>F,S</td>
</tr>
<tr>
<td>106</td>
<td>Individual lessons</td>
<td>1</td>
<td>F,S</td>
</tr>
<tr>
<td>107</td>
<td>Individual lessons</td>
<td>2</td>
<td>For Bachelor of Music in Performance students only. F,S</td>
</tr>
<tr>
<td>295</td>
<td>Individual lessons</td>
<td>1</td>
<td>F,S</td>
</tr>
<tr>
<td>305</td>
<td>Individual lessons</td>
<td>2</td>
<td>For Bachelor of Music in Performance students only. F,S</td>
</tr>
<tr>
<td>306</td>
<td>Individual lessons</td>
<td>1</td>
<td>F,S</td>
</tr>
<tr>
<td>307</td>
<td>Individual lessons</td>
<td>4</td>
<td>For Bachelor of Music in Performance students only. F,S</td>
</tr>
<tr>
<td>308</td>
<td>Individual lessons</td>
<td>1</td>
<td>F,S</td>
</tr>
<tr>
<td>309</td>
<td>Individual lessons</td>
<td>4</td>
<td>For Bachelor of Music in Performance students only. F,S</td>
</tr>
<tr>
<td>497</td>
<td>Recital</td>
<td>1</td>
<td>Prerequisite: Music 395. Co-requisite: Music 495. The presentation of a half-recital. S,U grading only. F,S</td>
</tr>
</tbody>
</table>

**Natural Sciences**

(A&S)

**College of Arts and Sciences**

**B.S. WITH MAJOR IN NATURAL SCIENCE**

Required 125 hours, including:

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

II. The Following Curriculum:

- **40 major hours, including:**
  - From Biology, Chemistry, Geography*, Geology and Physics select at least 16 hours from one, and at least 12 hours from each of two other fields. A minimum of 10 credits must be in upper level courses.
  - Required in other departments:
    - Level IV proficiency in a foreign language.
    - Mathematics through 212, or equivalent proficiency.

*The following Geography courses may be used to apply toward this concentration: Geography 121, 134, 334, and 421.

The curriculum is primarily for Pre-Medical and Pre-Dental students.
B.S. IN NURSING

Required 129 hours, including:

I. General Education Requirements (Including 12 credits of Arts and Humanities and approximately six credits of other electives. It is recommended that students try to complete a portion of these prior to admission to nursing), see pages 27-31.

II. College of Nursing Degree Requirements, see page 52.

III. The Following Curriculum:

Freshman Year (Prenursing)

*Engl 101. Composition I. (3)
*Chem 104 or 105. General Chemistry. (4)
*Chem 107. Introduction to Organic Chemistry. (4)
(or Chem 106 w/ Bio 101 and 102)
*Psy 101. Introduction to Psychology. (3)
*Anat 204L. Anatomy Laboratory. (2)
*Anat 204. Anatomy for Paramedical Personnel. (3)
*Soc 101. Introduction to Sociology. (3)
or
*Soc 102. Social Problems. (3)
or
*Anh 171. Cultural Anthropology. (3)
Engl 102. Composition II. (3)
or
Engl 209. Technical and Business Writing. (3)

Junior Year

Soc 326. Statistics. (3)

Sophomore Year

*Psy 301. Abnormal Psychology. (3)
*MBio 202/202L. Introduction to Medical Microbiology/Lab. (5)
*Nurs 233. Nursing and Professionalism. (1)
*Nurs 280. Introduction to Clinical Nursing. (3)
*Nurs 286. Health Assessment Techniques. (3)
*Phyx 304. Human Pharmacology. (3)
*Psy 251. Developmental Psychology. (4)
FCS 240. Fundamentals of Nutrition. (3)
*Nurs 230. Personal and Group Dynamics. (2)
*Nurs 288. Health Nursing. (4)

Senior Year

Nurs 478. Leadership and Management. (3)
Nurs 448. Community Health Nursing. (3)
Nurs 484. Community Health Nursing Clinical. (3)
Nurs 481. Multisystem Complex Adult Health. (4)
Nurs 498. Nursing Practicum. (2-4)
Nurs 448. Nursing Practicum. (2)
Nurs 440. Trends in Nursing. (2)
Nurs 483. Mental Health Nursing. (4)

Students are encouraged to consider Cooperative Education, Independent Study and Honors; students should obtain supplemental information from the College of Nursing Director of Student and Alumni Affairs or faculty adviser.

* Required Courses for Admission to the Nursing major.

*** A total of 12 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 evening, night, or weekend clinicals to provide the most varied and rewarding experience for the students. Some experiences may be at places distant from Grand Forks.

230. Personal and Group Dynamics. 2 credits. Focus is on awareness and use of self as a holistic person and as a professional, on communication and interviewing skills, and on the role of group processes in promoting personal and professional growth. Seminar. F.S Open to non-majors.

233. Nursing and Professionalism. 1 credit. Characteristics of a profession, a professional, and professional nursing practice as well as the evolution of nursing as a profession are explored. Seminar. F.S Open to non-majors.

286. Introduction to Clinical Nursing. 3 credits. Pre- or Co-requisites: Nurs 286, 233, Phy 301. Focus is on the theories, concepts, behaviors, and intervention skills basic to professional nursing practice. Use of the nursing process is emphasized in the care of adults, particularly in the middle and older developmental stages. Lecture/discussion/laboratory. F.S

286. Health Assessment Techniques. 3 credits. Pre- or Co-requisites: Phy 301 or consent of instructor. Within the nursing process, the emphasis is on holistic assessment of the health status of adults. Lecture/discussion/laboratory. F.S

286. Introduction to Adult Health Nursing. 4 credits. Prerequisites: Nurs 233, 280, Nurs 286, Pre- or Co-requisites: Phyx 304, FCS 240. Focus is on theory and practice of nursing care of adults with primarily chronic health alterations. Lecture/discussion/clinical/laboratory. F.S

320. Therapeutic Nutrition in Nursing. 1 credit. Prerequisites: FCS 240 and Nurs 280. Focus is on nutrition interventions related to the holistic care of adults while incorporating the nursing process. Nutrition concepts in promoting, maintaining, and restoring optimal health are applied. Lecture/discussion. F.S

328. Adult Health Nursing. 4 credits. Prerequisite: Nursing 288, 230. Co-require: Nurs 320. Focus is on selected theories and principles of adult nursing practice, education, and research with particular emphasis on the acute biological aspects. Lecture/discussion/special assignments. F.S

337. Nursing Cooperative Education Work Experience in Nursing. Pre-requisites: Completion of all sophomore year courses and a 2.5 overall GPA. A reality experience in nursing integrating clinical work experience and evaluation. Designed to enhance the student’s prior course work in nursing. Qualified nursing students are employed by selected health care agencies on either summer or parallel plan. Hours arranged within the guideline of 10 hours per credit. F.S.S

350. Nursing Research. 3 credits. Pre- or Co-require: Statistics. Introduction to nursing research with a focus on the interrelationship among nursing practice, theory and research. Lecture/Discussion. F.S

361. New Concepts in Nursing Practice I. 2 credits. Prerequisite: RN or consent of instructor. Topics, including the College of Nursing Philosophy, selected to prepare RN/BSN nursing students for their role as professional nurses are examined. Special issues in nursing practice are analyzed as they relate to the role of the professional nurse in the ever-changing health care system. F.S Open to pre-nursing RNs.

362. New Concepts in Nursing Practice II. 4 credits. Prerequisite: RN or consent of instructor. Pre- or Co-require: Nursing 361. Advanced concepts, theories, and research related to maternal/child and family health, adult health, and mental health are explored by RN/BSN option students. Nursing roles are examined in relation to promotion, maintenance, and restoration of health. Special issues in nursing practice are analyzed. F.S Open to pre-nursing RNs.

382. Adult Health Clinical. 4 credits. Pre- or Co-requisites: Nurs 328. The nursing process is applied in providing holistic care to adult clients to promote, maintain and/or restore optimal health. Emphasis is on the adult with primarily acute health alterations. Laboratory/clinical. F.S

384. Child Health Nursing I. (2)

385. Child Health Nursing II. (2)

386. Child Health Nursing II. (2)

387. Family in the Community. (3)

500. Nursing Research. (3)

350. Nursing Research. (3)
Occupational Therapy

(OT)

S. McIntyre (Chair), Byram, Marken, Perrin, and Zimmerman

The Occupational Therapy program is accredited by the Committee on Allied Health Education and Accreditation of the American Medical Association in conjunction with the Accreditation Committee of the American Occupational Therapy Association. Graduates of the program will be eligible for the national certification examination for the occupational therapist administered by the American Occupational Therapy Certification Board. 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 are usually based on the results of the AOTCB 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 year as a pre-major in the College for Human Resources Development to complete the pre-professional program. In the spring of the Sophomore year, when the student is continuing the required courses as listed in the first two years, he/she must make written application for admission to the professional Occupational Therapy program. The CLEP in Natural Sciences will not meet Biology and Chemistry requirements in Occupational Therapy. Acceptance is on a competitive basis with consideration given to pre-professional performance in the sciences, general graduation requirements, volunteer work and personal qualifications. A student must have at least a C in each of the Sciences, English Composition, and all Occupational Therapy courses. A student cannot repeat or withdraw from a course more than one time per course to remain eligible for admission to the professional program. A 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 for enrollment for the next semester. The Occupational Therapy Department reserves the right to place on professional probation or cancel the registration of any student in Occupational Therapy whose performance in relation to patient treatment is unsatisfactory.

Program accommodations for qualified handicapped persons will be reviewed upon notification to the department of a prospective student’s needs and limitations. A satellite professional level occupational therapy program is available for 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, Casper, WY, phone 307-268-2541.

College for Human Resources Development

B.S. IN OCCUPATIONAL THERAPY

Required 132 hours including:

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

II. College for Human Resources Development Requirements, see page 49.

III. The Following Curriculum:

Pre-Professional Requirements

Engl 101, 102 or 209 Composition I, II or Tech. & Bus. Writing .................(6)

Arts and Humanities .........................................................(12)

Boil 101 Introduction to Biology .............................................(4)

Chem 104 or 105 Introductory Chemistry or General Chemistry I ............(4)

Comm 161 Fundamentals of Public Speaking ...................................(3)

Soc 101 Introduction to Sociology ............................................(3)

Psy 101 Introduction to Psychology .........................................(3)

Psy 241 Introduction to Statistics ............................................(4)

Psy 251 Developmental Psychology ..........................................(4)

Psy 370 Abnormal Psychology ..................................................(3)

Anat 204 Anatomy for Paramedical Personnel ...................................(3)

Phy 201 Mechanics of Human Physiology .....................................(4)

OT 200 Introduction to Occupational Therapy ................................(2)

OT 205 Medical Terminology ....................................................(1)

OT 493 Workshop ......................................................................(1)

Professional Occupational Therapy Curriculum

OT 301 OT with Infants & Pre-School Children .................................(4)

OT 304 Psychosocial Aspects of OT with Children, Adolescents & Young Adults ....(4)

OT 305 Group Experience .........................................................(1)

OT 307 OT with School Children & Young Adults .........................(4)

OT 308 Leadership Skills in OT ...................................................(1)

OT 309, 310 Medical Sciences I, Medical Sciences II .............................(5)

OT 312 Muscle Function in Health and Disease ..................................(3)

OT 322 Anatomy for OT ...........................................................(5)

OT 337 Cooperative Education in OT (Elective) .................................(1-12)

OT 386 Internship: Children/Adolescents ........................................(1)

OT 401 Adaptive Technology for OT ...........................................(2)
OT 402. Orientation to Research in OT (2)
OT 403. Physical Aspects of OT with the Maturing Adult (2)
OT 404. Psychosocial Aspects of OT with the Maturing Adult (5)
OT 405. Organization and Administration of OT (2)
OT 422. Practicum: Psychosocial Function (2)
OT 422S. Practicum: Professional Practice (1)
OT 483. Practicum: Physical Dysfunction (2)
OT 483S. Seminar: Practicum Integration I (1)
OT 484. Community Aspects of OT (1)
OT 485. Field Work in Psychosocial Dysfunction (6)
OT 486. Elective Field Work in OT (2-6)
OT 487. Field Work in Physical Dysfunction (6)
OT 491. Independent Study in OT (Elective) (1-6)
OT 492. Community Experience (1-4)
OT 493. Workshop (1-6)

*One credit of 493 is required.

Courses

200. Introduction to Occupational Therapy. 2 credits. Prerequisites: Anatomy 204, Psychology 251, and Department Major. History, scope, objectives, and functions of Occupational Therapy. F-S

205. Medical Terminology. 1 credit. Knowledge of medical terminology. F-S

303. Occupational Therapy with Infants & Pre-School Children. 4 credits. Prerequisite: Registered in the professional Occupational Therapy program. Normal and abnormal human development, conception through pre-school years. Emphasis on reflexes, sensory systems, sensory integration, illness and trauma, assessment procedures, treatment techniques and therapeutic media. Laboratory included. S

304. Psychosocial Aspects of OT with Children, Adolescents & Young Adults. 4 credits. Prerequisites: Registered in professional Occupational Therapy program, OT 303, 309, 322. Psychosocial dysfunction in children, adolescents, and young adults, with emphasis on OT evaluation, planning, and treatment. Laboratory included. S

305. Group Experience. 1 credit. Prerequisite: Registered in professional Occupational Therapy program. Promote verbal and nonverbal communication. Laboratory included. S-U grading only. F

307. Occupational Therapy with School Children & Young Adults. 3 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 OT students with the opportunity to function as facilitators for their role in therapeutic groups in psychiatric settings. Laboratory included. S

309. 310. Medical Sciences I, Medical Sciences II. 2 credits, 3 credits. Prerequisite: Registered in professional Occupational Therapy program. The effect upon the human being of interruptions in, aberrations of, and trauma to the developing human organism throughout the life span. 309-F, 310-S

312. Muscle Function in Health and Disease. 4 credits. Prerequisite: Registered in professional Occupational Therapy program, OT 322. Review of muscular control in the extremities and trunk. Orientation to patterns of muscle function 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 neuromotor and anatomy of the extremities. Laboratory included. F

337. Cooperative Education in Occupational Therapy. 1-6 credits, repeatable to a total of 12 credits. Prerequisites: OT 200 and 205; overall GPA of at least 2.5; completion of 40 university credits, and approval of the Director of OT 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 faculty. S

401. Adaptive Technology for Occupational Therapy. 2 credits. Prerequisite: Registered in professional Occupational Therapy program, and OT 304, 307. 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 preparation of research design, source material, elementary statistics, and scientific manuscript preparation. F

403. Physical Aspects of OT 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, 307. 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-S

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. 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 physical dysfunction. F-S

483. Community Experience. 2 credits. Prerequisite: 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. F-S

483S. Seminar: Practicum Integration II. 1 credit. Prerequisites: Registered in professional Occupational Therapy program. Integration of didactic information with Level I clinical practice in the area of physical dysfunction. F-S

484. Field Work in Psychosocial Dysfunction. 6 credits. Prerequisites: Registered in professional Occupational Therapy program. Completion of all academic work with a 2.5 GPA. Application of Occupational Therapy in evaluation and treatment in psychosocial dysfunction fieldwork facilities. Three months full time: F, SS

486. Elective Field Work in Occupational Therapy. 2-6 credits. Prerequisite: Registered in professional Occupational Therapy program. Completion of all academic work with a 2.5 GPA. Application of OT in evaluation and treatment in optional area of student special interest in selected field work facilities. One-to-three months full time. S-U grading only. F, SS

487. Field Work in Physical Dysfunction. 6 credits. Prerequisites: Registered in professional Occupational Therapy program. Completion of all academic work with a 2.5 GPA. Application of occupational therapy in evaluation and treatment in physical dysfunction. Three months full time: S-U grading only. F, SS

491. Independent Study in Occupational Therapy. 1-6 credits. Prerequisite: Registered in the professional Occupational Therapy program. Research and/or independent study in a specialized area in Occupational Therapy. Elective for Occupational Therapy majors. F, S, SS

492. Community Experience. 1-4 credits, repeatable to 12 credits. Prerequisite: Departmental approval. Opportunity for students to engage in professional learning activities related to Occupational Therapy under faculty/professional supervision. 16 hours per semester of client contact constitutes 1 semester credit hour. S/U grading only. F-S, SS

493. Workshop. 1-6 credits, repeatable to 6 credits. Prerequisite: Departmental approval. A workshop course with topics dictated by faculty and student interests primarily for but not confined to continuing education. S/U grading only. On demand.

Peace Studies

Peace Studies is an interdisciplinary program with a large faculty drawn from departments and colleges such as law, medicine, philosophy and religion, history, education, economics, English, geography, psychology, sociology, languages, nursing, and the natural and physical sciences. The program’s 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. In addition, the program offers students opportunities for educational and professional enrichment on issues related to peace and social justice, grassroots organizing, public and international service, and conflict resolution and negotiation.

Peace Studies (PS)

Peace Studies is a new field. In many respects it is similar to other liberal arts disciplines with regard to career opportunities. It is an excellent preparation for graduate study in a range of legal, government, social service, educational, and theological fields. There are also
career fields open for those with a baccalaureate degree, especially in the social services as they apply to relief agencies, international agencies, human rights organizations, and arms control agencies. Opportunities also exist in government and in business enterprises with strong international dimensions.

The major includes the required courses listed below, courses that fulfill General Education Requirements, and elective courses. In consultation with an advisory committee composed of three members selected from the Peace Studies faculty, the student can tailor a program to suit his/her interests by choosing among GER courses as well as electives for the major. Relevant courses in conflict resolution, international relations, area studies, moral issues, science or local action may be organized around a theme. Students are encouraged to complete four years of language study and an advanced writing course.

The major includes an internship of 6 to 16 hours which may be served locally, nationally, or internationally. The internship may be undertaken with groups or professionals such as the following: an international governmental agency; a volunteer or church-related agency; a practitioner of negotiation and conflict resolution; an agency concerned with global food production, nutrition, and health; a relief agency; an arms control organization; or a business with an international focus. The internship is to be planned with the advisory committee and generally occurs during the junior year or following summer.

College of Arts and Sciences

B.A. WITH A MAJOR IN PEACE STUDIES

Required 125 hours including:

I. General Education Requirements; see pages 27-31.
II. The Following Curriculum: 32 hours, including:

P.S. 101 Introduction to Peace Studies 3
P.S. 201 Moral Thought in the Nuclear Age 3
P.S. 350 Peace Studies Seminar: Interdisciplinary Perspectives 3
P.S. 360 Conflict Management 3
P.S. 370 Nuclear Weapons 3
P.S. 486 Internship 6
P.S. 490 Senior Seminar 4

Electives, additional seminars (P.S. 350), Independent Study (P.S. 398), or additional internship credits (P.S. 486) as approved by committee described above. 7

Language requirement: Level IV proficiency in a language other than English.

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 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,S

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

398. Independent Study. 1-4 credits (maximum of 6 credits). Prerequisite: Consent of instructor. Supervised reading, study or research on an individual topic. On demand.

486. Internship. 6-16 credits. Prerequisites: Junior standing and advisory committee approval. Provides direct experience in a peace-related, social change, arms control, or international agency. F or S

490. Senior Seminar. 4 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.

Pharmacology and Toxicology (PhTx)

D. Hein (Chair), Blake, Borg, Buckley, Claren, Epstein, Hulla, Jahn, Kang, Martsoff, and Narang

The Department of Pharmacology and Toxicology offers an undergraduate minor in pharmacology and toxicology. The objective of the program is to provide an opportunity for undergraduate students to receive a general understanding of this discipline.

Pharmacology and Toxicology is a health and life science discipline relevant to many students. Educational objectives of departmental programs include an appreciation for the biological consequences of a chemical environment, including the actions of prescribed drugs, self-medication (over-the-counter) drugs, and psychoactive drugs frequently abused by the general public. It also includes the biological effects of food additives, agricultural, environmental, and industrial chemicals. Students gain a scientific basis for environmental issues and risk-benefit decisions. Departmental courses provide students with a general understanding of how drugs work, how they are developed and approved, and the differences between generic and brand name drugs. Students learn how to be better informed and educated health care consumers.

Science students majoring in chemistry and biology who complete the minor will appreciate increased relevance for their disciplines and will have an opportunity to enhance their application for further graduate or professional education in the health sciences. Students with majors in education, social work, counseling, sociology, and other disciplines can enhance their abilities to interact with people who may have drug-related problems. Students with interests in engineering, business, agriculture, environmental law, and occupational safety and environmental health will have an increased understanding of the effects of occupational chemicals on the environment and the worker.

Individual pharmacology and toxicology courses are required for various other health science programs such as Nursing (both graduate and undergraduate), Occupational Safety and Environmental Health, and Athletic Training. Individual courses are also required for the Chemical Use/Abuse Awareness minor in Social Work.

The Department offers a number of graduate and professional courses in Pharmacology and Toxicology. Details of these courses can be found in the Graduate School section of this catalog and the School of Medicine catalog.

MINOR IN PHARMACOLOGY AND TOXICOLOGY

Required 20 hours, including:

BiCh 301 Biochemistry Lecture 3
BiCh 303 Biochemistry Laboratory 3
Phy 301 Mechanics of Human Physiology 4
PhTx 304 Human Pharmacology 3
PhTx 402 Principles of Pharmacology and Toxicology 2
PhTx 410 Drugs Subject to Abuse 2
PhTx 490 Readings in Pharmacology and Toxicology 1-4
PhTx 493 Research in Pharmacology and Toxicology 1-4

The following electives can also be credited towards the minor:

PhTx 490 Readings in Pharmacology and Toxicology 1-4 or
PhTx 493 Research in Pharmacology and Toxicology 1-4 or
Anat 204 Anatomy for Paramedical Personnel 3
Chem 209 Quantitative Analysis 4
MBio 302 General Microbiology Lecture 4

Courses

304. Human Pharmacology. 3 credits. Prerequisites: Physiology 301 and Chem 107 or equivalent. A survey of the more important drugs used in medicine, including basic principles, clinical uses and possible adverse effects. S

402. Principles of Pharmacology and Toxicology. 2 credits. An introductory pharmacology and toxicology course with an emphasis on basic principles. Drugs will
include those most frequently encountered by the general public. The course does not require a science prerequisite and is appropriate for students in social work, athletic training, sociology, education, counseling, etc. who will encounter drug-related problems. F2

410. Drugs Subject to Abuse, 2 credits. Biochemical, pharmacological, behavioral and therapeutic aspects of substance abuse. Prerequisite: Advanced undergraduate standing. F2

420. Introduction to Applied Clinical Pharmacology, 4 credits. Prerequisites: PH103 or equivalent and consent of instructor. A course designed to expose students to practical clinical pharmacology in a hospital setting. Students investigate patient-specific pharmacology topics through discussions, lectures, patient care rounds, conferences, selected readings, meetings, interviews, and special topics assigned by the instructor. On demand.

490. Readings in Pharmacology and Toxicology, 1-4 credits. Prerequisites: Advanced undergraduate standing and consent of instructor. Topics and credits to be arranged with the instructor. On demand

493. Research in Pharmacology and Toxicology, 1-4 credits, repeatable to 4 credits. The conduct of laboratory research under faculty supervision. Advanced undergraduate standing and consent of instructor required. F,S,SS

Philosophy and Religion
(Phil and Rel)

L. Lindholm (Chair), Frein, Lowe, Messenger, Poochigian, and Sanborn

The two disciplines of Philosophy and Religion represent human-kind’s abiding interest in the fundamental questions of life, truth, and value. Questions about the meaning of life, the significance of truth, the access to knowledge, and the ability to live ethically, have been studied by philosophers and theologians from the time of Socrates and before. Philosophy seeks answers which, chiefly, refer to human capacities and ideals and to the world of experience in which we live; Religion will often include postulates about divine forces and spiritual realities in the answers it frames. The two disciplines tend to be more distinct in Western culture; philosophers and theologians have often been in bitter conflict both with each other and with religious authorities. In Eastern cultures, however, philosophy and religion overlap — often appearing as complements. In both East and West these two fields of study represent the longest and most basic traditions of literature and the intellectual life. Though Philosophy and Religion both address questions of ultimate meaning, each discipline preserves its own literary history and its own scholarly tradition.

Every student can benefit from course work in Philosophy and Religion. Most courses in the department fulfill General Education Requirements in Arts and Humanities. Several major programs require or recommend specific courses to their students. A two to five course series of courses in Philosophy and Religion can be designed to complement major programs in nursing, engineering, science, business, criminal justice studies, as well as humanities disciplines. Minor programs (20 hours) in Philosophy and Religion can also give depth and breadth to any major program. Neither Philosophy nor Religion requires a large technical vocabulary even in upper level courses. Juniors and seniors are urged to register for courses at the 300-400 level even though they have not taken courses at the 100-200 level.

Those students who wish to pursue a major or a second major in Philosophy and Religion must follow one of the two programs of concentration:

1. B.A. in Philosophy and Religion: Philosophy Concentration

2. B.A. in Philosophy and Religion: Religion Concentration

College of Arts and Sciences

B.A. WITH A MAJOR IN PHILOSOPHY AND RELIGION: PHILOSOPHY CONCENTRATION

Required 125 hours, including:

1. General Education Requirements, see page 27-31.

II. Philosophy Concentration requirements.

33 major hours, including:

Phil 101 Introduction to Philosophy..........................(3)
Phil 150 Introduction to Logic Scientific Method..............(3)

3 hours from:

Religion Curriculum

6 hours from:

Phil 300 Classical and Hellenistic Philosophy..................(3)
Phil 301 Medieval Philosophy...................................(3)
Phil 302 Renaissance and Enlightenment ......................(3)
Phil 303 Kant and the Nineteenth Century .......................(3)

A minimum of 18 hours of upper level work in Philosophy.

6 hours from an open-ended list of diversity/multicultural courses, which will include, but not be limited to, the following: (for other possibilities, check with advisors in the department).

2. B.A. WITH A MAJOR IN PHILOSOPHY AND RELIGION: RELIGION CONCENTRATION

Required 125 hours, including:

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

II. Religion Concentration Requirements:

30 hours, including:

Rel 101 Introduction to Religion (West)..........................(3)
Phil 300 Classical Greek and Hellenistic Philosophy...........(3)

3 hours from

Rel 102 Introduction to Religion (East)..........................(3)
Rel 109 Introduction to the Old Testament.......................(3)
Rel 250 East and West in Religions................................(3)
Religion Electives (15 must be at 300-400 level)...................(21)

6 hours from an open-ended list of diversity/multicultural courses, which will include, but not be limited to, the following: (for other possibilities, check with advisors in the department).

2. B.A. WITH A MAJOR IN PHILOSOPHY AND RELIGION: RELIGION CONCENTRATION

Required 125 hours, including:

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

II. Religion Concentration Requirements:

30 hours, including:

Rel 101 Introduction to Religion (West)..........................(3)
Phil 300 Classical Greek and Hellenistic Philosophy...........(3)

3 hours from

Rel 102 Introduction to Religion (East)..........................(3)
Rel 109 Introduction to the Old Testament.......................(3)
Rel 250 East and West in Religions................................(3)
Religion Electives (15 must be at 300-400 level)...................(21)

6 hours from an open-ended list of diversity/multicultural courses, which will include, but not be limited to, the following: (for other possibilities, check with advisors in the department).

A&S 225 Introduction to the Study of Woman......................(3)
A&S 250 African American Religious History....................(3)
CTL 430C Multicultural Education.................................(3)
Engl 365 Black American Writers..................................(3)
Geog 151 Cultural Geography......................................(3)
Hist 345 The Ancient Near East...................................(3)
IS 352 Native American Philosophic Thought....................(3)
Phil 283 Oriental Philosophy........................................(3)
Rel 203 World Religions..............................................(3)

Some of these courses simultaneously fulfill other Philosophy/Religion requirements.

Language requirement:

Reading proficiency in the philosophical literature of any foreign language. Majors in philosophy should be aware that proficiency in symbolic logic is expected in most graduate schools and in some substitutes for proficiency in a foreign language.

MINOR IN PHILOSOPHY AND RELIGION:

PHILOSOPHY CONCENTRATION

Required 21 hours in Philosophy:

6 hours from:

Phil 283 Oriental Philosophy........................................(3)
Phil 300 Classical Greek and Hellenistic Philosophy...........(3)
Phil 301 Medieval Philosophy.......................................(3)
Phil 302 Renaissance and Enlightenment.........................(3)
Phil 303 Philosophy since the Enlightenment....................(3)

A&S 225 Introduction to the Study of Women......................(3)
A&S 250 African American Religious History....................(3)
CTL 430C Multicultural Education.................................(3)
Engl 365 Black American Writers..................................(3)
Geog 151 Cultural Geography......................................(3)
Hist 345 The Ancient Near East...................................(3)
IS 352 Native American Philosophic Thought....................(3)
Phil 283 Oriental Philosophy........................................(3)
Rel 203 World Religions..............................................(3)

The additional 15 hours should normally include work complementary to the student’s major or to some developed personal interest. Students may consult department advisors to develop a special concentration in the minor with an emphasis on philosophy of science, ethics in the professions, aesthetics in art and literature, etc.

B.A. WITH MAJOR IN PHILOSOPHY AND RELIGION:

RELIGION CONCENTRATION

Required 125 hours, including:

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

II. Religion Concentration Requirements:

30 hours, including:

Rel 101 Introduction to Religion (West)..........................(3)
Phil 300 Classical Greek and Hellenistic Philosophy...........(3)

3 hours from

Rel 102 Introduction to Religion (East)..........................(3)
Rel 109 Introduction to the Old Testament.......................(3)
Rel 250 East and West in Religions................................(3)
Religion Electives (15 must be at 300-400 level)...................(21)

6 hours from an open-ended list of diversity/multicultural courses, which will include, but not be limited to, the following: (for other possibilities, check with advisors in the department).

A&S 225 Introduction to the Study of Woman......................(3)
A&S 250 African American Religious History....................(3)
CTL 430C Multicultural Education.................................(3)
Engl 365 Black American Writers..................................(3)
Geog 151 Cultural Geography......................................(3)
Hist 345 The Ancient Near East...................................(3)
IS 352 Native American Philosophic Thought....................(3)
Phil 283 Oriental Philosophy........................................(3)
Rel 203 World Religions..............................................(3)

Some of these courses simultaneously fulfill other Philosophy/Religion requirements.

Level IV proficiency in a foreign language (i.e., 4 semesters).
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 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 method — 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

150. Introduction to Logic & Scientific Method. 3 credits. An introduction to the principles of reasoning: formal and informal, deductive and inductive. Language is a vehicle for, and an obstacle to sound thinking. The essentials of deductive reasoning. The role of hypotheses and inductive reasoning in scientific investigation. F/S

210. Contemporary Moral Issues. 3 credits. An introduction to the problems connected with moral choice. This course examines the moral judgments that follow from the values held by a wide variety of people today on topics ranging from abortion to race, sexual behavior, the environment, etc. F/S

283. Oriental Philosophy. 3 credits. The main philosophical systems of India, China and Japan will be examined. F/S

300. Classical Greek and Hellenistic Philosophy. 3 credits. The ancient Greeks and Romans laid the foundations for even the most contemporary philosophy, and their ideas have had a continuing influence on all Western thought from their time to our own. This course attempts to examine those ideas and the reasons for their persistent relevance. F/S

301. Medieval Philosophy. 3 credits. Philosophy in Western Europe from the end of the Roman Empire to the early 15th Century as reflected in the writings of such thinkers as Boethius, Augustine, Abelard, Aquinas and Ockham. S/S

302. Renaissance and Enlightenment. 3 credits. Philosophy from the time of Petrarch (c. 1350) to that of the American Revolution as seen in the writings of such philosophers as Bruno, Bacon, Descartes, Spinoza and Hume. This is the period that sees the origins of modern thought. The implications of the work of the philosophers had an important role in shaping contemporary society, including the arts, literature, science, politics, and economics. F/S

303. Kant and the Nineteenth Century. 3 credits. Philosophy from the “Age of Reason” through the Industrial Revolution as reflected in the writings of Kant and other philosophers such as Hegel, Mill, Marx, and Nietzsche. S/S

304. Twentieth Century Philosophy. 3 credits. Contemporary developments in philosophy from the beginning of the 20th century. S/S

309. American Philosophy. 3 credits. A survey of major figures and movements in American philosophy. F/S

310. Ethics: Right and Wrong? Good and Evil? 3 credits. A study of traditional problems in ethical theory including the foundations of ethical philosophy, the nature of the good, ethical 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/S

350. Symbolic Logic. 3 credits. The modern deductive logic of propositions and functions (including relations); logicist systems. Students majoring in mathematics or computer science will be especially welcome in this course. S/S

356. 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/S

370. Ethics in Engineering and Science. 3 credits. Prerequisite: Juniorsenior 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/safety/quality, an update of the two cultures debate. F/S

372. Ethics in Health Care. 3 credits. Some ethical problems and ethical guidelines are of particular concern to citizens and to professionals interested in health care fields. Examples are informed consent, abortion, euthanasia, organ transplant policies, professional standards versus patient rights, assisted suicide, ethics of testing/screening, health care policy and reform. Class members will explore such issues through case studies in a context of relevant ethical history and theory. Juniorsenior standing required. No prerequisites. S/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 promulgated or inhibited by people and institutions in these areas. We 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 more. F/S

395. Philosophical Themes. 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.

406. Philosophy of Human Nature. 3 credits. A consideration of philosophical problems arising from the methodology of the behavioral sciences. Students majoring in Political Science, Economics, Psychology, Anthropology or Sociology are especially welcome. S/S

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 morality. F

430. Philosophy of Science and Technology. 3 credits. A study of the philosophic aspects of science and technology. Problems include, what makes a theory scientific?, is there a scientific “method?”, can one believe in science and religion at the same time?, how can we tell whether a technological enterprise is a reasonable risk or a negligent gamble?, how should a technological advance be controlled? S/S

472. Seminar in Philosophy. 3-6 credits. Prerequisites: Junior or senior standing and consent of the instructor. A consideration of selected philosophical problems or classic texts of mutual interest to departmental faculty and more advanced students. Previous work in philosophy or related disciplines is recommended. On demand.

492. Independent Study in Philosophy. 1-3 credits. May be repeated to 6 credits. Prerequisite: consent of instructor. Supervised tutorial on an individual basis. Typically, a student will work independently to a considerable extent. In other cases, the course may take the form of regularly scheduled meetings. F/S

Courses in Religion

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 belief 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 – the study 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
1. General Education Requirements, see pages 27-31.

II. The Center for Teaching and Learning Program in Secondary Education, see pages 77.

III. The Following Curriculum:

65 major hours, including:

Chem 105, 106................................ General Chemistry I and II and Qualitative Analysis..............................(8)
Chem 209................................. Quantitative Analysis...........................(4)
Chem 305, 306........................ Organic Chemistry..................................(10)
Phys 205, 206, 208...................... General Physics......................................(12)
Phys 317.................................. Mechanics.............................................(3)
Phys 490................................. Special Problems.................................(2)
Biol 101, 101L......................... Introduction to Biology.............................(4)
Geol 102, 102L......................... General Geology-Physical and Historical.....(8)
Math 211, 212, 213............... Calculus I, II, III.........................................(12)

IV. College of Arts and Sciences

B.S. WITH MAJOR IN PHYSICAL SCIENCE

Requirements the same as above under B.S.Ed. degree, except that instead of the CTL requirements (II), Level IV proficiency in a foreign language is required.

Physical Therapy (PT)

T. Mohr (Chair), Johnson, Keck, Mabey, P. Mohr, and Simunds

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 63-71 credits pre-physical therapy entrance requirements. The curriculum requires that the student take 3 to 8 semester credits in elective coursework, and 63 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 must be completed prior to selection. On 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 (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. 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 **Graduation Section, Physical Therapy, page 212.**

**Physics**

*(Phys)*

**B. Rao (Chair), Chen, Cole, Dewar, Henriksen, Lykken, Schwalm, and Wagner**

The Department of Physics offers a major and minor in Physics and a major in Applied Physics* in the College of Arts and Sciences, and a major in Physics in the Center for Teaching and Learning. The Arts and Sciences major in Physics is designed to prepare the students for graduate work in physics or to enable them to participate in physics research as a member of a research team. A student who plans to do graduate work in physics should acquire a reading knowledge of at least one of the foreign languages in which much of the current literature in physics is written, namely, German, Russian and French.

The major in physics offered in the Center for Teaching and Learning will provide a student with the training in physics essential for a secondary school teaching career.

The major in Applied Physics will provide interdisciplinary training in applied physics and engineering design with emphasis on instrumentation.

The Department of Physics offers graduate programs leading to the degree of Master of Science and Doctor of Philosophy. In order to pursue graduate work in physics, the student must have the baccalaureate degree with a major in physics or in applied physics. For more detailed information, see the Graduate Bulletin.

*Pending North Dakota Board of Higher Education approval.

**College of Arts and Sciences**

**B. S. WITH MAJOR IN PHYSICS**

Required 125 hours, including:

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

II. The Following Curriculum:

| Required 36 major hours, including: |  
| Physics 205, 206, 208 | General Physics | (12) |
| Physics 317 | Mechanics | (3) |
| Physics 318 | Mechanics | (3) |
| Physics 324 | Thermal Physics | (3) |
| Physics 325 | Optics | (3) |
| Physics 325L | Optics Laboratory | (1) |
| Physics 327 | Electricity and Magnetism | (3) |
| Physics 328 | Electricity and Magnetism | (3) |
| Physics 428 | Modern Physics Laboratory | (2) |
| Math 351 | Elem. Differential Equations | (3) |

Required in other departments:

|         | Calculus I, II, III | (12) |
| Math 211, 212, 213 | General Chemistry I and II and Qualitative Analysis | (8) |
| Math 151, 152 | Fund. Concepts of Chemistry, Inorganic Chemistry | (6) |
| Math 161, 162 | Quantitative & Qualitative Analysis Labs | (3) |

**B.S. WITH MAJOR IN APPLIED PHYSICS***

Required 125 credit hours, including:

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

II. The following curriculum:

| Required 41 major hours, including: |
| Math 205, 206, 208 | General Physics | (12) |
| Physics 317 | Mechanics | (3) |
| Physics 327 | Electricity and Magnetism | (3) |
| Physics 324 | Thermal Physics | (3) |
| Physics 325 | Optics | (3) |
| Physics 325L | Optics Laboratory | (1) |
| Physics 328 | Electricity and Magnetism | (3) |
| Physics 428 | Modern Physics Laboratory | (2) |
| Math 490 | Special Problems | (1-3) |

**MINOR IN PHYSICS**

Required 20 hours in Physics. The specific courses should be in consultation with the department.

**Center for Teaching and Learning**

**B.S.ED. WITH MAJOR IN PHYSICS**

Required 125 hours, including:

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

II. The Center for Teaching and Learning Program in Secondary Education, see page 77.

III. The Following Program:

| Physics 205, 206, 208 | General Physics | (12) |
| Physics 317 | Mechanics | (3) |
| Physics 327 | Electricity and Magnetism | (3) |
| Physics 324 | Thermal Physics | (3) |
| Physics 325 | Optics | (3) |
| Physics 325L | Optics Laboratory | (1) |
| Physics 328 | Electricity and Magnetism | (3) |
| Physics 428 | Modern Physics Laboratory | (2) |
| Math 351 | Elem. Differential Equations | (3) |

**Courses**

101, 102. Introductory College Physics. 8 credits. Prerequisite for 102 is Physics 101. Three hours of lecture-recitation and two hours laboratory per week. Students in the Upper Level are not admitted to this course for credit except in cases where specific departmental curricula require it. General physics for those who do not plan to take advanced courses in science. F.S.

171. Natural Science—Physics. 4 credits. Three hours of lecture-recitation and two hours laboratory per week. Prerequisites: None. A study of light, the solar system, stars and galaxies leads the student to learn how science develops an understanding of nature. F.S.

200. Physics for Poets. 3 credits. Prerequisites: None. Knowledge of elementary algebra is recommended. An introduction to the fundamental concepts of physics, especially those discovered and developed in the twentieth century. The course is designed for students who have a limited or non-existent mathematical background, and it attempts to show the picture of the universe which physics offers. On demand...
203, 204. General Physics. 8 credits. Prerequisite for Physics 204 is Physics 203. Four hours lecture-recitation and two hours laboratory per week. Prerequisite: College algebra or equivalent. Recommended course for pre-medical students. A student may not receive credit for Physics 203, 204 and also Physics 101, 102. F, S

205, 206, 208. General Physics. 12 credits. Four hours lecture-recitation and two hours laboratory per week. Prerequisites: Math 211 for Physics 205, Math 212 and Physics 205 for Physics 206, and Math 213 and Physics 206 for Physics 208. A sequence for students majoring in a science or engineering. Topics discussed are: classical mechanics, electricity and magnetism, optics, thermodynamics, and introductory modern physics. A student may not receive credit for Physics 205,206 and also Physics 203,204 or Physics 101,102. F, S

223. Introduction to Astronomy. 3 credits. Study of the universe: solar system, stars and stellar evolution, black holes, galaxies, big bang cosmology, and the expansion of the universe. F, S


256. The Science of Music and Sound. 4 credits. Three hours of lecture and two hours laboratory per week. Prerequisites: None. Knowledge of elementary algebra is recommended. A study of the production, analysis, and perception of musical sounds. On demand.

290. Selected Topics in Physics. 1 credit. Prerequisite: 8 hours of College Physics or consent of instructor. May be repeated to a maximum of 4 hours. Credit may not be applied toward a major in physics. On demand.

303. Applied Physics Laboratory. 2 credits. Prerequisite: Phys 208 and Math 351. Laboratory introduction to a variety of fabrication and measurement techniques. S, F, S/2

311. Foundations of Contemporary Physics. 4 credits. Three hours of lecture-recitation and two hours laboratory per week. Prerequisite: 8 hours of College Physics or consent of instructor. A semi-quantitative study of the development of contemporary physics. Physics 311 may not be taken for credit if credit has been received for Physics 208. On demand.

317. Mechanics. 3 credits. Prerequisites: Physics 205,206 or approval of department. Motion of a single particle, central forces and simple oscillatory systems. F/2

318. Mechanics. 3 credits. Prerequisites: Physics 317 or approval of department. A continuation of Physics 317. Rigid body motion, wave propagation, generalized coordinates and fluid dynamics. S, F/2

320. Elementary Solid State Physics. 3 credits. Prerequisite: Phys 208 or approval of department. An introduction to solid state physics with emphasis on applications. F, S

321. Methods of Experimental Physics. 2 credits. Prerequisite: Two semesters of general physics or approval of the department. Assembly and design of electronic circuits with emphasis on their application to instruments used in scientific measurements. On demand.

324. Thermal Physics. 3 credits. Prerequisites: Physics 205,206,208 or approval of department. Thermodynamics with an introduction to statistical physics. S, S/2

325. Optics. 3 credits. Prerequisites: Physics 205,206,208 or approval of department. Geometrical and physical optics with an emphasis on physical optics. S

325L. Optics Laboratory. 1 credit. Corequisite: Physics 325. Laboratory to accompany Physics 325. S

327. Electricity and Magnetism. 3 credits. Prerequisites: Physics 205,206 or approval of department. A quantitative treatment of electro-magnetic theory with an introduction to Maxwell's equations. F/2


401. Instrument Design. 3 credits. Prerequisite: senior standing. Systematic study and optimal design and/or fabrication of instruments and devices. F

428. Modern Physics Laboratory. 2 credits. Prerequisite: Physics 208 or approval of department. A repetition of the experiments which led to the current state of physics. F

431. Introductory Quantum Physics. 3 credits. Prerequisite: Physics 208 or approval of department. An introduction to quantum mechanics with applications to atomic structure. S, F

434. Nuclear Physics. 3 credits. Prerequisite: Physics 208 or approval of department. An introduction to the theory of the atomic nucleus. On demand.

437. Introductory Solid State Physics. 3 credits. Prerequisite: approval of department. Selected topics from solid state physics. S, F


490. Special Problems. 1-3 credits. Prerequisite: approval of the department. F, S

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The Department of Political Science offers undergraduate programs leading to the Bachelor of Arts with a major in Political Science, and to the Bachelor of Science in Public Administration with an emphasis on general 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. The undergraduate programs are designed to provide students with a broad background in the liberal arts and the administrative sciences, and to prepare them for governmental service, graduate studies, law school, and teaching.

The Department of Political Science also offers graduate programs through the Graduate School leading to the M.A. and the M.P.A.

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**Political Science and Public Administration (PSci)**

R. Kweit (Chair), Baker, Coker, Cozzetto, M. Kweit, Markovich, Pedeliski, and Pynn

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The College of Arts and Sciences

B.A. WITH MAJOR IN POLITICAL SCIENCE

Required 125 hours, including:

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

II. The Following Curriculum:

Required 28 credits, including:

<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
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<tbody>
<tr>
<td>PSci 101 ...........................American Government I........................................(3)</td>
<td></td>
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<tr>
<td>PSci 102 ...........................American Government II ........................................(3)</td>
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<tr>
<td>PSci 220 ...........................International Politics ....................................(3)</td>
<td></td>
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<tr>
<td>PSci 225 ...........................Comparative Politics ....................................(3)</td>
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<tr>
<td>PSci 231 ...........................Politics of Public Administration ........................(3)</td>
<td></td>
</tr>
<tr>
<td>PSci 300 ...........................Introduction to Research Methods ........................(3)</td>
<td></td>
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<tr>
<td>PSci 311 ...........................Political Thought I ............................................(3)</td>
<td></td>
</tr>
<tr>
<td>PSci 312 ...........................Political Thought II ..........................................(3)</td>
<td></td>
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<tr>
<td>PSci 405 ...........................Political Behavior .............................................(3)</td>
<td></td>
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<tr>
<td>PSci 432 ...........................Public Policy Making Process ............................(3)</td>
<td></td>
</tr>
<tr>
<td>PSci 495 ...........................Senior Colloquium .............................................(1)</td>
<td></td>
</tr>
<tr>
<td>PSci ..................................Electives .........................................................(6)</td>
<td></td>
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</tbody>
</table>

Required in other departments:

Level II proficiency in a foreign language.
Economics 210 Introduction to Business and Economic Statistics or equivalent (3 credits)
Economics 202 Introduction to Macroeconomics (3 credits)

MINOR IN POLITICAL SCIENCE

Required 21 hours, including:

Select 6 hours from:

<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
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<tbody>
<tr>
<td>PSci 101 ...........................American Government I........................................(3)</td>
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<tr>
<td>PSci 220 ...........................International Politics ....................................(3)</td>
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<tr>
<td>PSci 225 ...........................Comparative Politics ....................................(3)</td>
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<tr>
<td>PSci 231 ...........................Politics of Public Administration ........................(3)</td>
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<tr>
<td>PSci 300 ...........................Research Methods ............................................(3)</td>
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<tr>
<td>Political Theory ........................(PSci 311 or PSci 312 or PSci 318)................(3)</td>
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<tr>
<td>Constitutional Law........................(PSci 305 or PSci 306)............................(3)</td>
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University of North Dakota

PSCI 402 State and Local Government ...........................................(3)
PSCI 405 Political Behavior .........................................................(3)

6 additional hours of electives from 300 level and above courses in Political Science which may include the courses listed.

College of Business and Public Administration

B.S., B.A. WITH MAJOR IN PUBLIC ADMINISTRATION

Required 125 hours, 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

Acc 200, 201 Elements of Accounting I & II .......(6)
BIVED 217 Fundamentals of Management ..............(4)
Econ 201 Principles of Microeconomics .................(3)
Econ 202 Principles of Macroeconomics .................(3)
Econ 210 Introduction to Business and Economics Statistics ..................................................(3)
Math 103 College Algebra ....................................................(3)
or Math 104 Finite Mathematics ............................................(3)
PSCI 101, 102 American Government I, II .................(6)
Comm 161 Fundamentals of Public Speaking ..............(3)
PSCI 231 Politics of Public Administration ...................(3)

IV. GENERAL PUBLIC ADMINISTRATION

Required:
PSCI 300 Intro Research Methods .........................................(3)
PSCI 309 Legislative and Executive Processes .................(3)
PSCI 404 Urban Politics and Administration .................(3)
PSCI 432 Public Policy Making Process .......................(3)
PSCI 437 Administrative Processes .................................(3)
PSCI 493 Professional Projects in Public Administration ......(1)
Econ 324 Public Finance ....................................................(3)
Mgmt 300 Principles of Management ............................(3)
Mgmt 319 Organizational Behavior .....................................(3)
or
Soc 431 Organizations and Behavior .....................................(3)
Mgmt 400 Organizational Theory and Analysis ..............(3)

Recommended:
PSCI 480 Administrative Internship .................................(2-6)
Acc 400 Business Accounting .............................................(3)
Act 315 Business in the Legal Environment ...................(3)
BIVED 305 Microcomputer Applications for Business ......(3)
Econ 308 Intermediate Microeconomic Theory ..........(3)
Econ 309 Intermediate Macroeconomic Theory ..................................................(3)
Econ 341 Labor Economics and Labor Relations ...........(3)
Econ 355 Government Regulation of Business ..............(3)
Mgmt 309 Quantitative Approaches to Decision Making ... (3)
PSCI 309 Management Decision ............................................(3)
Psy 301 Industrial & Organizational Psychology ..............(3)
Soc 334 Social Participation ...............................................(3)
Soc 361 Social Psychology ..................................................(3)
SWK 418 Social Policy Analysis ...........................................(3)
SWK 458 Human Services Administration ....................(3)

Electives (consult with adviser for Public Administration) courses in political science, management, economics, history, sociology, anthropology, geography, and other fields.

MINOR IN PUBLIC ADMINISTRATION

Required 21 hours, including:
PSCI 231 Politics of Public Administration .......................(3)
PSCI 300 Introduction to Research Methods, or its Equivalent ..................................................(3)
PSCI 404 Urban Politics and Administration ...................(3)
PSCI 432 Public Policy Making Process .......................(3)
PSCI 437 Administrative Processes .................................(3)

Select 6 hours from:
PSCI 399 Legislative and Executive Processes ...............(3)
PSCI 433 Administrator and Public Affairs .....................(3)
PSCI 480 Administrative Internship ...............................(2-6)
Econ 324 Public Finance ....................................................(3)
Mgmt 305 Managerial Concepts, or its Equivalent ........(3)
(BPA students may not use Mgmt 305)
Soc 431 Organizations and Behavior ............................(3)

Other Courses may be elected with the consent of the Department.

Courses

101. American Government I. 3 credits. An introduction to political science through the study of the American political system: The Constitution; the political processes; the structure, powers and procedures of the Presidency, Congress, and the Judiciary. F/S

102. American Government II. 3 credits. Structure, function and problems of state and local government; executive, legislative, and judicial processes; federalism and metropolitan government. F/S

220. International Politics. 3 credits. An introduction to international politics with emphasis on the international system, the major actors, the struggle for power, and the struggle for order. S

225. Comparative Politics. 3 credits. An introduction to comparative politics with emphasis on the democratic systems of Europe. F

231. Politics of Public Administration. 3 credits. Prerequisite: PSCI 101. Introduction to the development of public administration in the United States and to the concepts and methods used in its practice. The political aspects of the public bureaucracy and contemporary issues are also highlighted. F

300. Introduction to Research Methods. 3 credits. Prerequisite: a statistics course prior to enrollment. General consideration of research methods and data analysis in political science and the social sciences. F

305. American Constitution — Governmental Powers. 3 credits. American Constitution studied in light of U.S. Supreme Court decisions and interpretations which focus on civil liberties; equal protections, due process, First Amendment rights.

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 sixteenth 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 sixteenth 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. Prerequisite: PSCI 220 or consent of instructor. 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. Prerequisite: PSCI 225 or consent of instructor. 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: Permission of department to enroll. Compensated on-the-job experience in various areas of political science. S-U grading only. F/S

339. Survey of Public Administration. 3 credits. Prerequisite: PSCI 101. Introduction to the development of public administration in the United States. Introduces students to concepts and methods used in its practice. The political aspects of public bureaucracy and contemporary issues are also highlighted. For non-majors, credit can not be applied to B.S.P.A. or Political Science majors. (No credit if PSCI 231 has been completed or audited) F

393. Problems in Political Science. 1-3 credits. Maximum 6 credits. Studies special topics under the direction and supervision of a member of the staff; prior consent of instructor required before enrollment. F/S

402. Problem in State and Local Government. 3 credits. Undergraduate seminar and research course covering major problems confronting state and local governments in institutional design, decision-making systems and public policy. On demand.

404. Urban Politics and Administration. 3 credits. Prerequisite: PSCI 101. Analysis of the socio-economic context of urban America and its impact on politics, policy, and administration. Once per year. F/S

405. Political Behavior. 3 credits. Prerequisite: PSCI 101. A review of the role of the public in a democracy focusing on the formation and content of public opinion, the means of communicating that opinion to government, and the impact of that opinion on policy. F

432. Public Policy Making Process. 3 credits. Prerequisite: PSCI 101. Two-thirds of the class is devoted to understanding the stages of the policy process: (1) Problem Identification and Agenda Setting; (2) Policy Formulation; (3) Policy Adoption; (4) Policy Implementation; and (5) Policy Evaluation. The last third applies the model to substantive policy areas such as health, environment, education. S

433. The Administrator and Public Affairs. 3 credits. Designed to make students aware of the political and community implications of public administration in a democratic society. Reviews and analyzes the political environment of public administration and considers various techniques for accommodating democratic influences in the administrative process. S/E

437. Administrative Processes. 3 credits. Prerequisite: PSCI 231 or 339. Explanation of theoretical and practical aspects of personnel and financial management in the public sector. S
MINOR IN PSYCHOLOGY

Required 20 hours, including:

Psy 101..................Introduction to Psychology. (3)
Psy 241..................Introduction to Statistics. (4)
Psy 303..................Research Methods in Psychology. (4)
Psy 370..................Abnormal Psychology. (3)

Students receiving teaching certification in secondary education (except CDIB) must also include:

Psy 241..................Introduction to Statistics. (4)
Psy 303..................Research Methods in Psychology. (4)

Courses

Psychology 101 is the prerequisite for all other Psychology courses.

101. Introduction to Psychology, 3 credits. Basic prerequisite to all other Psychology courses. Nature and scope of psychology as a science and a profession. F-S
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: Mathematics 103 or 104. Descriptive and inferential statistics as applied to psychological measurement and experimentation. F-S
251. Developmental Psychology, 4 credits. Intellectual, emotional and social development of the normal individual; significance of childhood experience for later development. F-S
301. Industrial and Organizational Psychology, 3 credits. Prerequisite: any basic statistics course. Selection, training, motivation, leadership, job satisfaction, human engineering and working environments as applied and induced. F-S
303. Research Methods in Psychology, 4 credits. Prerequisites: Mathematics 103 or 104, Psychology 241. Methods of gathering knowledge in psychology with special emphasis on the experimental method. F-S
331. Behavior Modification, 3 credits. Theory and practice in the application of operant and classical conditioning procedures to humans in applied settings. F
355. Adulthood and Aging, 3 credits. Prerequisite: Psy 101 plus 3 credits of Psychology. Basic findings and theoretical issues in the study of human aging from biopsychological and socio-psychological perspectives with an emphasis on the individual. F
366. Introduction to Personality, 3 credits. Examination of basic concepts in the field of personality. F-S
361. Social Psychology, 4 credits. (See Sociology 361). F-S
370. Abnormal Psychology, 3 credits. Prerequisites: Psychology 101 and three additional hours of psychology. Systematic study of behavior pathology, with primary emphasis on etiology and symptoms of abnormal psychology. F-S
405. History and Systems of Psychology, 3 credits. Prerequisite: Psychology 303. A consideration of the historical background and development of psychology and a survey of contemporary psychological theories. F
421. Individual and Group Differences, 3 credits. Prerequisites: Psychology 241 and 251 or consent of instructor. Origins and consequences of psychological differences among individuals and groups with special emphasis on sex differences and racial differences. S/2
433. Psychology of Learning, 3 credits. Prerequisite: Psychology 303. Principles and characteristics of learning. F-S
434. Motivation and Emotion, 3 credits. Prerequisite: Psychology 303. Survey of theories and experimental work on motivation and emotion. S/2
435. Physiological Psychology, 3 credits. Prerequisites: Biology 101,102, Psychology 303, or consent of instructor. Physiological basis of psychological processes. F
436. Perception, 4 credits. Prerequisite: Psychology 303. Perceptual basis of behavior. F/S
438. Brain and Behavior, 3 credits. Prerequisites: 303, Biology, 101,102 or consent of instructor. The physiological and anatomical mechanisms of learning and memory. S/2
458. Child Clinical Psychology, 3 credits. Prerequisites: Psy 251 and 370 and Instructor consent. Child psychopathology, etiology, behavior, and treatment. S/2
451. Advanced Developmental Psychology, 3 credits. Prerequisites: Psychology 251 and Psychology 303. In depth analysis of topics covering the entire lifespan, from genetics and prenatal influences to death and dying. Every other year.
460. Advanced Social Psychology, 3 credits. Prerequisites: Psychology 303, 361 (or Sociology 361). In depth examination of the theoretical and empirical literature in social psychology focusing on attitudes, stereotyping and prejudice, interpersonal relationships, social cognition, personality and the self, and group behavior. F/S
470. Introduction to Clinical Psychology, 3 credits. Prerequisites: Psychology 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
491. Individual Projects in Psychology, 1-4 credits. Repeatable. F/S
492. Tutoring in Psychology, 2 credits. Repeatable to 4 credits. Prerequisite: consent of instructor. S-U grading only. F-S
493. Readings in Psychology, 1-3 credits. Repeatable to 8 credits. Prerequisite: consent of instructor. F-S
494. Special Topics in Psychology, 1-3 credits. Prerequisite: consent of instructor. On demand.
495. Seminar in Psychology, 1-3 credits. Prerequisite: consent of instructor. On demand.
496. Senior Seminar, 1 credit. Prerequisite: Psy 303. Senior Seminar is intended as an opportunity to discuss and integrate recent trends in the field of psychology. The
Russian Studies  
R. Koprince (Advisor)

College of Arts and Sciences

B.A. WITH MAJOR IN RUSSIAN STUDIES

Required 125 hours, including:

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

II. The Following Curriculum:

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Hours</th>
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<tbody>
<tr>
<td>Econ 331</td>
<td>Comparative Economic Systems</td>
<td>3</td>
</tr>
<tr>
<td>Hist 416</td>
<td>Russia to 1855</td>
<td>3</td>
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<tr>
<td>Hist 417</td>
<td>Russia since 1855</td>
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<td>Lang 101, 102</td>
<td>Beginning Russian</td>
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<td>Lang 100, 102</td>
<td>Second-Year Russian</td>
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<td>Lang 301, 302</td>
<td>Third-Year Russian</td>
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3 hours from:

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<tbody>
<tr>
<td>Econ 360</td>
<td>Marxist Economic Analysis</td>
<td>3</td>
</tr>
<tr>
<td>Lang 305, 306</td>
<td>Reading and Composition</td>
<td>4</td>
</tr>
<tr>
<td>Lang 490</td>
<td>Individual Russian Readings</td>
<td>1-3</td>
</tr>
<tr>
<td>PSci 323</td>
<td>Issues in Comparative Politics</td>
<td>3</td>
</tr>
</tbody>
</table>

With the permission of the Russian Studies advisor, other courses may be elected to fulfill the Russian Studies degree requirement.

MINOR IN RUSSIAN STUDIES

Required 125 hours, including:

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hist 416</td>
<td>Russia to 1855</td>
<td>3</td>
</tr>
<tr>
<td>Hist 417</td>
<td>Russia since 1855</td>
<td>3</td>
</tr>
<tr>
<td>Lang 101, 102</td>
<td>Beginning Russian</td>
<td>8</td>
</tr>
<tr>
<td>Lang 201, 202</td>
<td>Second-Year Russian</td>
<td>8</td>
</tr>
</tbody>
</table>

9 hours, not all in one department, from:

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>Econ 331</td>
<td>Comparative Economic Systems</td>
<td>3</td>
</tr>
<tr>
<td>Econ 360</td>
<td>Marxist Economic Analysis</td>
<td>3</td>
</tr>
<tr>
<td>Lang 301, 302</td>
<td>Third-Year Russian</td>
<td>6</td>
</tr>
<tr>
<td>Lang 305, 306</td>
<td>Reading and Composition</td>
<td>4</td>
</tr>
<tr>
<td>Lang 490</td>
<td>Individual Russian Readings</td>
<td>1-3</td>
</tr>
<tr>
<td>PSci 320</td>
<td>Foreign Policies of Major Powers</td>
<td>3</td>
</tr>
<tr>
<td>PSci 323</td>
<td>Issues in Comparative Politics</td>
<td>3</td>
</tr>
</tbody>
</table>

Scandinavian Studies  
P. Thorson (Advisor)

College of Arts and Sciences

MINOR IN SCANDINAVIAN STUDIES

Required 28 hours, including:

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lang 101, 102</td>
<td>Beginning Norwegian</td>
<td>8</td>
</tr>
<tr>
<td>Lang 201, 202</td>
<td>Second-Year Norwegian</td>
<td>8</td>
</tr>
<tr>
<td>Hist 221</td>
<td>The Scandinavian Countries Since 1500</td>
<td>3</td>
</tr>
</tbody>
</table>

9 hours from the following:

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lang 301, 302</td>
<td>Advanced Norwegian</td>
<td>6</td>
</tr>
<tr>
<td>Lang 401, 402</td>
<td>Norwegian Literature</td>
<td>6</td>
</tr>
<tr>
<td>Lang 403</td>
<td>Ibsen in English</td>
<td>3</td>
</tr>
</tbody>
</table>

or

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lang 404</td>
<td>Ibsen in English</td>
<td>3</td>
</tr>
<tr>
<td>Lang 490</td>
<td>Individual Norwegian Readings</td>
<td>1-3</td>
</tr>
</tbody>
</table>

Other courses appropriate to the program selected with advisor.

For the benefit of the students in the Scandinavian field, a Scandinavian Cultural Center is located on the UND campus. Besides an extensive book collection, the center has numerous tapes, records and cultural programs on Scandinavia. A listening room has been established with a gift from Oscar Lunseth. A number of scholarships are available for study in Scandinavia.

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 Center for Teaching and Learning offices at an early date.

Center for Teaching and Learning  
A. Tyree and D. Xu, Advisors

B.S.E.D. WITH COMPOSITE MAJOR IN SOCIAL SCIENCE

Required 125 hours, including:

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

II. The Center for Teaching and Learning Requirements, see page 54.

III. The Following Curriculum:

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>Anth 171</td>
<td>Introduction to Cultural Anthropology</td>
<td>3</td>
</tr>
<tr>
<td>Econ 105</td>
<td>Elements of Economics</td>
<td>3</td>
</tr>
<tr>
<td>Econ 420</td>
<td>Economics Education</td>
<td>3</td>
</tr>
<tr>
<td>Geog 161</td>
<td>World Regional Geography</td>
<td>3</td>
</tr>
<tr>
<td>Geog 319</td>
<td>Geography for Teachers</td>
<td>2</td>
</tr>
<tr>
<td>Hist 101</td>
<td>Western Civilization to 1500</td>
<td>3</td>
</tr>
<tr>
<td>Hist 102</td>
<td>Western Civilization since 1500</td>
<td>3</td>
</tr>
<tr>
<td>Hist 103</td>
<td>United States since 1877</td>
<td>3</td>
</tr>
<tr>
<td>Hist 104</td>
<td>United States since 1877</td>
<td>3</td>
</tr>
<tr>
<td>PSci 101</td>
<td>American Government I</td>
<td>3</td>
</tr>
<tr>
<td>PSci Electives</td>
<td></td>
<td>3</td>
</tr>
</tbody>
</table>

An area of concentration from below is required: 12-18 hours

All courses to be selected with approval of faculty advisors.

Anthropology 12 hours.
Economics 12 hours.
Geography (Human or Cultural) 13 hours.
History 12 hours.
American History 12 hours.
Political Science 12 hours.
Psychology—minimum of 18 hours to be determined by Psychology Department.
Sociology 12 hours.
Social Work (SWk)

M. Jacobsen (Chair), Ahmed, Chandy, Dawes, Fry, Furman, Haagenstad, Haga, Heitkamp, B. Jacobsen, Klinkhammer, Muhlhauser, Perry, Remboldt, and Rodenhiser

The Department of Social Work holds undergraduate accreditation status with the Council on Social Work Education. 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. Each student must apply for such advanced standing independently.

The curriculum includes a broad liberal arts foundation for subsequent social work courses. Social work courses are open to sophomores, juniors and seniors. The principal educational objective of the social work program is to prepare students for beginning social work practice. Secondary educational objectives are to prepare students for graduate social work education or other graduate programs in human service related fields, and to prepare undergraduate students for active participation, as knowledgeable citizens in the social, political, and civic processes which facilitate the well being of all citizens, groups, communities, and institutions.

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:

a. ability to communicate in such a manner as to facilitate a helping relationship in the delivery of services.

b. mobility sufficient to perform essential work-related activities.

c. personal resources (psychological, social and intellectual) that facilitate the use of self in a helping manner in a social work setting.

Students are required to make application for admission to the social work program. Criteria for admission are as follows:

1. completion of 45 semester hours of course work.
2. attainment of a cumulative GPA of 2.40 or better.
3. completion of four social work courses: SWk 200 Intro to Helping Skills, SWk 246 Human Behavior in the Social Environment, SWk 255 Social Work in a Modern Society, SWk 306 Social Welfare — 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.
4. completion of Biol 100 Principles of Biology, Biol 100L Principles of Biology Lab; PSCI 101 American Government I; Psy 101 Introduction to Psychology, and Soc 101 Introduction to Sociology.
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).

Admission to the social work program is on a competitive basis. The number of applicants that will be admitted is determined by the number of suitable field practicum placements available to undergraduate social work students. Acceptance into the program will be based upon the applicant’s grade point average, written statement, personal interview, and other personal qualifications.

Students who have previously been admitted to the social work program but have not enrolled in a social work base course for six consecutive semesters (excluding summer sessions) must re-apply for admission to the program before enrolling in any social work base course. In accordance with accreditation standards, departmental requirements at the time of readmission shall constitute the student’s required program of study.

Social work majors must achieve an overall GPA of 2.40 and a grade of "C" or better in all social work courses (base) in which they were enrolled prior to: 1) admission; and 2) Field Instruction.

In the event a student transfers into the social work program from an accredited (CSWE) undergraduate social work program (or one in candidacy status), the student must complete at least thirty semester hours at UND. Twenty of those hours must be in required social work courses (base). In the event a student wishes to transfer credit for social work courses completed at the previous institution, course equivalence will be determined by the UND course instructor and the department chairperson.

There are special requirements while enrolled in SWk 487: Field Instruction. Many field instruction agencies are located outside the Grand Forks area. The student is responsible for travel, housing and food costs in addition to the payment of tuition while in the semester-long placement.

The faculty reserves the right not to place a student in a field instruction agency and to remove a student from SWk 487: Field Instruction if performance is unsatisfactory. Students must complete the field practicum experience during the last semester in which they are enrolled prior to graduation.

College for Human Resources Development
B.S. IN SOCIAL WORK
Required 125 hours including:
I. General Education Requirements, see pages 27-31.
II. College for Human Resources Requirements, see page 49.
III. The Following Curriculum.

A. Base (41 hours)

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>SWK 200</td>
<td>Intro to Helping Skills</td>
<td>(2)</td>
</tr>
<tr>
<td>SWK 246</td>
<td>Human Behavior in Social Environment</td>
<td>(4)</td>
</tr>
<tr>
<td>SWK 255</td>
<td>Social Work in a Modern Society</td>
<td>(3)</td>
</tr>
<tr>
<td>SWK 306</td>
<td>Social Welfare</td>
<td>(4)</td>
</tr>
<tr>
<td>SWK 322</td>
<td>Social Work Practice (Intro)</td>
<td>(2)</td>
</tr>
<tr>
<td>SWK 333</td>
<td>Research &amp; Statistics in Social Work I</td>
<td>(3)</td>
</tr>
<tr>
<td>SWK 334</td>
<td>Research &amp; Statistics in Social Work II</td>
<td>(3)</td>
</tr>
<tr>
<td>SWK 450</td>
<td>Social Work Practice (Micro)</td>
<td>(3)</td>
</tr>
<tr>
<td>SWK 454</td>
<td>Social Work Practice (Macro)</td>
<td>(3)</td>
</tr>
<tr>
<td>SWK 460</td>
<td>Senior Seminar</td>
<td>(2)</td>
</tr>
<tr>
<td>SWK 487</td>
<td>Field Instruction</td>
<td>(4-10)</td>
</tr>
<tr>
<td>SWK 488</td>
<td>Field Instruction Seminar</td>
<td>(1-2)</td>
</tr>
</tbody>
</table>

B. Required in other departments (38)

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>Biol 100</td>
<td>Principles of Biology</td>
<td>(4)</td>
</tr>
<tr>
<td>Com 161</td>
<td>Fundamentals of Public Speaking</td>
<td>(3)</td>
</tr>
<tr>
<td>Economics</td>
<td></td>
<td>(3)</td>
</tr>
<tr>
<td>Political Science 101</td>
<td>American Government I</td>
<td>(3)</td>
</tr>
<tr>
<td>History</td>
<td>(three credit hour course only)</td>
<td>(3)</td>
</tr>
<tr>
<td>Literature (English Department)</td>
<td></td>
<td>(4)</td>
</tr>
<tr>
<td>Psychology (upper division)</td>
<td></td>
<td>(6)</td>
</tr>
<tr>
<td>Sociology (upper division)</td>
<td></td>
<td>(6)</td>
</tr>
</tbody>
</table>

Cultural Diversity (6)*

*Selected from the following:

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>Anth 171</td>
<td>Intro to Cultural Anthropology</td>
<td>(3)</td>
</tr>
<tr>
<td>Anth 379</td>
<td>Culture Area Studies</td>
<td>(3)</td>
</tr>
<tr>
<td>Anth 465</td>
<td>Culture, Illness &amp; Health</td>
<td>(3)</td>
</tr>
<tr>
<td>A&amp;S 225</td>
<td>Intro to Study of Women</td>
<td>(3)</td>
</tr>
<tr>
<td>Engl 357</td>
<td>Women Writers &amp; Readers</td>
<td>(2-4)</td>
</tr>
<tr>
<td>Engl 365</td>
<td>Black American Writers</td>
<td>(3)</td>
</tr>
<tr>
<td>Engl 367</td>
<td>American Indian Literature</td>
<td>(3)</td>
</tr>
<tr>
<td>IS 121</td>
<td>Intro to Indian Studies</td>
<td>(3)</td>
</tr>
<tr>
<td>IS 203</td>
<td>Intro Survey of Chippewa History</td>
<td>(3)</td>
</tr>
<tr>
<td>IS 207</td>
<td>History of Three Affiliated Tribes</td>
<td>(3)</td>
</tr>
<tr>
<td>IS 235</td>
<td>Cross-Cultural Seminar</td>
<td>(2)</td>
</tr>
<tr>
<td>IS 301</td>
<td>History of Western Sioux</td>
<td>(3)</td>
</tr>
<tr>
<td>IS 330</td>
<td>Contemp Plains Indian Culture</td>
<td>(3)</td>
</tr>
<tr>
<td>IS 345</td>
<td>Contemp Amer Indian Issues</td>
<td>(3)</td>
</tr>
<tr>
<td>SWK 358</td>
<td>Contemp Issues in Rehab</td>
<td>(2)</td>
</tr>
<tr>
<td>Soc 436</td>
<td>Social Inequality</td>
<td>(3)</td>
</tr>
</tbody>
</table>

A total of 38 hours is required and a given course may not be used to satisfy more than one requirement within this section.

Courses used to fulfill the approved minor requirements may also be used to meet the above requirements whenever appropriate and applicable.
MINORS

Students are encouraged to declare either a University approved minor or, in conjunction with their 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 hours including:

1) Twelve hours from the following:
   - SWK 306: Contemporary Issues in Rehabilitation
   - SWK 455: Rehabilitation Process
   - SWK 457: Vocational Development in Rehabilitation
   - SWK 475: Testing and Assessment

2) Eight hours from the following:
   - Anat 204: Anatomy for Paramedical Personnel
   - CTL 315: Education of Exceptional Students
   - CTL 416: Functional Curricula for Students with Moderate Mental Handicaps
   - CDIS 343: Language Development & Disorders
   - HIPER 360: Recreation/Leisure Services for Individuals with Disabilities
   - HIPER 361: Principles of Therapeutic Recreation
   - PT 493: Psychological Aspects of Disability
   - Psy 370: Abnormal Psychology
   - SWK 311: Child Welfare
   - SWK 342: Social Work and the Legal Process
   - SWK 375: Community Living Topics

GERONTOLOGY MINOR

Required: 20 hours including:

1) The following eleven hours:
   - SWK 354: Orientation to Gerontology
   - Soc 352: Aging
   - Psy 355: Adulthood and Aging
   - Nurs 418: Physical Changes of Aging
   - CDIS 365: Aging and Communication Processes
   - Phil 101: Philosophy and Life
   - IT 206: Recreational Crafts
   - IT 300: Technology, Society and the Individual
   - HIPER 360: Recreation/Leisure Services for Individuals with Disabilities
   - HIPER 362: Leisure Education and Counseling
   - HIPER 363: Recreational Activities for the Elderly
   - Psy 421: Individual and Group Differences
   - Soc 353: Sociology of Death and Dying
   - Soc 354: Medical Sociology
   - FCS 470: Methods of Adult Education
   - FCS 240: Fundamentals of Nutrition
   - HT 361: Personal and Family Finance
   - SWK 246: Human Behavior in the Social Environment
   - SWK 306: Social Welfare

2) Thirteen from the following:
   - SWK 302: Social Problems
   - *Soc 355: The Family (3-4)
   - *Psy 360: Introduction to Personality
   - *Psy 370: Abnormal Psychology
   - *TLT 350: Development and Education of Adolescents
   - PhTs 402: Principles of Drug Action
   - PhTs 490: Readings in Pharma/Drug Abuse
   - Comm 301: Psychology of Communication
   - SWK 309: Medical & Psychosocial Aspects of Disability
   - IS 345: Contemporary American Indian Issues
   - HRD 493: International School of Alcohol Studies
   - *Couns 565: Dynamics of Addiction Seminar: Special topics in Chemical Use/Abuse

CHEMICAL USE/ABUSE AWARENESS MINOR

Required: 20 credit hours including:

1) The following:
   - *SWK 410: Drugs: Addiction Dynamics
   - *PhTs 410: Drugs Subject to Abuse
   - *SWK 355: Drugs and Society

2) Thirteen from the following:
   - SWK 302: Social Problems
   - *Soc 355: The Family (3-4)
   - *Psy 360: Introduction to Personality
   - *Psy 370: Abnormal Psychology
   - *TLT 350: Development and Education of Adolescents
   - PhTs 402: Principles of Drug Action
   - PhTs 490: Readings in Pharma/Drug Abuse
   - Comm 301: Psychology of Communication
   - SWK 309: Medical & Psychosocial Aspects of Disability
   - IS 345: Contemporary American Indian Issues
   - HRD 493: International School of Alcohol Studies
   - *Couns 565: Dynamics of Addiction Seminar: Special topics in Chemical Use/Abuse

Other minors:

Additional minors that the social work major should consider are Criminal Justice Studies, Psychology, Sociology, Spanish, Communication or Indian Studies.

Addiction Counselor Training Program

The Department of Social Work is designated as an Addiction Counselor Training Program by the North Dakota Board of Addiction Counseling Examiners. Students with social work majors who also complete the minor in Chemical Use/Abuse Awareness (required courses for licensing in addiction counseling) and the nine-month practicum in a certified addiction facility. Students must meet all requirements for a social work major in addition to the minor requirements and the addiction practicum requirement. This generally involves a four-year program of study.

The second level relates to graduate students in Counseling who must meet the required graduate program of study, the required addiction courses, and the nine-month practicum. For more complete details, please contact the Department of Social Work or the Department of Counseling.

Courses

200. Introduction to Helping Skills, 2 credits. Prerequisites: Pre-social work majors or consent of instructor. Basic knowledge and skills associated with helping process, including interviewing skills. Special focus will be on the problem solving process and interaction skills used in direct service activities with individuals. F,S

246. Human Behavior in the Social Environment I, 4 credits. Prerequisites: Psychology 101, Biology 100/100L, and Soc 101. The behavioral science basis of human behavior in ecological systems for social work practice; interpretation of biological, psychological, social and cultural determinants of human behavior throughout the life span, including the impact of membership in families, groups, organizations and communities. F,S

255. Social Work in a Modern Society, 3 credits. The growth and development of social work as a profession, its roles, values and goals as a helping profession. F

306. Social Welfare, 4 credits. Prerequisite: Soc 101 and Poli Sci 101. Introduction to the historical development of social welfare, its historical landmarks and the values and ideologies that influence its formulation. Included is information about the composition of the poor and the major social welfare programs that benefit them. The course will also provide a basic analytic model to evaluate social welfare policies. F,S

309. Medical & Psychosocial Aspects of Disability, 3 credits. This course offers a basic medical and psychosocial understanding of disability for human service workers. Primary emphasis is on medical terminology; causes, treatment, and prognosis of major disabilities; and the vocational and psychosocial impact of selected disabling conditions. F,S

311. Child Welfare, 3 credits. Historical perspective of the social, legal and economic status of childhood; study of the special status of childhood in a modern society and the provisions used in an attempt to meet the needs of children. F

322. Social Work Practice (Introduction), 2 credits. Prerequisites: Admission to the department. This course provides the student with an overview of the problem solving model for generalist practice. It is presented as an integral part of the helping framework, using an ecological systems perspective. F

333. Research and Statistics in Social Work I, 3 credits. Prerequisite: Admission to the department or consent of instructor. An orientation to current research practices in social work. Emphasis on the scientific and systematic evaluation of service delivery and personal professional practice. Introduction to statistical analysis within social work practice. F

334. Research and Statistics in Social Work II, 3 credits. Prerequisite: SWK 333. Further development of current research practices in social work. Emphasis on single subject research, group designs, survey research, and other qualitative and quantitative research designs. Advanced statistical analysis techniques, including inferential statistical techniques as utilized in social work practice. S

337. Cooperative Education in Social Work, 1-6 credits. Prerequisite: SWK 450 or consent of the instructor. This course offers students individually supervised field practicum in a human service agency. Students will be expected to integrate social work theory with practice. S-U grading only.

342. Social Work and the Legal Process, 2 credits. An introduction to the human service delivery system and its interface with the legal system. Emphasis will be placed on services in rural communities for adult populations.

354. Orientation to Gerontology, 2 credits. A general introduction to gerontology including the study of the aging process, the relationship between the theoretical and practical aspects of aging, and the interdisciplinary nature of practice. F
Sociology (Soc)

R. Ludtke (Chair), Driscoll, Ender, Hume, Larson, Meyer, Moen, Staples, Stofferahn, Tiemann, and White

This department offers a major and minor in sociology and it houses the program in Criminal Justice. In addition there is a graduate program leading to the M.A. The undergraduate programs in sociology are outlined below.

Graduate seminars, reading courses, and courses with eight or nine as the last digit may be repeated for credit at the discretion of the department. Some sociology background is usually necessary for upper level courses even when no specific prerequisite is listed.

B.A. WITH A MAJOR IN SOCIOLOGY

Required 125 hours, including:

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

II. The following Curriculum:

33 major hours, including:

- Soc 301 Basic Sociology Theory ........................................ (3)
- Soc 323 Sociological Research Methods ................................ (3)
- Soc 326 Sociological Statistics ........................................... (3)
- Soc 361 Social Psychology .................................................. (4)

9 hours from:

- Soc 306 Social Change ......................................................... (3)
- Soc 335 The Family .............................................................. (3)
- Soc 431 Organizations and Behavior ........................................ (3)
- Soc 436 Social Inequality ...................................................... (3)
- Soc 437 Population .............................................................. (3)
- Soc 450 Deviant Behavior ..................................................... (3)

Elections in Sociology ......................................................... (3)

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 hours, including:

- Soc 301 Basic Sociological Theory ........................................ (3)
- Soc 323 Sociological Research Methods ................................ (3)

At least nine of the other credits must be taken in courses numbered 300 and above.

Courses

101. Introduction to Sociology, 3 credits. An introductory analysis of the nature of society, the interrelationships of its component groups and the process whereby society persists and changes. Interpretation of human behavior from the standpoint of the group. Students wishing to earn credit from Sociology 101 by means of independent study should obtain information from the University counseling center on the CLEP examinations administered there. Sociology 101. F,S

102. Social Problems, 3 credits. No prerequisite. A sociological analysis of major social problems in America. F

250. Diversity in American Society, 3 credits. Prerequisite: Soc 101. An introductory survey of the racial, ethnic and cultural mosaic of American Society. Basic theories of intergroup relations, prejudice and discrimination are covered. F

252. Criminology, 3 credits. No prerequisite. 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. No prerequisite. The nature, extent, causes and treatment of delinquency. Delinquency prevention programs are explored. F

301. Basic Sociological Theory, 3 credits. Prerequisite: Soc 101. A survey of the main trends in the history of sociological thought. Basic concepts and frames of reference central to sociological theory and analysis are emphasized. F

306. Social Change, 3 credits. Prerequisites: 6 hours of sociology. Theoretical models of socio-cultural change and stability, examination of changes occurring in American institutions and international relations; technology and social change; procedures and problems of planned change. F

309. Selected Topics, 1-4 credits. Prerequisites to be determined when offered. Selected topics in sociology taught at the junior level. On demand.

323. Sociological Research Methods, 3 credits. Prerequisite: Sociology 301 or CJS 301. A general consideration of methods involved in survey research in the social sciences. F,S

326. Sociological Statistics, 3 credits. No prerequisite. It is assumed that students are able to perform basic mathematical and algebraic operations. This course introduces the student to calculation and application of basic statistical techniques employed by sociologists. F,S

331. Rural Sociology, 3 credits. Prerequisite: consent of instructor. A survey of sociological principles as they relate to rural society with emphasis on rural change and rural development. On demand.

335. The Family, 3 credits. Structure and function of the family, comparative family systems, sociology of family life stages (such as courtship, marriage, parenthood, old age), contemporary trends and problems of the family. F,S

337. Cooperative Education, 1-6 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. Prerequisites: Soc 101 or Soc 102 or Soc 250. The implications of gender for social behavior in cross-cultural and historical perspective as well as in contemporary Western society. F,S

351. Corrections, 3 credits. Prerequisites: Soc 252 or CJS 251. A course describing the correctional system as a part of the criminal justice system. A survey
and discussion of topics dealing with offender behavior, institutional programs and community response to ex-offenders. F

352. Aging. 3 credits. No prerequisite. Socialization theory and its implication for the aging process. S

353. Sociology of Death and Dying. 3 credits. No prerequisite: The study of social aspects of death and dying as they involve the individual, the family, organizations, and life-and-death decisions. S

354. Medical Sociology. 3 credits. Prerequisite: Soc 101 or Soc 102. Sociological analysis of health care definitions and roles, and the organization, availability and control of health care. F

355. Drugs and Society. 3 credits. No prerequisite. Social factors affecting use and control of self-administered psychoactive drugs, including alcohol, cigarettes, marijuana and more illicit substances. Topics include social definitions, causes, controls and consequences of drug problems. S

361. Social Psychology. 4 credits. Prerequisite: Sociology 101 or Psychology 101. (Same course as Psychology 361). The study of individual behavior in its social context: how the individual acts upon the social environment, is acted upon by the environment, and interacts with other individuals. F

407. Political Sociology. 3 credits. Prerequisite: 6 hours of Soc or consent of instructor: Sociological analysis of political and para-political groups; voting behavior; political socialization process; power elites, societies and systems of government; power structures. On demand.

409. Selected Topics in Sociology. 1-4 credits. No prerequisite. Topics in sociology taught at the senior level. On demand.

420. Sociology of Education. 2-3 credits. Prerequisite: 6 hours of Soc or consent of instructor: Analysis of education as a social institution, the school as a social system and the professional and organizational role of teachers, the school and problems of the community. On demand.

431. Organizations and Behavior. 3 credits. Prerequisite: 6 hours of Soc or consent of instructor: A look at the different ways in which organizations can be conceptualized and studied. The relationships between organizational structure and individual behavior are examined. The study of the effects of environments, including other organizations, on organizational goals. The kinds of organizations studied are traditional, industrial, medical, educational, and other types. F

435. Racial and Ethnic Relations. 3 credits. Prerequisite: Soc 301 or CIS 301 and Soc 250. A survey of major U.S. racial and ethnic groups, the histories of their social encounters, and the theoretical perspectives associated with their experiences. On demand.

436. Social Inequality. 3 credits. Prerequisite: 6 hours of Soc or consent of instructor: An examination of various forms and modes of portraying human inequality: An investigation of the role of inequality in human affairs, its measurement and significance. On demand.

437. Population. 3 credits. Prerequisite: 6 hours of Soc or consent of instructor: A basic consideration of formal and social demography. The determinants and consequences of population change. On demand.

450. Deviant Behavior. 3 credits. Prerequisite: 6 hours of Sociology coursework or consent of instructor: This course examines the nature, types and societal reactions to deviant behavior; special emphasis on the process of social typing, regulation of deviance, deviant subcultures, and identities. S

457. Practicum in Sociology. 3 credits. Prerequisites: Soc 301, 323, 326 and at least Junior status. Students enrolled in this practicum will be assigned to work on research under the direction of one or more faculty. The practicum is designed to provide directed research experience for those enrolled. Repeatable for a maximum of 6 credits. F,S

498. Readings in Sociology. 1-5 credits. Prerequisite: Consent of instructor. Designed for students who want instruction in subjects not covered adequately in usual course offerings. Specific arrangements must be made with the instructor prior to registration. F,S

499. Senior Honors Thesis. 1-15 credits; total not to exceed fifteen. Prerequisite: Consent of the Department and approval of the Honors Committee: Supervised independent study culminating in a thesis. F,S

MINOR IN SPACE STUDIES

Required 20 hours, including:
SpSt 200....Introduction to Space Studies...........................................(3)
SpSt 491....Independent Study.................................................................(2)
12 hours from:.................................................................................(12)
SpSt 405....Advanced Space Mission Design.................................(3)
SpSt 410....Life Support Systems.........................................................(3)
SpSt 420....Space Science & Exploration..............................................(3)
SpSt 430....Earth System Science.............................................................(3)
SpSt 440....Commercialization of Space...............................................(3)
SpSt 470....Special Topics in Space Studies........................................(3)
Space Studies electives.................................................................(3)

Courses

200. Introduction to Space Studies. 3 credits. An introduction to a range of topics in space studies including: a brief view of the history of national and international activities; an examination of the fundamentals of space flight and human activity in space; a review of some current problems and issues in the space arena, and a projection of the future course of space activities in the coming decades. F,S

405. Advanced Space Mission Design. 3 credits. A team design project to develop the requirements for a space mission. The specific mission will vary from time to time. Design teams will work on selected portions of the mission. Accompanying lectures will provide background material. S

410. Life Support Systems. 3 credits. Prerequisite: SpSt 200. A review of the physiological effects of living in space including a discussion of current and near-term life support systems equipment for the provision of oxygen, water, food, and radiation protection. In addition, a review will be made of the issues associated with the development of fully closed ecological life-support systems that will be essential to the long-term development of space. F

420. Space Science and Exploration. 3 credits. Prerequisite: SpSt 200. Revolutionary advances that have occurred in astronomy, the earth sciences and planetary science as a result of our entry into space. This course surveys the manned and robotic space missions which have gathered data for this new view of the Universe. The course introduces current concepts in cosmological theory as well as an overview of planetary evolution, solar system dynamical processes and physical characteristics of the planets. S

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

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

470. Special Topics in Space Studies. 1-3 credits. Prerequisite: consent of instructor: Lecture, discussion and readings on specific topics of current interest. May be repeated for credit if topic is different up to a total of 6 credits. Topics have included: Global Change; Life in the Universe; Asteroids, Comets and Meteorites; Planet Venus; and Manned Exploration of Moon and Mars. On demand.

480. Reading in Space Studies. 1-3 credits. Prerequisite: consent of instructor: Directed student readings designed to develop advanced knowledge in a specific area. A written report is required. May be repeated for a total of six credits. F,S

491. Independent Study. 2 credits. Prerequisite: Senior standing and 15 hours of Space Studies. An independent study project culminating in a paper on an approved topic in Space Studies. Requires weekly meetings with the student’s assigned adviser. F,S

Space Studies
( SpSt)
C. Wood (Chair), Gabrynowicz, Jensen, Seielstad, and Williams
Center for Aerospace Sciences
A minor in Space Studies is available to introduce students to the complexities of research, development, and operation of a wide array of space ventures. The multi-disciplinary nature of space activity immediately becomes evident, allowing the student to correlate the space experience with high-tech areas in a major field of study. Political, legal, and scientific aspects are dealt with extensively, and key technologies are introduced. Whether or not the student goes on to a career in the space field, useful knowledge will be gained regarding the development and operation of high-tech systems.

Theatre Arts
(TA)
D. Plato (Chair), Cutler, Engle, Gillette, Jacobs, Jacobsen, and Lindberg
The Department of Theatre Arts strives to promote integration of the creative arts for the campus, community and region by fostering a climate of creativity and cultural enrichment, and instilling an appreciation and understanding of theatre and drama in our students, faculty and
College of Fine Arts and Communication

B.F.A. WITH A MAJOR IN THEATRE ARTS

Required 125 hours including:
I. General Education Requirements, see pages 27-31.
II. College of Fine Arts and Communication Requirements (These requirements are satisfied through specific requirements within the BFA curriculum in III. B.).
III. The Following Curriculum:

A. Core I (courses normally taken during the first two years of study)
   - TA 122  Makeup for Theatre and Television  (1)
   - TA 130  The Art and Craft of Theatre  (3)
   - *TA 200, 480  Rehearsal and Performance  (3)
   - TA 225  Stagecrafts  (3)
   - TA 226  Intro to Design  (3)
   - TA 227  Acting I  (3)
   - TA 250  Readings in Dramatic Literature  (3)

   *At least one hour of TA 200 must be for technical theatre involvement.

B. Core II (courses normally taken during the last two years of study)
   - TA 300  Play Direction I  (3)
   - Engl 315 or 316  Shakespeare  (3)
   - TA 423  History of the Theatre: Classical, Medieval, Renaissance, to the Present  (3)
   - TA 424  History of the Theatre: 17th Century to the Present  (3)
   - Music Courses in History/Theory  (3)
   - VA Courses in History/Theory  (3)
   - Music or VA Courses in Applied Art  (3)
   - TA/Engl Additional courses in Dramatic Literature (may include TA 330)  (6)

C. From one of the following tracks:
   1. Performance
      - a. Required
         - TA 140/140L  Stage Movement  (2)
         - TA 314  Vocal Performance Techniques  (3)
         - TA 180, 280  Studio  (8)
         - 380, 480
         - TA 481  Theatre Practicum  (3)
         - TA 328  Acting II  (3)
         - TA 402  Acting III  (3)

   b. Electives*
      - TA 222  Advanced Makeup  (1)
      - TA 329  Creative Dramatics  (3)
      - TA 329  Children’s Theatre  (3)
      - TA 339  Production Design  (3)
      - TA 404  Acting for the Music Theatre  (3)
      - TA 411  Audition Techniques  (1)
      - TA 425  Play Direction II  (3)
      - TA 490  Senior Project  (4)
      - TA 481  Approved Practicum  (up to 3 additional)
      - 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 HPER, Communications, Music)

*Courses to be approved by advisor

2. Design and Technical Theatre
   - a. Required
      - TA 326  Lighting for Stage I  (2)
      - TA 339  Production Design  (3)
      - TA 426  Scene Design for the Stage  (3)
      - TA 427  Costume Design  (3)
      - TA 481  Theatre Practicum  (7)
      - TA 490  Senior Project  (4)

   b. Electives*
      - TA 222  Advanced Makeup  (1)
      - TA 325  Scene Craft  (3)
      - TA 336  Lighting for Stage II  (2)
      - TA 426  Scene Design for the Stage  (additional 3 credits)
      - TA 427  Costume Design  (additional 3 credits)
      - Additional VA, IT, or Comm courses (in applied areas)
      - Relevant Special Topics Courses

*Courses to be approved by advisor

Theatre Arts
B.A. WITH A MAJOR IN THEATRE ARTS

Required 125 hours including:

I. General Education Requirements, see pages 27-31.
II. Level IV proficiency in a foreign language.
III. The Following Curriculum:

33 hours, including

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<tr>
<th>Course Code</th>
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<th>Credits</th>
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<tr>
<td>TA 130</td>
<td>The Art and Craft of Theatre</td>
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</tr>
<tr>
<td>TA 200</td>
<td>Rehearsal &amp; Performance</td>
<td>2</td>
</tr>
<tr>
<td>TA 225</td>
<td>Stagecrafts</td>
<td>3</td>
</tr>
<tr>
<td>TA 226</td>
<td>Intro to Design</td>
<td>3</td>
</tr>
<tr>
<td>TA 227</td>
<td>Acting I</td>
<td>3</td>
</tr>
<tr>
<td>TA 250</td>
<td>Readings in Dramatic Literature</td>
<td>3</td>
</tr>
<tr>
<td>TA 300</td>
<td>Play Direction I</td>
<td>3</td>
</tr>
<tr>
<td>TA 330</td>
<td>Contemporary Theatre</td>
<td>3</td>
</tr>
<tr>
<td>TA 423</td>
<td>History of Theatre: Classical Medieval &amp; Renaissance</td>
<td>3</td>
</tr>
<tr>
<td>TA 424</td>
<td>History of Theatre: 17th Century to the Present</td>
<td>3</td>
</tr>
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<tr>
<td>TA 222</td>
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<td>TA 223</td>
<td>Advanced Makeup</td>
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<td>TA 229</td>
<td>Beginning Oral Interpretation</td>
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<td>TA 325</td>
<td>Scenecraft</td>
<td>3</td>
</tr>
<tr>
<td>TA 326</td>
<td>Lighting for Stage I</td>
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</tr>
<tr>
<td>TA 328</td>
<td>Acting II</td>
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<tr>
<td>TA 329</td>
<td>Children’s Theatre</td>
<td>3</td>
</tr>
<tr>
<td>TA 425</td>
<td>Play Direction II</td>
<td>3</td>
</tr>
<tr>
<td>TA 426</td>
<td>Scene Design for Stage</td>
<td>3</td>
</tr>
<tr>
<td>TA 427</td>
<td>Costume Design</td>
<td>3</td>
</tr>
<tr>
<td>TA 481</td>
<td>Theatre Practicum</td>
<td>1</td>
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<tr>
<td>TA 498</td>
<td>Playwriting</td>
<td>1</td>
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</table>

MINOR IN THEATRE ARTS

Required 23 hours, including:

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
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<tr>
<td>TA 130</td>
<td>The Art and Craft of Theatre</td>
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<td>TA 225</td>
<td>Stagecrafts</td>
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<td>TA 227</td>
<td>Acting I</td>
<td>3</td>
</tr>
<tr>
<td>TA 300</td>
<td>Play Direction I</td>
<td>3</td>
</tr>
<tr>
<td>TA 423</td>
<td>History of Theatre</td>
<td>3</td>
</tr>
<tr>
<td>TA 424</td>
<td>History of Theatre</td>
<td>3</td>
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<td>3 hours from the following</td>
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<tr>
<td>TA 222</td>
<td>Makeup for Theatre &amp; Television</td>
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<td>TA 229</td>
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<td>TA 326</td>
<td>Lighting for Stage I</td>
<td>2</td>
</tr>
<tr>
<td>TA 328</td>
<td>Acting II</td>
<td>2</td>
</tr>
<tr>
<td>TA 329</td>
<td>Children’s Theatre</td>
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<tr>
<td>TA 425</td>
<td>Play Direction II</td>
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<td>TA 426</td>
<td>Scene Design for Stage</td>
<td>3</td>
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<tr>
<td>TA 481</td>
<td>Theatre Practicum</td>
<td>1</td>
</tr>
<tr>
<td>TA 498</td>
<td>Playwriting</td>
<td>1</td>
</tr>
</tbody>
</table>

Courses

121. Introduction to Theatre Arts. 3 credits. Basic orientation and historical perspective to theatre arts. Study of the roles of playwright, director, actor, designer, producer, and audience members in current theatre practice. Course will include attendance at 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

180. Theatre Performance Studio. 1 credit repeatable to 2. A studio setting wherein students will explore movement, voice, improvisation, audition, stage combat, and the implementation of other relevant acting tools. Frequent use of guest lecturers and guest artists. F-S

200. Rehearsal and Performance. 1 credit. Participation in theatre pre-performance and performance capacities, both technical and acting, under faculty direction. Repeatable to 8 hours. F-S

210. Selected Topics in Theatre. 1-3 credits. Repeatable up to 9 credits. Topics of special interest to faculty and students, such as Stage Management, and others. On demand.

222. Advanced Makeup. 1 credit. Prerequisite: TA 122 or consent of instructor. A continuation of 122 with emphasis on various prosthetic techniques, mask building, and non-realistic styles.

225. Stagecraft. 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 are tied to lab experience in University productions. S

226. Intro to Design. 3 credits. Introduces the student to the principles and elements of design, the design process, and the methods of presentation of design ideas. F

227. Acting I. 3 credits. Basic principles of acting with emphasis on movement; basic character development through improvisation and script. F-S

229. Creative Dramatics. 3 credits. The study of theatre games, improvisations and techniques as they relate to the education and development of creativity in children. On demand.

250. Readings in Dramatic Literature. 3 credits. Readings in dramatic literature from ancient to contemporary, with a strong emphasis on written and verbal analysis of realistic texts. S2

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

312. Scene Craft. 3 credits. Specialist 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. F2

328. Acting II. 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

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. S2

330. Contemporary Theatre. 3 credits. Readings in dramatic literature from 1880 to contemporary times. Strong emphasis on written and verbal analysis of current dramatic techniques beyond realism. S2

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. F2

337. Cooperative Education. 1-6 credits, repeatable to 12. Prerequisites: 2.5 GPA, junior standing. A practical work experience with an employer closely associated with the student’s academic area. Arranged by mutual agreement among student, department, and employer.

339. Production Design. 3 credits. Prerequisites: TA 130, 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, craftspeople, and managers. S

350. Dramatic Production and Criticism. 3 credits. Prerequisites: TA 130 and 250, or consent of instructor. An examination of the principles of production criticism and the application of those principles to a series of theatrical productions. F2

380. Theatre Performance Studio. 1 credit, repeatable to 2. Prerequisite TA 280. Continuation of TA 280. F-S

402. Acting III. 3 credits. Prerequisite: TA 328. Intensive work in individual and ensemble techniques with study and practice of actor research methods, movement and characterization methods needed for a variety of classical or highly stylized texts. S2

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. S2

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.
### Visual Arts (VA)

The Department of Visual Arts provides opportunities for both the potential professional practitioner and the appreciator to study in the various disciplines and media of the visual arts. The broad categories of study are: two-dimensional (drawing, painting, photography, printmaking), three-dimensional (ceramics, sculpture, fibers, metalsmithing), history of visual arts, and visual arts education. A core of study in the foundations of the visual arts is followed by the development of skills and technical knowledge in the various media. These are prerequisite to the ultimate objective of nurturing growth in conceptual ability and creative production. The Edmund A. Hughes Fine Arts Center provides specialized studios and opportunities for work in the various visual media.

The Department of Visual Arts in the College of Fine Arts and Communication of the University is an accredited institutional member of the National Association of Schools of Art and Design.

### College of Fine Arts and Communication

#### B.F.A. WITH MAJOR IN VISUAL ARTS

Required 132 hours including:

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

II. College of Fine Arts and Communication Requirements, see page 47 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:

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
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<tbody>
<tr>
<td>VA 108</td>
<td>Hand &amp; Power Tool Safety</td>
<td>1</td>
</tr>
<tr>
<td>VA 130, 131</td>
<td>Drawing I, II</td>
<td>6</td>
</tr>
<tr>
<td>VA 173, 174</td>
<td>Design I: Two-dimensional; Design II: Three-dimensional</td>
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<tr>
<td>VA 210</td>
<td>Art History Survey: Paleolithic to Renaissance</td>
<td>3</td>
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<td>VA 211</td>
<td>Figure Drawing I</td>
<td>3</td>
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<tr>
<td>VA 230</td>
<td>Sculpture I</td>
<td>3</td>
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<tr>
<td>VA 231</td>
<td>Ceramics I</td>
<td>3</td>
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<td>VA 240</td>
<td>Printmaking I: Intaglio</td>
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</tr>
<tr>
<td>VA 241</td>
<td>Printmaking I: Relief and Serigraphy</td>
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<td>VA 253</td>
<td>Ceramics II: Throwing</td>
<td>3</td>
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<tr>
<td>VA 260</td>
<td>Slide Photography</td>
<td>3</td>
</tr>
<tr>
<td>VA 261</td>
<td>Color Printing</td>
<td>3</td>
</tr>
<tr>
<td>VA 274</td>
<td>Calligraphy</td>
<td>3</td>
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<tr>
<td>VA 276</td>
<td>Surface Design on Fabric</td>
<td>3</td>
</tr>
</tbody>
</table>

Before advancement to upper-division status, all B.F.A. candidates must participate in review and evaluation by the Visual Arts Faculty.

#### B.A. WITH MAJOR IN VISUAL ARTS

Required 125 hours including:

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

II. The Following Curriculum of 48 major credits:

All B.A. 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:

<table>
<thead>
<tr>
<th>Course</th>
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<th>Credits</th>
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</thead>
<tbody>
<tr>
<td>VA 108</td>
<td>Hand &amp; Power Tool Safety</td>
<td>1</td>
</tr>
<tr>
<td>VA 130, 131</td>
<td>Drawing I, II</td>
<td>6</td>
</tr>
<tr>
<td>VA 173, 174</td>
<td>Design I: Two-dimensional; Design II: Three-dimensional</td>
<td>6</td>
</tr>
</tbody>
</table>
MINOR IN VISUAL ARTS (Studio)

Required 22 hours including:

- VA 210. Art History Survey: Paleolithic to Renaissance (3)
- VA 211. Art History Survey: Renaissance to Present (3)

Plus at least 9 credits in the following:

- VA 200, 201. Sculpture I, II (3, 3)
- VA 204, 205. Jewellerymaking I, II (3, 3)
- VA 220, 221. Painting I, II (3, 3)
- VA 230, 231. Figure Drawing I, II (3, 3)
- VA 240. Printmaking I: Intaglio (3)
- VA 241. Printmaking I: Relief and Serigraphy (3)
- VA 251. Ceramics I (3)
- VA 253. Ceramics II: Throwing (3)
- VA 260. Slide Photography (3)
- VA 261. Color Printing (3)
- VA 274. Calligraphy (3)
- VA 276. Surface Design on Fabric (3)
- VA 277. Fibers I (3)

Upper-level students are required to complete a MINTIMUM of 20 credits in courses selected from the following list:

- VA 302, 303. Sculpture III, IV (3, 3)
- VA 322, 323. Painting III, IV (3, 3)
- VA 332, 333. Figure Drawing III, IV (3, 3)
- VA 340. Printmaking II: Lithography (3)
- VA 341. Printmaking III: Plate & Color Lithography (3)
- VA 342, 343. Printmaking II, III: Intaglio (3, 3)
- VA 344, 345. Printmaking II: III, Serigraphy (3, 3)
- VA 351. Ceramics II: Sculpture (3)
- VA 353. Ceramics III: Throwing (3)
- VA 355. Clay & Glazes (3)
- VA 356. Concepts in Visual Arts Education (2)
- VA 356, 366. Photography Studio I, II (3, 3)
- VA 375. Brush Lettering & Sign Painting (3)
- VA 379. Color Theory (3)
- VA 391a, 391b. Special Topics (1-4)
- VA 410. Art History: Selected Topics (1-4)
- VA 412. Art History: 20th Century (to 1930s) (3)
- VA 413. Art History: 20th Century (1930s to 1960s) (3)
- VA 414. Art History: 20th Century (1960 to present) (2)
- VA 415. Art History: Museum Internship (1-3)
- VA 416. Art History: Italian Renaissance (3)
- VA 417. Art History: Northern Renaissance (3)
- VA 418. Art History: Baroque (3)
- VA 419. Art History: 19th Century (3)
- VA 490. Special Projects/Independent Research (variable credit dependent upon scope of project) (1-12)

MINOR IN ART HISTORY

Required 24 hours including:

- 6 hours of Art History Survey:
  - VA 210. Art History Survey: Paleolithic to Renaissance (3)
  - VA 211. Art History Survey: Renaissance to Present (3)
- 12 hours from any 400 level Art History Course (12)
- 6 hours from the following studio courses:
  - VA 100. Introduction to Sculpture (3)
  - VA 120. Introduction to Drawing and Color Materials (3)
- VA 173, 174. Design I: Two-Dimensional; Design II: Three Dimensional (6)

7 hours from the following:

- Ceramics, Fibers, Painting, Jewelry, Printmaking, Sculpture

MINOR IN VISUAL ARTS EDUCATION (Middle or Secondary)

22 hours required as follows:

- VA 110. Understanding Art (3)
- VA 130, 131. Drawing I, II (6)
- VA 173, 174. Design I: Two-dimensional; Design II: Three-dimensional (6)

7 hours from the following:

- Ceramics, Fibers, Painting, Jewelry, Printmaking, Sculpture

Center for Teaching and Learning

B.S.Ed Degree with a Combined Major in Elementary Education and Visual Arts

For curriculum outline see page 77 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
105. Hand & Power Tool Safety, 1 credit. Lectures and demonstrations of power machinery and hand tools with emphasis on safety in practical application. Skills acquired equip the student for advanced courses in all media areas. F, S
110. Introduction to the Understanding of Art, 3 credits. Films, original works, slides, discussions, demonstrations. Structure and meaning of visual art forms as revealed through the analysis of psychological, sociological and philosophical applications of art mediums. F, S
120. Introduction to Drawing and Color Materials, 3 credits. Introduction for non-majors to drawing and color media and techniques. Includes working from still-lifes, models, and landscapes. F, S
130. Drawing I, 3 credits. Form, proportion, composition, and perspective covering a wide range of subject; experimentation in line and color quality; figure work. F, S
131. Drawing II, 3 credits. Prerequisite: VA 130. A continuation of the skills and concepts developed in Drawing I. F, S
151. Introduction to Ceramics, 3 credits. Introduction for non-majors to basic hand forming processes and glazing techniques. Clay and firing processes are learned through lecture, discussion, demonstrations, and readings. F, S
173. Design I: Two-Dimensional, 3 credits. Basic concepts of 2-dimensional design as they apply to the fine and applied arts are learned through projects with various media, black and white and color. F, S
174. Design II: Three-Dimensional, 3 credits. Prerequisite: VA 173. Basic concepts of 3-dimensional design as they apply to the fine and applied arts are learned through projects with various media. F, S
200. Sculpture I, 3 credits. Prerequisites: VA 108, 174. Introduction to philosophical, aesthetic, history and processes of sculpture. Demonstrations in the use of metals, stone, clay, plastic, wood, etc. F, S
201. Sculpture II, 3 credits. Prerequisite: VA 200. Continuation of Sculpture I. F, S
204. Jewellerymaking I, 3 credits. A comprehensive laboratory understanding of non-ferrous metals and their manipulation is presented, leading to proficiency for the making of body ornaments and simple containers from sheet. S
205. Jewellerymaking II, 3 credits. Prerequisite: VA 204. A continuation of comprehensive laboratory understanding of non-ferrous metals & their manipulation is presented. Leading to proficiency for the making of body ornaments and simple containers from sheet. S
211. Art History Survey: Renaissance to Present, 3 credits. A survey of western art from Renaissance to the present. S
220. Painting I, 3 credits. Prerequisite: VA 131. Experimentation with oil painting and associated media with emphasis upon creative compositions, using models, still-life subjects and imaginative contemporary expressions. F, S
221. Painting II, 3 credits. Prerequisite: VA 220. Continuation of concepts and techniques explored in Painting I. F, S
230. Figure Drawing I, 3 credits. Prerequisite: VA 131. Expressive and analytical drawing of the figure. Work is done in varied media, varied techniques and varied conceptual approaches to help students develop visual expressive skills. F, S
231. Figure Drawing II, 3 credits. Prerequisite: VA 230. Continuation of problems introduced in Figure Drawing I. F, S
240. Printmaking I: Intaglio, 3 credits. Survey of intaglio processes, including etching, engraving, aquatint, etc. on zinc and plastic. F
241. Printmaking II: Relief and Serigraphy, 3 credits. Survey of relief and serigraphic print processes. F
251. Ceramics I, 3 credits. A beginning course for majors. Proficiency in the basic hand forming processes and glazing techniques and an understanding of the clay firing processes are achieved through lectures, discussions, demonstrations, and readings. F, S
253. Ceramics II: Throwing, 3 credits. Prerequisites: VA 151 or 251 or permission of instructor. Throwing is the process by which a form is made by working the hands and on the potter’s wheel. During the first semester emphasis is placed on centering the clay on the wheel and mastering the basic bowl and bottle forms. F, S
260. Slide Photography, 3 credits. A non-darkroom oriented class in slide photography emphasizing the aesthetic design and compositional aspects of this artistic medium; SU grading only. F, S
261. Color Printing, 3 credits. Prerequisite: VA 260 or instructor approval. This beginning course in color printing is designed as a complementary follow up course to Slide Photography. VA 260. SU grading only. F, S
274. Calligraphy, 3 credits. Lettering styles in Gothic, Roman and Script, utilizing several media and techniques; studies of the importance of lettering in advertising and illustration. F, S
276. Surface Design on Fabric, 3 credits. Prerequisite: VA 173. Exploration of technical and design possibilities of various surface embellishments on fabric (printed, dyed). Demonstration/slides/studio work. F
277. Fibers I. 3 credits. Prerequisite: VA 173. Samples and finished art projects of student’s design carried out exploring technical and design possibilities of various textile techniques. Demonstrations/slide lectures/studio work. S

302. Sculpture III. 3 credits. Prerequisite: VA 201. Continued involvement in advanced sculpture processes and emphasis on personal style development. F,S

303. Sculpture IV. 3 credits. Prerequisite: VA 302. Continuation of Sculpture III. F,S

305. Jewelry and Small Sculpture I. 3 credits. Prerequisite: VA 205 or consent of instructor. Specialized techniques and processes, new and traditional, of metal fabrication ranging from body adornments to small sculptural forms with emphasis on design and craftsmanship. Includes designing, piercing, soldering, bezel setting, forming, forging, wire-pulling, casting, enameling. Incorporation of mixed media encouraged. F

306. Jewelry and Small Sculpture II. 3 credits. Prerequisite: VA 305. Expansion of bench techniques and studio production, including advanced design, repair, gem identification and settings, marketing, portfolio and exhibit experience. F

307. Jewelry and Small Sculpture IV. 3 credits. Prerequisite: VA 306. Continuation of Jewelry and Small Sculpture I. S

322. Painting III. 3 credits. Prerequisite: VA 221. Further development of painting concepts, perception of visual and verbal elements of painting and composition. Survey stresses the focus of one’s attitudes towards developing a more personal visual statement in areas of personal interest. F,S

323. Painting IV. 3 credits. Prerequisite: VA 322. Continuing of Painting III. F,S

324. Figure Drawing III. 3 credits. Prerequisite: VA 231 or consent of instructor. Using the human figure as a basis for searching out presentation of plastic form and design. Traditional and experimental searching in various media, styles, forms. F,S

333. Figure Drawing IV. 3 credits. Prerequisite: VA 322. Continuation of Figure Drawing III. F,S

337. Cooperative Education. Part-time, fall and spring, 1-3 credits. Repeatable to 3 credits only. Full-time, fall, spring, and summer, 8 credits, not repeatable or interchangable with part-time. Arranged by mutual agreement among student, Department and employer prior to enrollment. Special permission is required. Regular grading only. F,S,S

340. Printmaking II: Intaglio. 3 credits. Prerequisite: VA 240 or 241. Basic black and white stone lithographic processes. F

341. Printmaking III: Plate and Color Lithography. 3 credits. Prerequisite: VA 340. Advanced work in stone lithography to include color processes. Introduction to plate lithography and related photographic procedures. S

342. Printmaking II: Intaglio. 3 credits. Prerequisite: VA 240. Intaglio work to include metal and plexiglas plates. Elaboration on the use of techniques, including soft ground, sugar lift, and the double print process. Introduction to multiple color printing and experimental processes. A slide survey of contemporary printmakers. F,S

343. Printmaking III: Intaglio. 3 credits. Prerequisite: VA 342. Continuation of Printmaking II: Intaglio. F,S

344. Printmaking II: Serigraphy. 3 credits. Prerequisite: VA 241. Investigation of screen printing techniques with professional quality, non-toxic materials and a full range of stencil materials including experimental approaches. A slide survey of contemporary printmakers. F,S

345. Printmaking III: Serigraphy. 3 credits. Prerequisite: VA 344. Continuation of Printmaking II: Serigraphy. F,S

351. Ceramics II: Sculpture. 3 credits. Prerequisite: VA 151 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 area. F,Z

355. Ceramics III: Throwing. 3 credits. Prerequisite: VA 253. Devoted to more complex problems such as throwing larger pieces, multiple-sectioned forms, sets of forms and lidded pieces. F,S

356. Clay & Glazes. 3 credits. Prerequisite: VA 151. This is a technical approach to the raw materials used in ceramics. The various processes of calculating, mixing, evaluating, and refining both clay and glazes are explored. Through lectures, readings and laboratory test work, a basic understanding of clay and glazes is achieved. S

361. Concepts in Visual Arts Education. 2 credits. Lecture, discussion course designed to give an overview of visual arts education, current topics in visual arts education, trends in education, and the relation of the arts and education to the general education requirements. F

365. Photography Studio I. 3 credits, repeatable to 6 credits. Prerequisite: VA 265. Introduction to photography. Further development of conceptual and formal techniques related to silver or non-silver processes, 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

366. Photography Studio II. 3 credits (repeatable to 6 credits). Prerequisite: VA 365 or consent of instructor. Further development of conceptual and formal qualities in silver or non-silver processes project photographs in 35mm, medium or large format cameras. The scope of work and media will be determined by contractual arrangement between students and instructor. F,S

371. Fibers II. 3 credits. Prerequisite: VA 173 or 174 and 277. Course work will consist of sample making and sustained projects woven on the loom. Techniques taught include yarn dying. F

372. Fibers III. 3 credits. Prerequisite: VA 371. A continuation of skills acquired in Fibers II. This course will deal with double-weaveloom construction processes and other multiple layer possibilities. S

373. Fibers IV. 3 credits. Prerequisites: VA 173 or 174 and 372. This course will deal with structure and pattern in weaving. Work will consist of samples and final weaving projects. F,S

375. Brush Lettering and Sign Painting. 3 credits. Prerequisite: VA 274. A continuation of Calligraphy; further practical knowledge of the applications of freethand brush lettering; layout techniques; materials involved. F,S

392. Color Theory. 3 credits. Prerequisite: VA 173. Advanced experimentation with color phenomena, light & pigment theory through historical, theoretical and practical approaches. F

391a. Special Topics. 1-4 credits. Prerequisite: upper division status. Experience in specialized techniques and processes as they apply to various media both new and traditional. Offered on request. May be conducted either on laboratory or tutorial basis as subject matter permits. Letter grade only. F,S

391b. Special Topics. 1-4 credits. Prerequisite: upper division status. Experience in specialized techniques and processes as they apply to various media both new and traditional. Offered on request. May be conducted either on laboratory or tutorial basis as subject matter permits. S/U grade only. F,S

410. Art History: Selected Topics. 1-4 credits. Prerequisite: VA 210,211. Art historical topics outside the regular art history curriculum or specialized subjects as indicated by title of course. May be repeated as title changes. F,S

412. Art History: 20th Century to 1930s. 3 credits. Prerequisites: VA 210, VA 211. The origins of 20th Century "isms" from the 19th-Century trends through the 1930s in Europe. F,Z

413. Art History: 20th Century (1930s to present). 3 credits. Prerequisites: VA 210, VA 211. A critical view of the artistic proliferation in Europe and the United States from the 1930s to the present. S,Z

414. Art History: 20th Century (1960 to present). 2 credits. This course is a continuation of the 20th Century Art History sequence. It will cover Abstract Expressionism through to the emerging artistic trends of the present. F,Z

415. Art History: Museum Internship. 1-3 credits. The Museum Intern will work with the instructor and museum staff on assigned exhibitions to research and write a paper and a presentation for the docents and the public. F,S

418. Art History: Baroque Art and Architecture. 3 credits. Prerequisites: VA 210, VA 211. Survey of Northern Renaissance Art from France, Germany and the low countries, 1300-1600. S,Z

419. Art History: 19th Century. 3 credits. Prerequisites: VA 210, VA 211. Survey of 19th Century Art with an emphasis on French painting. S,Z

460. Methods, Materials and Philosophy: Art in the Elementary Classroom. 3 credits. Prerequisites: Sophomore standing in CTL or VA. The study of art materials, methods, philosophy and projects applicable for special education, kindergarten through sixth grade students. Emphasis is on inter-curricular creativity using both 2-dimensional and 3-dimensional projects, featuring multi-cultural and disciplined-based education. F,S

490. Special Projects/Independent Research. 1-6 credits, no more than 12 in each media. Prerequisites: 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, Multimedia, Jewelry, Photography. 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 and the institutions and systems that affect women’s lives. Students planning careers in law, business, medicine, education, service, and the sciences find a minor in Women Studies to be a useful complement. Other students choose Women Studies courses to provide coherence in their General Education Requirements. The Women Studies Program expands our concepts of a well-educated person.

College of Arts and Sciences
I. Required courses (total hours 4 to 7):
A&S 225. Introduction to the Study of Women (3)
A&S 498. Senior Study (credits may be shared with major field) (1-4)

II. At least three of the following (total hours 9):
Anth 230. Women & Men in Society & Culture (3)
Biol 250. Human Sexuality (3)
Engl 357. Women Writers & Readers (3)
Hist 332. Women in American History (3)
Soc 340. Sociology of Gender & Sex Roles (3)

III. At least six hours from (total hours 6):
BVED 450. Special Topics: Human Dynamics in Business (3)
CTL 430. Human Relations (3)
IS 346. Contemporary Indian Women (3)
Comm 310. Women, Minorities, & Media (3)
Soc 335. The Family (3)
Other special topics or seminars as appropriate:
History 300, Psychology 495, Counseling 565,
Languages 231, English 200, Honors 299 & 395 (1-4)
Students may declare a minor through the College of Arts and Sciences and should also contact the Director of Women Studies and one other member of the Women Studies faculty to design a program of study.
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The Graduate School

STUDENT RESPONSIBILITY

IT IS THE RESPONSIBILITY OF THE STUDENT TO BECOME INFORMED AND TO OBSERVE ALL REGULATIONS AND PROCEDURES REQUIRED BY THE UNIVERSITY, THE GRADUATE CATALOG, AND THE PROGRAM THE STUDENT IS PURSUING. The student is responsible for reading the Graduate Catalog, all contracts for employment, the terms and conditions of any awards and correspondence from the various office 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 1993–94, 366 master’s degrees, 5 specialist diplomas, and 50 doctorates were awarded. More than 12,000 master’s degrees, 70 specialist’s diplomas, and 1400 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, 70% full members and the remainder either associate or adjunct members.

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

Bruce Dearden, Ph.D., Sciences/Mathematics, 1993-96
Mary Lou Fuller, Ph.D., Education, 1994-97
Rashid Hasan, Ph.D., Engineering, 1992-95
George Henly, Ph.D., Human Resources, 1993-96
Mark Hoffmann, Ph.D., Member-at-Large, 1994-97
Susan Koprince, Ph.D., Humanities
Patrick Luber, M.F.A., Fine Arts, 1994-97
Jan Moen, Ph.D., Social Sciences, 1994-97
Susan Nelson, Ph.D., Business, 1993-96
Tom Petros, Ph.D., Member-at-Large, 1992-95
Sesh Rao, Ph.D., Sciences/Mathematics, 1992-95
Jonathan Spanier, Ph.D., Health Sciences, 1993-96
Harvey Knull, Ph.D., Dean (ex officio)

RESEARCH AND SCHOLARSHIP AT UND

The faculty at the University of North Dakota are committed to scholarship and creativity, to new knowledge, and to new technology. Each of the past few years has lead to the generation of more than $40 million in sponsored programs, a figure that compares favorably on a per capita basis to much larger institutions.

The Graduate School supports research with Summer Research Professorships, which allow faculty to work with their students on research and Summer Doctoral Fellowships, which allow Ph.D. candidates to spend full time on their research during the summer.

The University operates a variety of research centers such as the Energy and Environmental Research Center (EERC), the Bureau of Business and Economic Research, the Bureau of Governmental Affairs, the Bureau of Educational Services and Applied Research, the Center for Innovation and Business Development, the Center for Rural Health, the Institute for Ecological Studies, the Institute for Remote Sensing, the Social Science Research Institute, and the Engineering Experiment Station. The University also works closely with the North Dakota State Geological Survey and with the U.S. Department of Agriculture Human Nutrition Research Center, located adjacent to the campus.

UND is also active in the North Dakota Experimental Program to Stimulate Competitive Research (EPSCOR). This program obtained $3 million from 1986 to 1991, and $3.9 for the period 1992-95, along with matching monies. Half of these EPSCOR dollars are expended at UND to enhance research and to assist in building the science infrastructure in the state of North Dakota.

The faculty are productive scholars. In 1994 they authored over 300 articles in regional, national, and international journals, and over 30 books, from poetry to textbooks. Faculty also participate in numerous theatre and musical performances, and faculty artists’ work is represented yearly in as many as 60 juried shows nationwide.
Admission

Those who have earned or will earn a bachelor’s degree from a recognized college or university (for U.S. degrees, accreditation by one of the six regional accrediting associations), a minimum of 20 semester credits of appropriate undergraduate work in the chosen field, 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 an evaluation of the work and (b) Graduate Record Examination scores on the General Test and the Subject Test, if offered in the discipline.)

4. A score of at least 550 on the TOEFL (Test of English as a Foreign Language) for all applicants whose native language is not English.

5. Completion of all departmental admission requirements (see the section entitled, “Departmental Programs,” p. xx)

*Exception—Master of Engineering Program requires an overall GPA of 2.50.

REQUIREMENTS FOR ADMISSION TO SPECIALIST OR DOCTORAL PROGRAMS

1. All general admission requirements listed above.

2. A master’s degree from an accredited institution normally in the field of proposed specialist or doctoral study.

Note: With the approval of the University Graduate Committee, some departments permit admission to the doctoral program with a bachelor’s degree. See the departmental section for the specific requirements which may be in addition to the Minimum General Requirements listed above.

3. A grade point average of 3.5 or above in all graduate level work.

4. Completion of all departmental requirements.

Students who do not meet all of the above requirements for admission may be considered for PROVISIONAL admission or for a QUALIFIED admission (see p. xx).

Please see the Departmental Section for admission requirements in addition to the minimum Graduate School requirements.

Students who meet all of the stated admission requirements are eligible for consideration for approved status admission, but are not guaranteed admission. The entering classes will be chosen from all qualified applicants on the basis of the quality of applicants’ previous work and the adequacy of their preparation for graduate study at UND. The Graduate School reserves the right to refuse admission to any applicant on the basis of scholastic or other reasons.

APPLICATION DEADLINES

The University of North Dakota maintains flexible deadlines for most graduate programs; however, applicants are encouraged to apply as early as possible to assure admission and full consideration for financial aid. The following programs observe specific deadlines:

- Counseling / 15 February
- Counseling Psychology / 15 February
- English / 1 March
- Psychology (all specialties) / 15 February
- Social Work / 1 February
- Speech/Language Pathology / 15 February

NOTE: Applications must be completed and submitted to the Graduate School two weeks prior to departmental deadlines.

A NOTE TO INTERNATIONAL STUDENTS

The completed application and all official transcripts or mark sheets with English translations must be received in the Graduate School three months prior to the term in which the applicant wishes to matriculate.

All applicants from abroad are required to demonstrate English language proficiency by taking the Test of English as a Foreign Language (TOEFL) and achieving a score of at least 550.

Graduate assistantships are generally not available in the first year of study. However, an applicant with an outstanding record will be considered only if he/she has taken the Test of Spoken English and achieved a minimum score of 230.

Each applicant from abroad must furnish a statement of financial status to the Graduate School. Approximately $17,000 annually is required for educational and living expenses.

Applicants admitted to graduate study will be issued an I-20 Form when appropriate. No international student seeking admission should leave her/his country before obtaining an official offer of admission from the dean of the Graduate School.

CATEGORIES OF ADMISSION

Degree Status

Applicants for degree programs may be admitted to Approved, Qualified, or Provisional Status.

Approved Status

Students who have met the minimum admission requirements stipulated by the Graduate School and have met all departmental requirements for admission are granted admission to Approved Status. Admission to this status implies only that a student is permitted to commence graduate work which normally will lead to a degree or diploma. However, admission to Approved Status does not guarantee that a student will be allowed to become a candidate for a degree or diploma.

Provisional Status

Admission to Provisional Status may be granted to an applicant who has failed to meet one or more of the admission requirements. The first obligation of students admitted to Provisional Status will be to meet all of the conditions specified at the time of admission. Students

University of North Dakota
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 eight (8) semester credits taken as a graduate Non-Degree student may subsequently be counted toward a graduate degree subject to all other regulations.

**Deferred Admission Status**

This status is reserved for applicants who intend to pursue a degree program and who are allowed to register in the Graduate School while a formal application for admission is completed and processed and eligibility determined. Work taken in this status will not count toward a graduate degree at UND unless admission to a graduate program is secured. A Deferred Student who fails to gain admission to a graduate program by the next registration period will be considered to be in Non-Degree status. The status of those who are admitted will be converted to degree status retroactively.

**Post-Baccalaureate Status**

The purpose of this status is to provide a procedure for individuals to take a limited amount of academic work for cultural, intellectual, and continuing education needs. A student registered in Post-Baccalaureate status may not change to another status until the completion of the term. All work taken will be graded on the Satisfactory-Unsatisfactory system and cannot be applied to any graduate degree program at the University of North Dakota.

(Any student who has been dismissed as a Degree, Deferred admission, or Non-Degree student is eligible to register in the Graduate School only as a Post-Baccalaureate student.)

**Transient Status**

Transient students are those who are pursuing a graduate program at another university but who wish to enroll for a semester or summer session with the intent of returning to their home institutions. If a Transient student elects to remain at the University of North Dakota to work toward a graduate degree, formal application for admission to a degree program will be required. Subsequently, if admitted, the student may ask the Advisory Committee to accept courses taken while in Transient Status to a degree program.

NOTE: All students taking courses in the Graduate School must maintain a 3.00 Grade Point Average. Students in Non-Degree, Deferred, or Transient Status whose cumulative Grade Point Average falls below a 3.00 will be dismissed.

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**REGISTRATION**

NOTE: Students attending North Dakota colleges and universities must prove immunization against measles, mumps, and rubella. This policy includes students taking one or more courses offered for credit, non-credit, or audit. Forms to prove compliance are available at the UND Student Health Service, University of North Dakota, P. O. Box 9038, Grand Forks, ND 58203-9038, phone (701) 777-3963.

Any student who holds a baccalaureate degree and has established a degree as a Non-Degree, Deferred Admission, Post-Baccalaureate, or Transient student is eligible to enroll in a graduate course (i.e., a course numbered 500 or higher) by registering through the Graduate School. Enrollment in certain courses may be limited to Degree students, however. Registration and fee payment procedures are outlined by the Registrar’s Office and published in the Time Schedule. Registration is complete only upon payment of tuition and fees. Registration may be cancelled by the Bursar if tuition and fees are not paid.

It is strongly recommended that students consult their advisor before registering and check departmental and program policies on advisement.

Only work taken as a registered Graduate Student may be credited toward a graduate degree. Students classified as Seniors may be granted graduate credit if they meet the criteria defined in the policy on page 163.

The number of credits for which a student may register is subject to certain limits as defined on page 163. Registrations not in compliance with University, Graduate School, and departmental policies are subject to cancellation by the dean’s office.

Registration for certain activities is done using course numbers that are uniform throughout the Graduate School and are not listed separately for each department:

**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.

**WITHDRAWAL FROM THE UNIVERSITY**

A student wishing to withdraw from the University before the end of a semester must secure a Withdrawal Report Form from the
GRADUATE CREDIT

Graduate credit may be earned only by students enrolled in the Graduate School and in courses listed in the Graduate section of this catalog. UND seniors who have obtained special permission as described in page xx may also receive graduate credit for graduate courses. All courses listed in the “Departmental Program” section carry graduate credit and are eligible for use in the major or minor of any program of study for a graduate degree, subject to the approval of an advisor or Faculty Advisory Committee and the dean. Only those courses listed in the Graduate Catalog may be used in the major or in a minor.

All UND courses numbered 300 and above and listed in this catalog may be applied to the cognate part of a program of study.

When a graduate student elects to use a 300- or 400-level course for graduate credit, it is understood that the student will be required to do additional work over and above that typically required of undergraduates. Usually, such work is of an independent nature.

At least one-half of the credits for all degrees must be in courses numbered 500 or higher.

Graduate courses used for credit for one degree at UND may not be used for credit toward a second UND graduate degree.

ELIGIBILITY TO WORK FOR AN ADVANCED DEGREE

Only those who have been officially admitted to the Graduate School as Degree Students on the basis of a letter from the dean may work for an advanced degree.

ELIGIBILITY OF FACULTY TO PURSUE GRADUATE DEGREE

A UND faculty member above the rank of instructor may be admitted to and enrolled in a graduate degree program at this University two years after the date of termination as a faculty member. In those instances where there is clearly no potential for serious conflict of roles or interests, the two-year interval may be waived by the University Graduate Committee upon the recommendation of the department to which admission is sought. This policy does not apply to members of the Department of Military Science.

PETITIONS AND APPEALS

Students who wish to be excused from Graduate School requirements must petition the dean of the Graduate School on a form available from the Graduate School. The forms require the written endorsement of the advisor, instructor (if appropriate), and department chairperson.

Graduate Students or members of the Graduate Faculty may appeal decisions of the dean to the Graduate Committee.

ACADEMIC GRIEVANCE

An “academic grievance” is a statement expressing a complaint, resentment, or accusation lodged by a student about an academic circumstance (such as grading, testing, quality of instruction) which is thought by the student to be unfair.

Academic issues subject to grievance procedures differ from those subject to the academic petition process. If a student thinks that a petition has not been handled fairly, the student may initiate a grievance based upon unfair treatment, but not upon the substantive issue of the petition. The grievance process available to graduate students depends on the issue as follows:

1. Grades

An academic grievance involving the work in a course by a graduate student shall be resolved by the process prescribed by the college in which the course is offered. The process must commence with a discussion between the student and the instructor.

2. Other Issues (involving Graduate School policies and procedures)

Resolution of all other grievances by graduate students shall commence by discussion between the student and the party against whom the grievance is lodged. In the absence of resolution by such discussion, the grievance may be advanced by either party beginning at the next level and continuing as necessary through the persons/units/committees in the following sequence:

1. Advisor or Advisory Committee
2. The person assigned administrative responsibility for the graduate program in which the student is a major, i.e., the director of graduate study or, in the absence of such a position, the department chairperson
3. The dean of the Graduate School
4. The Graduate Committee
5. The Student Academic Standards Committee (as described in the Code of Student Life)

Grievances must be submitted in writing when advanced beyond the first discussion. Similarly, responses to such advanced grievances must be in writing. Responses by the parties described in items 2 and 3 shall be within 10 class days of their receipt; response by the Graduate Committee shall be within a reasonable period of time consistent with its meeting schedule.

GRADUATE WORK BY UNDERGRADUATES

Graduate courses normally are open only to graduate students. An undergraduate senior at UND may enroll in graduate courses (300-level) for undergraduate credit with the permission of the instructor. A student below the standing of a senior must have the permission of the instructor, the student’s academic dean, and the graduate dean to take a graduate course.

A senior may be granted graduate credit for the courses listed in this section of the catalog if the student:

1. secures the prior approval of the dean of the Graduate School on a form available from the Graduate School and does so no later than the last day to add a course;
2. is within twelve credits of the baccalaureate degree;
3. completes the degree requirements in the current semester;
4. has an overall GPA of at least 3.00;
5. is carrying a total academic load of no more than 16 credits during a semester or 8 credits during the summer session;
6. is not taking the courses for S/U credit;
7. the credits sought will not be used to complete requirements for the baccalaureate degree.

NOTE: The 300- or 400-level courses listed in this section of the catalog were approved by the Graduate Committee for graduate credit on the basis that the student be required to do additional work, generally of an independent nature.

MAXIMUM AND MINIMUM ACADEMIC LOADS

A full course load for a graduate student is twelve credit hours in a semester or six credit hours in a summer session. A graduate student may carry no more than sixteen credit hours per semester or 8 credits in
a summer session. Graduate research assistants whose research is part of their degree requirement must carry at least 12 credits each semester or 6 credits in a summer session. Graduate teaching or service assistants and some graduate research assistants are allowed the loads indicated in the table below.

<table>
<thead>
<tr>
<th>Graduate Appointment</th>
<th>1/2 Time (minimum-maximum)</th>
<th>1/2 Time (minimum-maximum)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Semester (16 weeks)</td>
<td>6-10</td>
<td>8-12</td>
</tr>
<tr>
<td>Summer (8 weeks)</td>
<td>3-5</td>
<td>4-6</td>
</tr>
</tbody>
</table>

**GRADING SYSTEM**

A graduate student will be allowed credit for a course only when a grade for the course has been reported to the Registrar’s Office. Grades awarded in all courses are indicative of the quality of the work done. Their significance is as follows:

<table>
<thead>
<tr>
<th>Grade</th>
<th>Honor Point Equivalent</th>
</tr>
</thead>
<tbody>
<tr>
<td>A (Superior)</td>
<td>4 Honor Points</td>
</tr>
<tr>
<td>B (Excellent)</td>
<td>3 Honor Points</td>
</tr>
<tr>
<td>C (Acceptable)</td>
<td>2 Honor Points</td>
</tr>
<tr>
<td>D (Passing, but no graduate credit awarded)</td>
<td>1 Honor Point</td>
</tr>
<tr>
<td>F</td>
<td>Failure 0 Honor Points</td>
</tr>
<tr>
<td>I</td>
<td>Incomplete</td>
</tr>
<tr>
<td>S</td>
<td>Satisfactory</td>
</tr>
<tr>
<td>U</td>
<td>Unsatisfactory</td>
</tr>
<tr>
<td>W</td>
<td>Withdrawn</td>
</tr>
</tbody>
</table>

**Computation of the Graduate Point Average**

To calculate the Grade Point Average (GPA), multiply the Honor Point Equivalent for each course times the number of credit hours associated with each course. The GPA is obtained by dividing the total honor points for all courses by the total credits for the courses (grades of I, S, or U are not a part of this calculation). A student’s cumulative GPA is based on all course work, graduate or undergraduate, taken while the student is registered in the UND Graduate School.

Grades of less than C are not included in the number of credits accepted for a graduate degree, but they are counted in determining the cumulative GPA. Credits and grades for courses accepted in transfer, or courses graded on a Satisfactory-Unsatisfactory basis are not counted in determining the GPA. Courses with grades of Incomplete are not counted as partial fulfillment of degree requirements nor toward 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 395), 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. The Graduate School should be informed of an intent to repeat a course in order that the transcript be correctly marked.

**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.

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 academic standing of all graduate students whose cumulative GPA falls below 3.00 (2.75 for Master of Engineering program) is reviewed at the end of each academic term by the graduate dean. For such students the following action normally results:

(a) Degree Students who are in Provisional Status, Non-Degree Students and Deferred Admission Students will be dismissed.

(b) Degree Students who are in Approved Status will be placed on probation and allowed one additional registration of a maximum of twelve hours for a regular semester or six hours in a summer session. If after such a registration the GPA is still less than 3.0, the student will be dismissed.

(c) Degree Students in Qualified Status may be treated the same as Degree Students in Approved Status.

**TRANSFER OF GRADUATE CREDITS**

A limited amount of graduate work completed at a regionally accredited North American institution prior to, or after matriculation in the Graduate School at UND, may be applied toward a graduate degree at the University of North Dakota. Graduate work is considered for transfer only on an individual basis and only after the student has completed satisfactory work in residence at UND. Those transfer credits approved by the student’s advisory committee and the dean of the Graduate School are included in the program of study for the UND graduate degree and only those transfer credits will be recorded on the UND transcript.

The basic purpose of the transfer policies is to ensure that transferred work is of comparable content, level, timeliness, and quality to that which would be taken at UND and included on the program of
study for the degree. The following policies are generally applicable to the acceptance of the graduate work for transfer to UND:

1. The work must have been taken while enrolled as a graduate student in an accredited institution offering a graduate degree in the field.
2. The work must have received graduate credit at the institution where it was earned.
3. Only that work which will be less than seven years old at the time of the UND degree is awarded may be transferred, with the exception that work which was part of a completed prerequisite graduate degree may be transferred even though it is more than seven years old.
4. The student must have earned a grade of B or better in the courses offered for transfer.
5. Credits offered for transfer must not have been used to satisfy degree requirements for another degree previously earned or in process.
6. Work credited toward a master’s degree from another institution may be accepted toward a specialist’s or doctoral degree at UND.
7. Any additional transfer work to be applied toward the major area for the specialist’s or doctoral degrees must be post-master’s level and from an institution offering post-master’s degrees in the discipline.
8. Additional transfer work (i.e., beyond the master’s degree) from an institution offering only master’s level work in the discipline may be applied to the minor or cognate areas of specialist’s or doctoral programs.
9. Work from an incomplete master’s degree program at another institution is transferable only to a master’s degree at UND.
10. The amount of transfer credit that may be accepted toward the master’s degree is one-fourth of the number of hours required for that degree (usually 8 semester credits).
11. The amount of transfer credit that may be accepted toward the specialist’s degree may not exceed one-half the course credits required beyond the master’s degree (usually 16 credits) plus the master’s degree credits (usually a total of 48 credits).
12. The amount of transfer credit that may be accepted toward the doctoral degree may not exceed half the number of required credits beyond the master’s degree (usually 30 credits) plus the master’s degree credits (usually a total of 60 credits).
13. Students may transfer up to 32 semester credits of basic medical science courses, taken as part of a completed M.D. program, to the program required for the Ph.D. degree. To effect such transfer, in addition to meeting the usual requirements, students must pass a diagnostic examination over the subject matter of each of the courses, such examinations to be administered by the regular offering department. Such examinations must be completed and recommendations transmitted to the dean of the Graduate School by the advisory committee no later than the end of the first semester of enrollment in the Ph.D. program. On the basis of the examination results, transfer credit may be recommended, a student may be required to audit courses, or a student may be required to take courses for credit.

RESIDENCE REQUIREMENTS

Some graduate degree programs, especially those with a significant research/creative component, require that students spend a minimum period of time in residence during their course of study. The purpose of residence is to provide an opportunity for sustained and concentrated intellectual effort, to provide for immersion in a research environment, and to permit extensive interaction with fellow students and faculty of the major department.

In order to meet a residence requirement, a student (a) must devote full time to academic study and (b) must be registered for at least twelve 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

Graduate Credit Courses

The University of North Dakota Continuing Education Division offers graduate courses at various sites throughout the state as well as via the Educational Telephone Network and the Interactive Television.
Network. Four degree programs are now being offered on IVN: the Master of Business Administration, the Master of Public Administration, and the Master of Science in Rural Health Nursing.

There are limits on the number of credits that may be applied to a degree program. Ordinarily, no more than one-half of a student’s program for the master’s degree may be taken off campus. Students enrolled in extended degree programs offered at cooperating sites by the UND Continuing Education Division are exempt from this policy.

Workshops

Graduate level workshops are short-term organized learning experiences which provide for active, hands-on participation or for concentrated study on a specialized topic. Registration is limited to persons holding at least a baccalaureate degree, and grading is on the Satisfactory/Unsatisfactory system. Students will be registered as Continuing Education students and do not have to be admitted to the Graduate School.

Graduate level workshops are offered by the graduate departments under the course number “900-Graduate Workshop.” For each such registration, a transcript entry will be made showing the title, credit, and grade for the workshop. Registration for workshops is limited to persons holding at least a baccalaureate degree. Workshops will be graded on the satisfactory-unsatisfactory (S/U) grading system. Registrants will not be expected to have been admitted to the UND Graduate School. They will be registered as Continuing Education students.

Since graduate level workshops are not designed to be part of a graduate degree program, their credit may not be applied toward graduate degree requirements and, therefore, may not be included on programs of study. If the workshop involves critical review, analyses, discussion, theory, or content similar to graduate courses, it may be considered for inclusion on the program of study. Programs of study proposing inclusion of such workshops credit must be accompanied by a brief explanatory note documenting that the workshop meets these criteria. In any event, no more than four graduate workshop credits may be counted toward a master’s degree or specialist’s diploma, and no more than eight credits may be counted toward a doctoral degree.

Financial Information

(See p. 7-10 for general information on tuition, fees, etc.)

GRADUATE SCHOOL AWARDS

Applications for graduate awards are accepted throughout the year and are considered for the appointments and awards that are available at the time the applications are received. However, students are reminded that the greatest number of selections for appointments and awards are made about March 15. Students should complete an Application for Award form which is available from the Graduate School.

The following policies are applicable to the award and holding of graduate financial assistance:

1. Only Degree Students who have been admitted to the UND Graduate School may hold such awards or appointments.
2. A student may be removed from an appointment or award at any time due to unsatisfactory academic performance or standing.
3. Students in good academic standing (i.e., a GPA of 3.00 or higher) are eligible for reappointment.
4. Students must be carrying a full academic load in a degree program in the Graduate School for each semester or summer session that they hold an appointment or award. A full load must be maintained throughout the semester or summer session.
5. Students who withdraw from or are dismissed from the Graduate School immediately become ineligible for and may not continue to hold an appointment or award.
6. Students admitted to the Graduate School and notified that they have been granted an appointment or award before they actually have received a bachelor’s degree may neither register in the Graduate School nor hold an appointment or award unless, by the opening of the session and the beginning date of the appointment or award, they hold a bachelor’s degree and have fulfilled all requirements for admission to the Graduate School as a degree student.
7. Students must hold a GPA record which would qualify them for approved status (see p. 160).
8. Assistantship appointments normally will not exceed one-half time in all combinations.

In accordance with the provisions of federal statutes, it is the policy of the University of North Dakota that no person in the United States shall be discriminated against because of race, creed, handicap, color, sex, age, or national origin in the selection for an award or appointment provided only that the applicant meets the eligibility conditions for an award. Policies and procedures affecting graduate assistantships are described more fully in the Graduate Assistant Handbook.

Graduate assistantship stipends are subject to income tax and tax will be withheld. Tax will not be withheld from scholarships, traineeships, 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 and Appointments

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 hold Graduate Teaching Assistantships during the preceding year.

Cultural Diversity Tuition Assistance may be available. Applications are available in the Graduate School.

An Alumni Prize of $1,000 is awarded each year to a graduate student who has completed at least one year of graduate work. This prize, which may be granted in addition to other major awards, is in recognition of outstanding academic performance.

Summer Doctoral Fellowships of $3,000 plus a waiver of tuition for the summer session are available to doctoral students who plan to work on their dissertation/research full time during the summer. Applications are due early in the second semester and will be evaluated on the basis of an application and recommendations from the advisor and the chairperson.

Graduate Teaching Assistantships are university appointments that provide financial assistance to students qualified for teaching service in the department in which they take the major part of their graduate work. The purpose of these assistantships is to facilitate students working toward their degree while gaining teaching experience in the field of the degree. 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.

Stipends for half-time assistantships for a 1994-95 nine-month appointment are $6800-9200 for a student beginning graduate work and registered in a master’s degree program and $7000-9400 for a student who holds a master’s degree or equivalent and is registered in a doctoral program. Post-master’s students in doctoral programs who have at least three years of post-master’s college teaching experience may receive larger stipends.

For those students who are one-quarter time or more graduate teaching assistants, the tuition is waived by the University. Students are responsible for all other fees. Assistantships are available in most departments offering a graduate degree.

Graduate Research Assistantships are offered in many of the departments of the University (e.g., sciences, engineering, and education). These appointments usually carry a monthly stipend. For those students who are one-quarter time or more graduate research assistants, the tuition and non-resident fees are waived by the University.

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 the Division of Student Affairs, Computer Center, Rehabilitation Hospital, Athletic Department, and other service units on the campus. 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 (page 176).

MASTER OF ARTS, MASTER OF SCIENCE

These degrees are available with a thesis option in most fields. A non-thesis option also is available in selected fields.

Thesis Option

Course Requirements. A minimum of 30 semester credits is required in a program of study for the M.A. or M.S. degree in a major field. This includes the credits granted for the thesis and the research leading to the thesis. At least one-half of the credits must be at or above the 500-level. Fifteen semester credits must be taken on campus. A maximum of eight semester credits may be transferred from another institution. A maximum of four semester credits may be taken in approved workshops, but workshop credits normally are not included.

The program may include just the major, the major and a minor, or the major and a cognate area (see p. 175 for information regarding minors and cognates). The major must include 20 credits from the major department, and a minor or cognate area must include at least 9 credits.

Students should refer to the section of this Catalog entitled “Departmental Programs” for the additional admission, degree, examination, and course requirements unique to each department.

Residence Requirement. A student must spend a minimum of one semester or two summer sessions in residence on this campus (see p. 164 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 pamphlet Instructions for the Preparation of Theses and Dissertations (1995 edition), one copy of which will be provided to the student by the Graduate School when the program of study is approved. Copies also may be purchased at the University Bookstore.

The topic for a thesis must be approved by the student’s Faculty Advisory Committee. Approval is effected by the student’s completing a form entitled Outline of Thesis, available with instructions from the Graduate School, then submitting the outline to the Advisory Committee for its approval. The approved outline (original and three copies) is then filed in the Graduate School to become part of the record. The outline should 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 designate, of the student’s major department and normally will consist of three members, but may consist of four. If the student intends to include a minor on the program of study, one committee member must be chosen to represent the minor field. The chairperson of the Committee normally must be a Full Member of the Graduate Faculty but may be an Associate Member under certain conditions, must represent the student’s area of interest, and must serve as the thesis advisor. The Committee is responsible for program advisement, thesis advisement, and examination of the student.
4. Approval of a Program of Study. Until such time as a student selects a thesis advisor, the department chairperson, or designate, will act as a temporary advisor for the selection of courses, etc. After the formation of a Faculty Advisory Committee, the student and the Committee should formulate a Program of Study for the degree on a form available from the Graduate School. The program should be developed early in the second semester of enrollment. After the program has been signed by the student and the Committee, it is submitted to the Graduate School for the approval of the dean.
5. Approval of an Outline of Thesis on a form available from the Graduate School. This outline, when approved by the Faculty Advisory Committee and deposited in the Graduate School, indicates acceptance of a topic for study and incorporation into a thesis. The outline form and three copies 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 should 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. A maximum of 16 credits of off-campus work may be included.

The program may include just the major, the major and a minor, or the major and a cognate area (see p. 175 for information regarding minors and cognates). The major must include at least 22 credits from the major department and a minor or cognate area must include at least 9 credits.

**Students should refer to the section of this catalog entitled “Departmental Programs” for additional admission, degree, examination, and course requirements unique to each department.**

**Residence Requirement.** There is no residence requirement for the non-thesis M.A. and M.S. degrees. However, at least half of the credits for the degree must be taken on the UND campus.

**Independent Study.** The independent study is designed to require the student independently to investigate a topic related to the major field of study. The study need not be an original contribution to knowledge but may be a presentation, analysis, and discussion of information and ideas already in the literature of the field. The requirement is to ensure that a student can investigate a topic and organize a scholarly report on the investigation.

The topic for an independent study must be approved by the student’s advisor. Approval is effected by the student’s completing a form entitled Outline of Independent Study, available with instructions from the Graduate School, then submitting the outline to the advisor for approval. The outline, which 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 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 should be filed prior to the semester or session in which the student expects to graduate.

**Final Examinations.** Those advanced to candidacy for non-thesis master’s degrees must pass written final comprehensive examinations which must cover the major field but may, at the advisor’s discretion, draw upon or cover the supporting areas. Such examinations generally will be given and evaluated by the major department, but the results will be certified to the Graduate School by the advisor and the department chairperson on the form Final Report on Candidate by the deadline specified in the Academic Calendar. The appropriate comprehensive examination(s) will be arranged by the advisor and administered by the department no earlier than the semester preceding the semester in which the candidate intends to graduate. Comprehensive examinations which are failed may be repeated only with the prior approval of the advisor, the department, and the dean, but in no event earlier than at the next regularly scheduled offering.

Candidates may not take the final comprehensive examination(s) unless they have been advanced to candidacy for the degree, are in satisfactory academic standing, and have been certified, in writing, as eligible by the Graduate School.

**MASTER OF BUSINESS ADMINISTRATION**

See Business Administration under Departmental Programs.

**MASTER OF EDUCATION**

The Master of Education degree (M.Ed.) is designed for those who wish to prepare for careers as teachers, specialists, administrators, or supervisors in elementary or secondary schools. To be eligible for the degree, a student must meet the undergraduate requirements in Education (i.e., eighteen semester credits in Education, including student teaching) and must be offered admission to the degree program by the dean of the Graduate School.

The Master of Education degree is available for those doing major work either within or outside of the Center for Teaching and Learning. The areas of concentration available within the Center 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 p. 165 for further information.)

**Independent Study.** The independent study is designed to enable the student independently to investigate a topic related to the major field of study. The study may be a presentation, analysis, or discussion of information and ideas already in the literature of the field. The
requirement is designed to ensure that a student can investigate a topic and organize and present a scholarly report on the investigation.

The topic for an independent study must be approved by the student’s advisor. The independent study outline, which should be approved no later than the beginning of the semester or session in which the student expects to graduate, must be filed in the Graduate School before a student is advanced to candidacy for a master’s degree.

The student must prepare and secure the advisor’s approval of an independent study report. Three copies of the report (one each for the student, the advisor, and the department) must be accepted by the advisor who will certify completion of the report to the Graduate School by the deadline specified in the Academic Calendar and submit a grade for 997-Independent study to the Registrar’s Office.

Candidacy for the Degree. To become a candidate for the Master of Education degree the following requirements must be met in approximately the following sequence:

1. Completion of the equivalent of one full-time semester (12 semester credits).
2. A GPA of at least 3.00 for all work attempted.
3. Appointment of an advisor from the major department. The advisor, who must be a member of the Graduate Faculty, will be appointed by the dean upon written recommendation of the chairperson of the student’s major department. The advisor is responsible to the department and the Graduate School for the supervision of the student’s work.
4. Approval of a Program of Study on a form available from the Graduate School. The program, which should be developed in consultation with the advisor, early in the second semester, must bear the signature of the student, the advisor, and the department chairperson (or designate) and must be submitted to the dean of the Graduate School for approval.
5. Approval of a topic for the independent study by having the advisor sign the Outline of Independent Study form and submitting the Outline and three copies to the Graduate School.

The student and the advisor will be notified in writing of the advancement to candidacy. Students should 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, are in satisfactory academic standing, and have been certified as eligible by the Graduate School.

INTEGRATED MASTER OF ENGINEERING PROGRAM

The Integrated Master of Engineering program provides an opportunity for selected students to work concurrently toward the Bachelor of Science in Engineering degree and the Master of Engineering degree. Such students will be able to complete both degrees in a total of five years and will be qualified to enter the engineering profession at an advanced level with special competence in engineering design.

Admission Requirements

Applicants will be considered for admission to the Integrated M. Engr. program if they have met the following requirements:

1. A minimum of 90 semester credits toward an engineering baccalaureate degree.
2. A minimum of 36 semester credits of approved engineering courses in the work completed.
3. Academic achievement necessary to pursue advanced study in engineering. A GPA of at least 2.50 for all previous work is required.

Interested students must apply for admission to this program early during the second semester of their junior year on forms available from the UND Graduate School. Each applicant will be notified in writing by the dean of the Graduate School concerning his/her status. The academic transcripts for those admitted will be marked accordingly.

Program Requirements

Students will be assigned a permanent faculty advisor by the dean of the Graduate School upon the recommendation of the chairperson of the student’s major department and the dean of the School of Engineering and Mines. The advisor will be responsible for developing with the student a detailed program of study which meets the requirements of the B.S. degree (see p. 45) and the M. Engr. degree (see p. 170 of this catalog). Those credits designated specifically to meet the M. Engr. degree requirements will be listed on a M. Engr. Program of Study form available from the Graduate School. The Program of Study 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
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 or science 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 course 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 an unaccredited 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 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 designee), and the dean of the School of Engineering and Mines, and must be submitted to the dean of the Graduate School for approval.
5. Approval of a topic for the design project by having the advisor, department chairperson, and dean of Engineering sign the Outline of Design Project and submitting the Outline and three copies to the Graduate School.

The student and the advisor will be notified in writing of the advancement to candidacy. Students should complete all requirements for advancement to candidacy prior to the semester in which they plan to graduate.

Final Examination. Candidates for the Master of Engineering degree must pass written final comprehensive examination(s) which must cover the course material in the field of study. Such examinations generally will be given and evaluated by the major department, but the results must be certified to the Graduate School by the advisor and the department chairperson on the form Final Report on Candidate by the deadline specified in the Academic Calendar. The appropriate comprehensive examination(s) will be arranged by the advisor and given by the department no earlier than the semester preceding the semester in which the candidate intends to graduate. Comprehensive examinations which are failed may be repeated only with the prior approval of the advisor, the department, and the dean of the Graduate School, but in no event earlier than at the next regularly scheduled offering.

MASTER OF FINE ARTS
See Visual Arts under Departmental Programs.

MASTER OF MUSIC
See Music under Departmental Programs.

MASTER OF PHYSICAL THERAPY
See Physical Therapy under Departmental Programs.

MASTER OF PUBLIC ADMINISTRATION
See Public Administration under Departmental Programs.

MASTER OF SOCIAL WORK
See Social Work under Departmental Programs.

SPECIALIST DIPLOMA

The Specialist Diploma is available only in the field of Educational Administration. This program requires the equivalent of two full years of study beyond the bachelor’s degree or one full year of study beyond the master’s degree. The Specialist Diploma ordinarily is a terminal program of advanced preparation for professional practice.

Admission Requirements
1. A master’s degree, normally in Educational Administration.
2. Significant experience in teaching and administration.
3. A minimum of eighteen semester credits, including student teaching, of undergraduate preparation in Education.
4. A GPA of at least 3.50 for all graduate work completed.
**Course Requirements.** A minimum of 64 credits beyond the bachelor’s degree is required for the Specialist Diploma, including 4 credits for the Independent Study Report (997). One half of the credits for the diploma must be for courses numbered 500 or higher. The program in Educational Administration will include an area of concentration of at least 40 credits, including at least 20 credits in Educational Administration, and one or two cognate areas totaling 12-24 credits.

**Students are referred to the section of this Catalog entitled “Department Programs” for additional departmental requirements.**

**Residence Requirements.** Following the awarding of the master’s degree, all students must spend either one semester or one summer session in residence (see p. 164 for a definition of Residence).

**Independent Study Report.** The independent study is designed to require the student to investigate a topic related to the major field of study. The study need not be an original contribution to knowledge but may be a presentation, analysis, and discussion of information and ideas already in the literature of the field. The requirement is to ensure that a student can investigate a topic and organize a scholarly report on the investigation.

The topic for an independent study must be approved by the student’s Advisory Committee. Approval is effected by the student’s completing a form titled Outline for Independent Study, available with instructions from the Graduate School, then submitting the outline to the Committee for approval. The outline, which must be approved no later than the beginning of the semester or session in which the student expects to graduate, must be filed in the Graduate School before a student is advanced to candidacy.

A report of an independent study must be prepared and submitted to the Faculty Advisory Committee for approval. Three copies of the report (one each for the student, the advisor, and the department) must be accepted by the Faculty Advisory Committee who will certify completion of the report to the Graduate School by the deadline specified in the Academic Calendar. The advisor will submit a grade for 997-Independent Study to the Registrar’s Office.

**Candidacy for the Diploma.** Candidates for a Specialist Diploma will not be permitted to graduate in the same semester or summer session in which they become a candidate. Students in Approved Status may be advanced to candidacy for the Specialist Diploma when the following requirements have been fulfilled:

1. Completion of the equivalent of a full-time semester (12 semester credits) with a satisfactory GPA.
2. Appointment of a three-member Faculty Advisory Committee. This Committee is appointed by the dean upon the written recommendation of the chairperson of the student’s major department. The chairperson of the Committee must be a Full member of the Graduate Faculty. Until the appointment of the Committee, the department chairperson, or 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 an Outline for Independent Study on a form available from the Graduate School. This outline, when approved by the Committee and filed with three copies in the Graduate School, indicates acceptance of the topic for study and incorporation in a report.
5. Completion of the required practicum or internship.
6. Completion of departmental testing requirements.

Students and their advisors will be notified in writing of advancement to candidacy.

**Final Examinations.** All students must pass written comprehensive examinations covering the program of work approved for the diploma. The examinations normally are given and evaluated by the department in the period 30 days before the Final Report deadline. Comprehensive examinations which are failed may be repeated only with the prior approval of the Advisory Committee, the department, and the dean, but in no event earlier than at the next regularly scheduled offering.

Candidates may not take the final comprehensive examination(s) unless they have applied to receive the diploma, have been advanced to candidacy for the diploma, and have been certified, in writing, as eligible by the Graduate School.

**DOCTOR OF ARTS**

The Doctor of Arts degree program is designed to prepare teachers for 4-year and 2-year colleges in subject matter fields. The recipient of this degree must have demonstrated a command of knowledge in the broad field of the degree and an ability to teach the subject at the post-secondary level. This degree does not require the preparation of a dissertation but does require the student to obtain some experience in independent research and write a formal report thereon.

The D.A. degree is available only in the departments of Biology and History. Only those persons holding a master’s degree in biology, history, or closely related fields are eligible for admission to a program leading to the D.A. degree.

**Students should refer to the section of this catalog titled Departmental Programs for additional admission, degree, examination, and course requirements unique to each department.**

**Admission Requirements**

1. An overall GPA of at least 3.50 for all graduate work.
2. A master’s degree.
3. Scores on the general and advanced tests of the Graduate Record Examination if appropriate.
4. Recommendation for doctoral work by the department.

In History, a master’s degree with thesis is preferred, and the master’s program must have a minimum of fifteen semester hours of history at the graduate level. Acceptance of a student for doctoral work, on the basis of the above criteria, does not imply or guarantee advancement of the student to candidacy for the degree.

**Program Requirements.** The D.A. degree requires the completion of a program of 90 semester credits beyond the baccalaureate degree, including acceptable master’s work. The program of study for the degree, prepared with the assistance of the Faculty Advisory Committee, and approved by the dean, will include:

1. A minimum of 60 credits of work in the discipline (the major) of which no more than 20 credits will be designated as an area of concentration. Included in the area of concentration will be a minimum of 5 credits of independent research.
2. A minimum of 10 credits in areas cognate to the major.
3. A minimum of 15 credits in college teaching. The majority of this work will be in a supervised teaching internship in the discipline and in work in the major department preparatory to the internship (seminars in college teaching, etc.).

With the approval of the student’s Committee and the dean, up to one-half of the work beyond the master’s degree may be transferred from another institution.

**Residence Requirement.** At least two regular consecutive semesters of residence are required on the University of North Dakota campus (see p. 164 for a definition of Residence).

**Internship.** A teaching internship during which the student is required to teach college-level courses under supervision is a necessary part of each student’s program. This teaching may be done at the University of North Dakota or at a cooperating institution. If done at a cooperating institution, the student will be under the joint supervision of a resident professor and the chairperson of the student’s Advisory Committee.
Research Project. All D.A. students must complete a research project and register for at least 5 semester credits. The project will be conducted under the direction of a member of the Faculty Advisory Committee, usually the chairperson, who is responsible for assigning a final grade. The proposed project must be approved by the Faculty Advisory Committee and the director of doctoral study of the department (if appropriate), and a copy will be filed with the department and the Graduate School.

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 Outline on a form available from the department.

7. The Advancement to Candidacy has been recommended by the student’s Faculty Advisory Committee.

The student and the advisor will be notified in writing of advancement to candidacy.

Final Examination. The final examination for the D.A. degree is conducted by the candidate’s full Faculty Advisory Committee. The examination will be oral and will be based on the area of concentration and the research project. Final examinations which are failed may be repeated only with the prior approval of the Advisory Committee and the dean.

Examinations are to be scheduled in advance by the Committee through the Graduate School. The results must be certified by the Committee on the Final Report form by the deadline specified in the Academic Calendar.

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 Instructions for the Preparation of Theses and Dissertations (1995 edition).

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 p. 164 for a definition of Residence).

Dissertation. Each candidate for the Doctor of Education degree must submit a dissertation to the Graduate School in partial fulfillment of the requirements for the degree. The dissertation is prepared with the guidance and advice of the student’s faculty advisor. However, all dissertations must be prepared in accord with the Instructions for the Preparation of Theses and Dissertations (1995 edition), which will be provided to each candidate when the program of study is approved. (Copies also may be purchased at the University Bookstore.)

The topic for the dissertation must be approved in advance by the student’s Faculty Advisory Committee. Approval is effected by the student’s completing a form titled Outline of Dissertation, available from the Graduate School, then submitting the outline to the committee for approval. The approved outline must be filed in the Graduate School. The outline should be approved at least six months before the degree is expected, but it must be completed before advancement to candidacy.

The draft of the dissertation should be presented to the Faculty Advisory Committee sufficiently in advance of the Preliminary Approval deadline that a thorough evaluation may be effected by the entire committee. The committee must be able to read the draft, suggest corrections and changes, and the student must be able to make the corrections, all in time for the committee to indicate its approval of the draft by signing a form titled Preliminary Approval of Dissertation. The student must deposit the approval form in the Graduate School by the deadline specified in the academic calendar (usually four weeks prior to commencement). The Preliminary Approval assures the student that no major changes will be required in the final copy of the dissertation. Copies of the dissertation in its final form must be presented to the Faculty Advisory Committee in time 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 Instructions for the Preparation of Theses and Dissertations, also must be presented with the dissertation. The abstract is published in Dissertation Abstracts by University Microfilms International, and the entire dissertation is microfilmed by the same organization. The Graduate School has the final copy of the dissertation bound and cataloged in the University Library.

Comprehensive Examination. All students seeking a Doctor of Education degree must take a written comprehensive examination after a substantial portion of the course work has been completed. At the option of the department, an oral examination may also be given. The content of the examination will be determined by the Graduate Faculty of the departments concerned, and the examination will be given at times announced by the departments. The examination must be extensive and searching and cover in depth the field or fields of knowledge in which the degree is taken. This examination must be completed before advancement to candidacy for the degree but cannot be undertaken until the scholarly tool requirements have been completed. Comprehensive examinations which are failed may be repeated only with prior approval of the advisory committee, the department, and the dean, but in no event earlier than at the next regularly scheduled offering.

Students must apply for permission to take the comprehensive examination on a form available from the Graduate School. After checking the record to ensure that the student is eligible for the examination (most of the work completed, Approved Status attained, Program of Study approved, scholarly tool requirements completed), the Graduate School will certify eligibility and will forward an examination report form to the chairperson of the student’s Faculty Advisory Committee. The student may not take the examination until such certification has been provided.

Candidacy for the Degree. A student must fulfill all of the requirements for and be advanced to candidacy prior to the beginning of the semester or summer session in which he/she expects to receive a degree.

Students in Approved Status may be advanced to candidacy for a doctor’s degree when the following requirements have been fulfilled:

1. A five-member Faculty Advisory Committee has been appointed. Four committee members are appointed by the dean upon the written recommendation of the chairperson of the student’s major department and must represent the major and cognate areas of study. The fifth member is appointed by the dean and represents the Graduate Faculty. Until the appointment of the committee, the department chairperson, or designate, acts as the student’s temporary advisor. The chairperson of the Committee, who serves as the student’s major and dissertation advisor, must be a Full member of the Graduate Faculty.

2. A Program of Study, outlining the requirements for the degree as developed by the student and the committee, has been approved by the student, the committee, and the dean of the Graduate School. The program, executed on a form available from the Graduate School, should be developed no later than the beginning of the second semester of work.

3. Departmental examination requirements have been completed.

4. A substantial portion of the course work for the degree has been completed with a GPA of no less than 3.00 for all work attempted.

5. The scholarly tool requirement has been met.

6. The comprehensive examination has been successfully completed.

7. A dissertation topic has been approved as evidenced by filing an approved Outline of Dissertation on a form available from the Graduate School (original and three copies).

8. Advancement to candidacy has been recommended by the student’s Faculty Advisory Committee.

The student and the advisor will be notified in writing of advancement to candidacy.

Final Examination. The final examination must be scheduled two weeks in advance by the committee through the Graduate School and must be completed and the results reported by the deadline specified in the Academic Calendar.

The final examination is conducted by the candidate’s full Faculty Advisory Committee in the presence of the dean of the Graduate School and such other members of the Graduate Faculty as the student may request. The final examination will include 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.

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. 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. In certain disciplines students who have completed the equivalent of the course work for the master’s degree may be readmitted to work toward the Ph.D. directly, thereby bypassing the master’s degree. In addition, each student must have: (1) attained an overall GPA of at least 3.50 for all graduate work, (2) completed the necessary undergraduate preparation, (3) completed any departmental examination(s) or other requirements, (4) presented scores on tests required by the department, and (5) been recommended for doctoral work by the department. Acceptance of a student for doctoral work on the basis of the above criteria does not imply or guarantee advancement of the student to candidacy for the degree.

Program Requirements. The Ph.D. degree requires the completion of a program of 90 semester credits of graduate work beyond the bachelor’s degree, including acceptable master’s degree work, and the submission of an acceptable dissertation. With the approval of the student’s Faculty Advisory Committee, up to one-half of the work beyond the master’s degree may be transferred from another institution. The program will include work in one major department and should include work in one or more related departments (i.e., either a minor or cognate area—see p. 175 for information regarding minors and cognates), but at least one-half of the work must be in the major field. The credits for the dissertation, and the research on which it is based, should comprise a substantial portion of the 90 credits for the degree and should be included in the major part of the program.

Students should refer to the section of this catalog titled Departmental Programs for additional admission, degree, examination, and course requirements unique to each department.

Residence Requirements. Since the Ph.D. is a research degree, the majority of the academic work must be conducted in an academic research environment. Accordingly, the program normally will include provision for two consecutive years of full-time academic work. In most instances this requirement will be met by two consecutive years of residence on the University of North Dakota campus (see p. 164 for a definition of Residence). With prior written approval by the dean, one of the two years of residence may be completed by one year of full-time academic work and/or research at another institution or location. Note: The Residence Requirement is in effect unless modifications have been granted to the department by the Graduate Committee.

Scholarly Tools. Candidates for the Ph.D. degree may have to demonstrate competence in scholarly tools required for study and research in the discipline. Each department offering the Ph.D. degree has specified the nature of these tools (languages, mathematics, statistics, computer programming, etc.). See “Departmental Programs.” This requirement must be completed before the student is permitted to take the comprehensive examination for the degree or become a candidate for the degree.

Students required to demonstrate a reading knowledge of a foreign language may do so by one of two procedures. Standardized tests (Graduate Student Foreign Languages Test—GSFLT) prepared by the Educational Testing Service are available in French, German, Russian, and Spanish and are given by the Counseling Center upon student request. The UND Languages Department will administer examinations near the end of each fall and spring semester and at the beginning of the fall semester each year in German and French. A student must register with the Languages Department one week in advance and may be examined in one of these languages a maximum of three times, thereafter being eligible only for the GSFLT. The Languages Department will offer the courses French 100 and German 100 on an irregular basis and only for audit for those students needing preparation in those languages. 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 Instructions for the Preparation of Theses and Dissertations (1995 edition), a copy of which will be provided each candidate upon approval of the program of study. Additional copies may be purchased at the University Bookstore.

The topic for the dissertation must be approved in advance by the student’s Faculty Advisory Committee. Approval is effected by the student’s completing a form titled Outline of Dissertation, available with instructions from the Graduate School, then submitting the outline to the committee for approval. The approved outline is then filed in the Graduate School. The outline should be approved at least six months before the degree is expected, but it must be approved before advancement to candidacy.

The draft of the dissertation should be presented to the Faculty Advisory Committee sufficiently in advance of the Preliminary Approval deadline that a thorough evaluation may be effected by each committee member. The Committee must be able to read the draft, suggest corrections and changes, and the student must be able to make the corrections, in time for the Committee to approve the dissertation and sign a form titled Preliminary Approval of Dissertation. The student must deposit the Approval Form in the Graduate School by the deadline specified in the academic calendar (usually four weeks prior to commencement). Unless this deadline is met, the student will not be permitted to graduate at the upcoming graduation. The Preliminary Approval assures the student that no major changes will be required in the final copy of the dissertation.

Copies of the dissertation in its final form must be presented to the Faculty Advisory Committee in time that they may thoroughly read the dissertation prior to the final examination. When the final version of the dissertation has been approved by the committee, a copy must be deposited in the Graduate School in time to receive the approval of the dean by the deadline specified in the Academic Calendar (usually two weeks prior to graduation). The advisor and the major department must each be presented one copy of the dissertation. One copy of a special abstract of the dissertation (in a 350 word format described in the Instructions for Preparation of Theses and Dissertations) also must be submitted. The abstract is published in Dissertation Abstracts by University Microfilms International, and the dissertation is microfilmed by the same organization. The Graduate School has the final copy of the dissertation bound and cataloged in the University Library.

Comprehensive Examination. All students seeking a Doctor of Philosophy degree must take a written comprehensive examination after a substantial portion of the 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 ad-
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 Outline of Dissertation on a form available from the Graduate School (original and three copies).

8. Advancement to candidacy has been recommended by the student’s Faculty Advisory Committee.

The student and the advisor will be notified in writing of advancement to candidacy.

Final Examination. The final examination must be scheduled two weeks in advance by the Committee through the Graduate School and must be completed and the results reported by the deadline specified in the Academic Calendar.

The final examination 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 M.D. degree is 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 for candidacy. 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 for candidacy.

Students interested in the joint Ph.D./M.D. program should contact the Executive Associate Dean for Academic Affairs and Research of the School of Medicine.

MINORS AND COGNATES

Some degree programs require or permit academic work outside of the area of concentration (major) in a supporting area which may be called a minor area or a cognate area. A minor is a concentrated study in a specific supporting field at the graduate level. A cognate is a selection of courses priding broad support for the major. Both must be in fields other than the major and both must include at least nine credits.

A minor must be in a specific field be so titled and identified on the student’s transcript. Only the courses approved for graduate credit may be included in a minor.

A cognate area will not be titled and will not be listed on a student’s transcript. All UND courses numbered 300 or higher and appearing in the Catalog are eligible for inclusion in a cognate area. Courses may be drawn from departments or fields which do not offer graduate courses or degrees and are, therefore, not included in this catalog.
Graduate Departmental Courses, Programs

Only the courses listed in this bulletin may be used as part of the major or minor work for a degree program. Classes numbered 300 or higher may be applied to a cognate area. Those classes numbered 500 or higher are graduate classes while those listed with 300 or 400 numbers are upper division undergraduate classes. The 300- and 400-level courses listed in this section have been approved for graduate credit by the University Graduate Committee upon application by the department and on the basis that additional work is required of all graduate students in such courses.

Common course numbers are used for the following registrations and are not listed separately for each department:
- Continuing Enrollment ............................................. 996
- Independent Study .................................................... 997
- Thesis ........................................................................... 998
- Dissertation .................................................................... 999

The faculty listed are members of the Graduate Faculty. Those whose names are preceded by an asterisk are Associate Members and the others are Full Members. Only a Full Member may serve as the chairperson of the Advisory Committee (and, therefore, as the advisor) for a student pursuing a doctor’s degree or specialist’s diploma. An Associate Member may serve as the advisor for a student pursuing a non-thesis master’s degree and, under certain conditions, as the advisor for a student pursuing a thesis master’s degree. Associate Members may serve as members on any Faculty Advisory Committee.

NOTE: THE ADMISSION AND DEGREE REQUIREMENTS LISTED IN THIS SECTION ARE IN ADDITION TO THE GENERAL GRADUATE SCHOOL REQUIREMENTS.

Anatomy and Cell Biology

Professors Carlson (Chair), J. C. Oberpriller (Graduate Director), J. O. Oberpriller; Associate Professors Olson, Rieke; Assistant Professors McCormack, Ruit; Adjunct Assistant Professor Hunt

Program Description

The graduate program of the Department of Anatomy and Cell Biology leads to the degrees of Master of Science and Doctor of Philosophy. The program is designed to prepare scholars for academic teaching and research, or for research in a variety of organizations that carry on research and development in biologically or medically related areas. Research facilities and expertise are available in the department in transmission and scanning electron microscopy, developmental biology, reproductive biology, neuroscience, tissue culture, immuno-histochemistry, and molecular biology.

Admissions Requirements

1. An overall undergraduate GPA of at least 3.00.
3. A year-long sequence of General Chemistry.
4. A course in Organic Chemistry, a course in College Algebra or the equivalent, and a course in Morphology (e.g., Human Anatomy, Comparative Anatomy, Embryology, Histology); courses in Cell Biology, Biochemistry, and Genetics are also recommended.
5. Graduate Record Examination—Placement in the 40th percentile on GRE General Test (scores from the Advanced Biology test are also recommended).
6. Admission to the Anatomy and Cell Biology is through the Ph.D. program.

Occasionally, when prerequisites are questionable, students may be admitted to the M.S. degree program. Once they have proven themselves in the graduate program, a student in the M.S. program may choose to attempt to by-pass that degree by taking a Diagnostic Qualifying examination. Such an examination is administered by a departmental committee and consists in part of the preparation of a written research proposal by the student, with an oral defense of that proposal. By passing it and by meeting other requirements, such as a GPA of 3.5 or higher in graduate level course work, a student may be admitted to the Ph.D. program without completing the M.S. program. Otherwise, a student admitted to the M.S. program must complete the degree as listed below.

Other departmental requirements for admission to the Ph.D. program include an overall GPA of 3.50 in previous graduate work, and, if the student is new to the UND Anatomy and Cell Biology Program, performance at the 40th percentile or better on the GRE General test, and appropriate letters of reference.

Degree Requirements

Master of Science

1. An average of 36-50 semester hours of graduate credit (can be completed in four full semesters and one summer session).
3. Completion of the following core graduate level courses: Gross Anatomy (513), Histology (515), Developmental Anatomy (518), Neuroscience (522), Seminar (505 for 3 semesters), and Biochemistry (500) or Physiology (523).
4. Teaching experience in one of the following courses: Gross Anatomy, Histology, Neuroscience (In unusual circumstances, this requirement may be waived by action of the faculty.)

Doctor of Philosophy

1. Four full years plus summer sessions.
2. Completion of the following core graduate level courses: Gross Anatomy (513), Histology (515), Developmental Anatomy (518), Neuroscience (522), Seminar (505 for 6 semesters), Biochemistry (500), and Physiology (523).
3. A minimum of 6 credits of elective specialty courses.
4. Demonstration of proficiency in at least one of the following areas: foreign language (by examination), statistics (through course work at the undergraduate or graduate level or by equivalent practical experience), biochemical or cell biological laboratory research techniques through formal graduate level course work. (The quantity and quality of the scholarly tools experiences required in these areas is dependent upon the needs of the student as determined by his or her graduate advisory committee; on occasion, depending upon the background and needs of a student, the above requirement(s) may be waived or modified with approval of the Graduate Faculty of the Department of Anatomy and Cell Biology.)
5. Teaching experience in two of the following courses: Gross Anatomy, Histology, or Neuroscience.
6. A dissertation written on an independent research problem.

The department accepts NBME Part I as the Diagnostic/Qualifying Examination for medical students entering the M.D./Ph.D. program. Students must pass Part I and the anatomy section of the examination.

Courses

500. Introduction to Research in Anatomy. 1 credit. Prerequisite: senior or graduate standing. A course in the philosophy and methodology of research and an orientation to research in Anatomy.
Biochemistry and Molecular Biology

Professors Knoll, Lambeth, Nordlie (Chairperson), Ray (Graduate Director); Associate Professors Detke, Milavetz, Sukalski; Assistant Professor Shabb; Adjunct Professors Johnson, Nielsen

Program Description

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 Faculty of the University of North Dakota School of Medicine. Research is conducted in the areas of intermediary metabolism, enzymology, neurochemistry, protein/protein interactions, endocrinology, enzyme and metabolic regulation, membranes, roles of free radicals in biological systems, receptor proteins, signal transduction, trace metal transport and function, protein engineering, and molecular genetics. There is also collaboration with research scientists at the United States Department of Agriculture Human Nutrition Research Center, whose research interests focus on metabolism of trace and ultra-trace elements.

Admission Requirements

1. A minimum of 20 semester credits (or equivalent) in chemistry plus biology, including at least 6 semester hours of credit in organic chemistry.
2. Courses in Analytical Chemistry and Biology are highly desirable.
3. General Record Examination—General and Advanced Graduate Record Examination tests (Biochemistry, Cell and Molecular Biology; or Chemistry; or Biology).

Financial Assistance

Most students are supported by Graduate Teaching or Graduate Research Assistantships. Students may apply for admission at any time, but those seeking financial aid should complete their application by March 1, since appointments are generally made in March or early April for the coming academic year.

Degree Requirements

Master of Science

1. A 30 credit major (including research and thesis) or a 21 credit major and 9 credits in a minor or cognate area.
2. A grade of at least B in Biochemistry 500.
3. An overall GPA of at least 3.0.
5. Satisfactory performance on a final oral examination covering the thesis and program of study.

Doctor of Philosophy

1. Performance of original research of a quality suitable for publication in a refereed, professional journal and the preparation of a dissertation based thereon.
2. A minimum of 90 credit hours, including research and dissertation.
3. A scholarly tool (normally met by taking Biology 470 or its equivalent).
4. A grade of at least B in Biochemistry 500.
5. An overall GPA of at least 3.0.
6. A minor or cognate of at least 9 credits outside of the department.
7. Passing performance on oral and written comprehensive examinations covering the course work in the major and related areas.

Work completed for the master’s degree program may be incorporated into the doctoral program if approved by the student’s Advisory Committee and the dean of the Graduate School. Students who wish to proceed toward the Ph.D. degree without obtaining a M.S. in the department will be required to pass a Qualifying Diagnostic examination normally given after three semesters of graduate work.

M.D./Ph.D.

The Department offers the M.D./Ph.D. degree. For further information consult the M.D./Ph.D. section of this catalog (p. 175).
Courses

500. Survey of Biochemistry and Molecular Biology, 7 credits. First semester. Prerequisite: A year of Organic Chemistry. This course covers the structures, properties, and metabolism of molecules which make up organisms. Topics include the structures and metabolism of amino acids, proteins, carbohydrates, lipids, nucleotides, and nucleic acids; enzymes; membranes; bioenergetics; hormones; biological regulatory mechanisms; molecular aspects of gene expression; hemoglobin, pH regulation; and nutrition. Emphasis is placed on the biochemistry of mammals and the variations that occur in disease.

510. Research Tools, 2 credits. First semester. Prerequisite: Biochemistry 500 or consent of instructor. The theory and application of modern laboratory techniques including spectrophotometry, chromatography, centrifugation, electrophoresis, tissue and cell culture, immunochemistry, and radiochemistry are considered. Techniques for assay of biological constituents, purification of proteins, and the construction and use of DNA recombinants will also be covered with examples from the current literature.

514. Current Literature, 1 credit. First and second semesters. Prerequisite: Biochemistry 500 or consent of instructor. Students and faculty of the department rotate in leading informal reviews, analyses, and the discussions of research papers selected from current journals in the areas of biochemistry and molecular biology. S/U grading only.

521. Seminar, 1 credit. Prerequisite: Biochemistry 500 or consent of instructor. Students present topics in biochemistry and molecular biology based on review of the current literature. Each presentation is followed by a discussion of the topic by the faculty and students of the department. S/U grading only.

530. Advanced Topics, 1 to 3 credits. Prerequisite: Biochemistry 500 or consent of instructor. A series of topics in biochemistry and molecular biology rotated over a three year period. The list of topics may vary, but currently includes: (A) Bioenergetics; (B) Endocrinology; (C) Enzyme Chemistry; (D) Molecular Genetics; (E) Neurochemistry; (F) Protein Engineering; (G) Free Radicals in Biology; and (H) Signal Transduction.

540. Special Topics, 1 to 3 credits. Prerequisite: Biochemistry 500 or consent of instructor. Discussion of a topic in biochemistry and/or molecular biology of current interest to faculty and students.

590. Research, 1 to 10 credits. The assignments deal with pertinent research problems in various aspects of biochemistry and molecular biology.

594. Special Problems in Biochemistry and Molecular Biology, 1 to 6 credits. Prerequisite: Consent of instructor. The student in consultation with a faculty member of the department undertakes a laboratory research project.

595. Readings in Biochemistry and Molecular Biology, 1 to 3 credits. Prerequisite: Biochemistry 500 or consent of instructor. Selected readings and library research in an area of mutual interest to the student and a faculty member of the department. Conferences and/or written reports are required.

Facilities for Graduate Research

The department is located in Starcher Hall which was completed in 1981. This structure contains greenhouse facilities, herbarium, controlled environment chambers, animal rooms for terrestrial and aquatic organisms, observation rooms for behavioral studies, vertebrate and invertebrate research museums, tissue culture, isotope, chromatography, and data analysis rooms, molecular biology laboratories, and a darkroom.

The department operates three field stations for research and class use. The Forest River Biology Area is 40 miles from the campus. It includes habitats suitable for studies in aquatic and woodland biology: spring brook, swamp, moist and dry woods, and a section of the Forest River. The Oakville Prairie Station consists of 800 acres of virgin upland and lowland prairies and is located 12 miles from the campus. A third area consists of 600 acres of old fields located 17 miles from the campus.

The Biology Department and the North Dakota Game and Fish Department have a history of cooperative research involving the management of sport and commercial fisheries and wildlife. The department participates in the planning for the University of Minnesota Forestry and Biological Station at Itasca through representation on the Itasca Advisory Council.

Admission Requirements

1. An undergraduate major or its equivalent in the biological sciences with at least 24 semester credits in biology.
2. Graduate Record Examination—both the General and the Advanced Test in Biology (Doctoral applicants must average at least the 50th percentile).

Students seeking summer or fall admission should complete their applications by April 15. Master’s degree applicants should specify interest in either the thesis or non-thesis option. Inquiries should be directed to the Director of Graduate Studies, Biology Department.

Financial Assistance

Financial aid in the form of teaching assistantships, research assistantships, fellowships and internships are available on a competitive basis. Students seeking teaching assistantships should complete their applications by March 1, since most appointments are made in March. Teaching assistantships are renewable if progress toward the degree and instructional service are satisfactory. Normally, master’s degree students are limited to two years of such support, while doctoral students may receive teaching assistantship support for up to three years beyond a master’s degree. Research assistantships may be offered by faculty members for work on specific research projects for nine- or twelve-month periods.

Degree Requirements

Master of Science

This degree program is designed to produce broadly trained biologists for job opportunities or continued graduate study.

Thesis Option

1. Thirty (30) credit hours including research and thesis, as well as minimum of two credits of seminar.
2. Successful completion of a comprehensive examination administered by the student’s advisory committee.

Non-Thesis Option

1. Thirty-two (32) credits including a minimum of 23 credits in the major.
2. A minimum of two credits of seminar.
3. Preparation of a written independent study and oral presentation of the results to the advisor and interested faculty.
4. Written comprehensive final examination.

Biology

Professors Auerbach, Crawford, Fivizzani (Chairperson), Holloway, Larson, D. Lieberman, Schlosser, Seabloom, Sheridan, Wrenn (Graduate Director); Associate Professors LaDuke; Assistant Professors Denome, Galewsky, Hughes, Kelsch, Lang; Research Professor M. Lieberman; Assistant Research Professor Vanderpool

Program Description

The Department of Biology offers graduate studies leading to the Master of Science (thesis and non-thesis options), Doctor of Arts, and Doctor of Philosophy degrees. These programs are designed to prepare students for academic teaching and research, research in government service, research and developmental opportunities in industry, and functioning as a professional biologist.

The department offers graduate work in the following areas: Ecology; Behavior; Fisheries Biology; Wildlife Biology; Genetics; Morphology; Physiology; Systematics and Molecular Biology. A reputation for excellence in the area of “Ecology of the Northern Great Plains” has been developed, and the Ph.D. program has been designated by the Western Interstate Commission for Higher Education (WICHE) as a Western Regional Graduate Program because of its uniqueness and strength. It is, therefore, open to residents of the 13 western states at resident tuition rates.

University of North Dakota
Doctor of Arts

This degree program is designed to produce broadly trained biology teachers for the four-year and junior colleges. A dissertation is not required, but students must have some research and technical writing experience as part of their program. Only those persons holding a master’s degree in biological science are eligible for admission to the program. A teaching internship is required as part of this program.

Doctor of Philosophy

1. Performance of research suitable for publication in refereed professional journals, and the writing of a dissertation based thereon.

2. Four (4) credits of seminar.

3. Scholarly tool requirement of the following options: (1) reading knowledge of two foreign languages; (2) reading knowledge of one foreign language and 5 credits of course work in a supporting area; (3) five credits of course work in each of two supporting areas. (Supporting areas include anatomy, biochemistry, chemistry, computer science, microbiology, physiology, psychology, or statistics.)

4. A minor is not required, but each student is expected to show competence in related areas as determined by the student’s Advisory committee.

Work completed on a master’s degree program may be incorporated into the doctoral program if approved by the student’s Advisory Committee and the dean of the Graduate School.

Courses

503. Seminar. 1 credit. Discussion of selected topics in advanced biology, a different topic each semester.

504. College Biology Teaching. 3 credits. Survey of literature and trends in college biology teaching.

520. Helminthology. 3 credits. Prerequisite: Biology 364 or equivalent. Morphology, physiology, and life histories of the worm parasites of humans and other animals.

522. Medically Important Arthropods. 2 credits. Prerequisites: Biology 363 or 364 or equivalent. The biology, distribution, and health significance of insects and arachnids having human and veterinary importance.

533. Grassland Ecology. 2 credits. Prerequisites: Biology 322 or equivalent. Phytophagous, 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, 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.

587. Teaching Internship in Biology. Up to 12 credits. Supervised experiences in college biology teaching and/or curriculum development.

592. Directed Studies. 1 to 4 credits. Designed to meet the needs of individual and small groups of students in areas of faculty specialization. May be repeated to a total of 12 credits. Examples include: Aquaculture, Big Game Biology, Biorehythms, Conservation Biology, Fire Ecology, Molecular Techniques, Plant-Animal Interactions, Sex Determination and Speciation.

599. Research. Credits arranged. Maximum of 15 credits per semester. Intended for students conducting original research in consultation with staff. S/U grading only.

312. Evolution. 3 credits.

332. General Ecology. 3 credits.

332L. General Ecology Lab. 1 credit.

333. Population Biology. 3 credits.

334. Ecology of Animal Parasites. 3 credits.

336. Systematic Botany. 4 credits.

338. Animal Behavior. 2 credits.

338L. Animal Behavior Lab. 2 credits.

341. Cell Biology. 3 credits.

341L. Cell Biology Lab. 1 credit.

343. Plant Physiology. 3 credits.

343L. Plant Physiology Lab. 1 credit.

357. Modern Genetics and Man. 3 credits.

361. Plant Morphology. 4 credits.

363. Entomology. 4 credits.

364. Parasitology. 2 credits.

364L. Parasitology Lab. 2 credits.

369. Histology. 2 credits.

369L. Histology Lab. 2 credits.

370. Vertebrate Zoology. 2 credits.

371. Anatomy and Adaptations Laboratory. 2 credits.

373. Vertebrate Natural History. 3 credits.

375. Invertebrate Zoology. 4 credits.

378. Developmental Biology. 3 credits.

415. Ichthyology. 3 credits.

427. Ornithology. 3 credits.

428. Mammalogy. 3 credits.

431. Wild Life Management. 4 credits.

432. Fish and Wildlife Disease. 3 credits.

433. Aquatic Ecology. 3 credits.

433L. Aquatic Ecology Lab. 1 credit.

438. Fisheries Management. 3 credits.

442. Physiology of Organs and Systems. 4 credits.

470. Biometry. 3 credits.

Business Administration


Program Description

The Master of Business Administration (M.B.A.) is a professional degree with a program designed to prepare persons for general management responsibilities at the executive level. The program is accredited by the American Assembly of Collegiate Schools of Business. The recipient of the degree must have demonstrated critical, analytical, and decision-making abilities in the broad area of management and also must have demonstrated an ability to study and write in one specialized area. The M.B.A. degree program is designed for individuals who have an undergraduate background in a field other than business as well as for those with undergraduate training in business.

Admission Requirements

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).

To be admitted to Approved Status, applicants must demonstrate command of a common body of knowledge in business and administration through course work in economics, accounting, quantitative methods, the functional areas of business, mathematics, and administrative process. This competence normally will have been demonstrated by completion of the following UND undergraduate and foundation 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 departments within the College of Business and Public Administration. The M.B.A. Program Administrator is responsible for coordinating all aspects of the program. Business courses carrying graduate credit status from the departments of Accounting, Business Administration, Economics, Finance, Management, and Marketing are described elsewhere in this section. The M.B.A. degree program course requirements are:

1. A minimum of 32 semester credits of academic work must be completed. The program includes a core of 26 semester credits, including the Independent Study (B.A. 997-2 credits), and sufficient cognate electives to total 32 semester hours. The M.B.A. Core includes the following required courses:

- Management 501: Quantitative Analysis for Management Decisions 3 credits
- Management 505: Policy Formulation and Administration 3 credits
- Management 515: Advanced Managerial Theory 3 credits
- Marketing 510: Strategic Market Planning 3 credits
- Economics 509: Macroeconomic Decision-Making 3 credits
- Accounting 509: Accounting Information for Decision and Control 3 credits
- Finance 501: Managerial Finance 3 credits
- Bus. Admin. 502: Business Research Methods 3 credits

TOTAL 24 credits

2. Cognate elective courses may be chosen from those offered at the 300-, 400- and 500-level in the Departments of Accounting, Economics, Finance, Management, Marketing, and related fields. A cognate may be chosen from selected courses in the Aviation Administration area.

Students who already have completed courses similar to those in the core will be required to choose substitutes from the graduate credit offerings listed in this catalog. Core substitutions require the prior approval of the advisor 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. core courses before enrolling in Management 505.

Courses

ACCOUNTING

- 501. Seminar in Accounting Problems. 1 to 4 credits. Special problems in accounting and accounting research. May be repeated.
- 503. Accounting Theory. 3 credits. Prerequisite: satisfactory evidence of academic training or practical experience. Theory and use of accounts and accounting principles.

504. Advanced Auditing. 3 credits. Prerequisite: the same as for 503. Auditing theory and practice.
505. 506. Specialized Accounting Problems. 6 credits. Prerequisite: the same as for 503. Research, analysis, and problem solving.
507. Advanced Managerial Accounting. 3 credits. Functional uses of accounting in management of the enterprise.
509. Accounting Information for Decision and Control. 3 credits. Management accounting concepts and their application in internal planning, control, and decision-making.
510. Industrial Quantitative Controls. 3 credits. Prerequisite: Accounting 306. The use of quantitative techniques in business decision making. Some of the topics included are probability concepts, decision theory, inventory control, and linear programming.
575. Special Topics. 3 credits. Specific topic will vary from offering to offering at the discretion of the department. Departmental permission will be required for enrollment. Prerequisites and/or corequisites may be required depending upon the special topic selected. Course may be repeated up to a total of nine credits with permission of department. Regular grading.
590. Contemporary Readings in Accounting. 2 credits. Review of outstanding monographs and other writings in the field of accounting.
591. Accounting Research. 1 to 6 credits. Individual student projects designed to develop skills in accounting research.
592. Research in Federal Tax. 1 to 4 credits. Prerequisite: Accounting 411 or equivalent. Research in Federal Income Tax with emphasis on corporations and shareholders.

306. Cost Accounting II. 3 credits.
309. Accounting Information Systems. 3 credits.
312. Fund Accounting. 3 credits.
401. Accounting Problems. 3 credits.
403. Contemporary Accounting Theory. 3 credits.
405. Auditing. 3 credits.
406. Auditing Problems. 3 credits.
410. Income Tax I. 3 credits.
411. Income Tax II. 3 credits.

BUSINESS ADMINISTRATION

502. Business Research Methods. 3 credits. Prerequisites: Completion of MBA foundation courses or consent of instructor. A study of the methodology of research involving research design, problem definition, information sources, data collection instruments, and the organization and writing of a research paper.
996. Continuing Enrollment. Variable credit.
997. Independent Study. 2 credits. (See p. xx for details on 996 and 997.)

BUSINESS LAW

593. Research in Business Law. 1 to 4 credits. Individual projects designed to develop basic skills in legal research.

ECONOMICS

504. Advanced Price Theory. 3 credits. Prerequisite: Economics 308. Economic theory and methodology; theory of consumer behavior and demand; theory of production and distribution, equilibrium in commodity and factor markets; general equilibrium and welfare; behavior of economic agents in imperfect competition. Particular attention is given to efficiency and equity ramifications of perfectly competitive economic systems.
505. Advanced Macroeconomic Theory. 3 credits. Prerequisite: Economics 309. Advanced study of macroeconomic theoretical models with particular attention to the analysis of business cycles, income growth, and evaluation of public policies concerned with inflation and unemployment.
509. Macroeconomic Decision-Making. 3 credits. Prerequisite: Economics 202 or 205. 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 437 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 policies of external and internal monetary and fiscal policies in those areas. Multinational corporations, world trade, New International Economic Order (NIEO) and trade.

Seminar on the Economics of Regulation. 3 credits. Prerequisites: Economics 308 or Econ 514 or Econ 504, or permission of the instructor. Journal articles in regulatory economics will be discussed in a seminar format. Key components of the course include: the foundation for utility regulation; determining the cost of capital; the importance of cost and demand factors in rate design; energy conservation; and alternatives to rate-of-return regulation.

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.

Research in Economics. 2 to 3 credits. Research work and use of original documents: collecting of material and preparing of special topics and bibliographies; familiarizing the student with government publications and other material available for study of economic problems.

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.
334. Economics of Development. 3 credits.
341. Labor Economics and Labor Relations. 3 credits.
355. Economics of Regulation. 3 credits.
400. History of Economic Thought. 3 credits.
403. Commercial Bank Operations. 3 credits.
416. Mathematics for Economists. 3 credits.
427. Financial Markets and Institutions. 3 credits.
430. Political Economy. 3 credits.
437. International Economics. 3 credits.
438. International Money and Finance. 3 credits.
444. Economics of Human Resources. 3 credits.
450. Industrial Organization and Public Policy. 3 credits.
475. Economics of Natural Resources and the Environment. 3 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.
410. Cases in Managerial Finance. 3 credits.
420. Investment Analysis and Portfolio Management. 3 credits.
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.

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 M.B.A. core courses or consent of instructor. An integrating course designed to develop coordinating ability and experience in the decision-making process. Taught from the point of view of the top management and by the case method, the course develops understanding of an overall point of view, through analysis of actual business situations, and an appreciation of the relations of the production department to other departments and to the business as a whole. Concluding cases place emphasis on the responsibilities of business enterprise to the community and to society generally.
515. Advanced Managerial Theory. 3 credits. Prerequisite: Management 300 or consent of instructor and graduate standing. Analysis of macro- and micro-behavioral approaches to the study of effective human resource management within the organization. Topics covered include the environment, the individual, small group, leadership, motivation, job design, evaluation, rewards and growth. Macro-behavioral topics such as organizational design, climate, and organizational process are also covered as they 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.
403. Operations Management. 3 credits.
407. Wage and Salary Administration. 3 credits.
408. Issues in Human Resource Management. 3 credits.
409. Union-Management Relations. 3 credits.
412. Issues in Production Management. 3 credits.
420. International Business Management. 3 credits.

MARKETING

510. Marketing Administration. 3 credits. Prerequisite: Marketing 301. Marketing situations analyzed from the point of view of management.
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.
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. Prerequisite: Consent of instructor.
425. Current Perspectives in Global Marketing. 3 credits.

Business Education and Vocational Education

Professors Langemo, Navara (Chairperson), Prigge; Assistant Professor *Mohagen

Program Description

Graduate study in the Department of Business and Vocational Education may lead to the Master of Science degree in Business Education or Vocational Education. Degree programs are designed to serve those who desire to enter college, post-secondary, or secondary level teaching, supervision, or administration.

Admission Requirements

Master of Science in Business Education (thesis or non-thesis)
A minimum of 20 semester hours of undergraduate work in education or business courses (may include business education and business administration courses).

Master of Science in Vocational Education (non-thesis)
1. A minimum of 20 semester hours of undergraduate course work in an area related to vocational education, e.g., home economics, agriculture, counseling and guidance, industrial technology, etc.
2. At least one year of successful teaching experience or occupational experience equivalent to vocational certification requirements of the North Dakota State Board for Vocational Education.

Degree Requirements

Master of Science in Business Education
1. Major must include courses in business and vocational education and a thesis or independent study.
2. A minor in a single field or a cognate in related fields may be chosen from fields such as data processing, vocational education, accounting, business law, management, or marketing; liberal arts fields are also acceptable.
3. The following courses must be included on the program of study: BVED 524, 546, 550 and VED 535.

Master of Science in Vocational Education
1. Major must include courses in vocational education and an independent study.
2. A minor or cognate area may be selected from such fields as business education, marketing education, home economics, industrial technology education, educational administration, special education, counseling and guidance, and agricultural education.
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3. Candidates minioring in agriculture or home economics may complete minor requirements at North Dakota State University or at an institution offering a similar graduate program.

4. Program of Study must include: VED 535, 444 or 528, 530, and 541 (5 credits).

BUSINESS EDUCATION

503. Improvement of Instruction and Research in Business Education Skill Subjects. 1 to 4 credits. Organization, methods of instruction, and research in business education skill subjects—keyboarding, shorthand and alternative writing methods, or keyboard-based skill courses.

505. Improvement of Instruction and Research in Business Education Subjects. 1 to 4 credits. Organization, methods of instruction, and research in business education cognitive subjects, such as accounting/bookkeeping, basic business, business communications, office procedures, computers/data processing.

524. Principles and Practices in Business Education. 3 credits. Evaluation of aims and philosophies of business education at secondary, junior college, and college levels in terms of vocational and general education needs of youth; current philosophies and their application to classroom practices; professional organizations and literature; evolution of business education principles and practices; content and curricular considerations for business programs.

537. Business and Vocational Education in the Post-Secondary School. 3 credits. Administrative and curricular considerations in business and vocational education programs for junior colleges, private business schools, technical institutes, teacher-education programs, collegiate schools of business, and graduate schools; business teacher certification; field trips and interviews with officials at post-secondary institutions; independent study of institution of student’s choice.

539. Professional Writing in Business Education. 3 credits. Preparation of behavioral objectives for business non-skill and skill subjects. Development of shorthand and keyboarding teaching materials to include such controls as syllabic intensity, stroke intensity, and diagraphical constituency; textbook and article writing; legal aspects of royalty and authorship. Each student must prepare three articles and a textbook prospectus to be submitted for publication.

546. Research Seminar in Business Education. 1 credit. A study of dissertation review and research design. S/U grading only.

550. Office Technologies and Concepts of Information Management. 3 credits. A study of each specialty area included in modern administrative office management, including office layout, design, and space utilization; systems and procedures; personnel administration applied to support services management; business records management; word processing; data processing; reprographics; office work simplification; work measurement, in-service office education and training.

591. Research in Business Education. 1 to 3 credits. Repeatable to six credits.

595. Readings in Business and Vocational Education. 1 to 3 credits. Repeatable to six credits.

405. Records Management Systems. 3 credits.

409. Data Resource Management. 3 credits.

413. Telecommunications. 3 credits.

420. Methods and Materials for Cooperative Office Education Programs. 2 credits

VOCATIONAL EDUCATION

527. Evaluation and Measurement in Vocational Education. 3 credits. Principles of evaluation; prognosis and aptitude tests for vocational occupations; statistical interpretation of tests; grading and evaluation in skill and non-skill subjects; standardized tests, test construction for specific vocational subjects.

528. History and Principles of Vocational Education. 3 credits. Evolvement of the vocational education movement and its motivating influences in Europe and America; philosophies of vocational education; principles, practices, and trends relating to legislation; relationship of vocational education to the total plan of public education.

529. Part-time and Adult Programs in Vocational Education. 3 credits. Problems of adult vocational education including the determination of need, selection of teachers, appropriate teaching procedures, methods of financing, and planning community programs.

530. Administration and Supervision of Vocational Education. 3 credits. Principles of effective administration and supervision; administering programs sponsored by federal vocational legislation and administered by state and local boards of education; functions of state plans, study of program standards; planning physical facilities; supervisory duties on local, state, and national levels.

531. Vocational Education for Youth with Special Needs. 2 credits. A study of the characteristics and education needs of mentally retarded, socially and emotionally disturbed, and physically handicapped students, their employment opportunities; developing meaningful vocational sequences to meet their special needs.

535. Introduction to Research. 3 credits. Study of significant research in vocational education; research methodology; organization and presentation of research data; application of research to vocational education topics; supervision of original investigations being made by graduate students.

536. Seminar in Vocational Education. 2 credits. Opportunity for graduate students to study advanced problems in vocational education.

540. Special Topics in Vocational Education. 1 to 3 credits. An intensive study of a topic of interest to vocational educators. The topics of study will vary and the course may be repeated for credit provided the subject of study differs.

541. Directed Study in Vocational Education. 1 to 2 credits. Specialized study to identify and analyze facets of vocational education through campus and field experiences. Philosophy, objectives, issues and problems, criteria for evaluation, cooperative programs, youth organizations, research, and administration of individual vocational education service areas. Repeatable to 6 credits.

580. Internship in Vocational Education. 1 to 6 credits. Field work in supervising and administering vocational education programs on secondary or post-secondary levels or occupational experience while under the direction of a qualified vocational administrator or supervisor. S-U grading only. May be repeated.

421. Coordinating Techniques. 2 to 3 credits.

444. Philosophy of Vocational Education. 3 credits.

DISTRIBUTIVE EDUCATION

596. Problems in Distributive Education. 1 to 3 credits. Credits and hours arranged by the instructor. Selected problems in developing and expanding distributive education.

Chemical Engineering

Professors Hasan, Owens; Associate Professors Erjavec, Ludlow (Chairperson); Assistant Professor Schulz

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 of Chemical Engineering also participates in the multidisciplinary Energy Engineering Ph.D. program. The M.S. or M.Engr. degree can be completed in one year of full-time study by a student holding an accredited B.S. degree in Chemical Engineering. It has been common over the last several years for students holding baccalaureate degrees with majors in chemistry to apply, enroll and successfully complete requirements for the M.S. degree with a major in chemical engineering.

Research interests in the department include surface science and catalysis, characterization of fractal systems using gas adsorption, multiphase flow in petroleum wellbores, process modelling and control, and engineering statistics. Research projects are often done in collaboration with the Energy & Environmental Research Center (EERc), which has extensive analytical, laboratory, and pilot plant facilities.

Admission Requirements

Master of Science

1. B.S. degree in Chemical Engineering from an ABET accredited program. (Students holding a B.S. degree in a science field may be admitted to Qualified Status with an obligation to acquire a background in Chemical Engineering.)

2. An overall undergraduate GPA of at least 2.75 or a GPA of at least 3.00 for the last two years.

3. Graduate Record Examination General Test for those with undergraduate degrees from other than ABET accredited programs.

Master of Engineering

1. B.S. degree in Chemical Engineering from an ABET accredited program.

2. Overall GPA of at least 2.50 or a GPA of at least 3.00 for the last two years.

Degree Requirements

Master of Science

There are no specific departmental degree requirements beyond those required for the Master of Science degree.

Master of Engineering

1. Thirty credits (30) with at least 15 credits of chemical engineering at the 500-level.
2. Fifteen (15) credits in engineering design, including either Chemical Engineering 511 or 512, Engineering 595 (3 credits), and nine credits selected from approved engineering design courses.
3. At least 15 credits of basic and engineering science, including at least 3 credits of chemistry, 3 credits of chemical engineering, 3 credits of mathematics, and 3 credits of chemistry, chemical engineering, or mathematics.

Courses

503. Fuels Technology. 3 credits. 3 to 6 hours. Processing and utilization of low rank fuels.
504. Air Pollution Control. 3 credits. Background equivalent to Chemistry 106, Math 213, and Physics 206 is expected. Identification of major air pollutants from stationary and mobile sources and methods of controlling their emissions; dispersion of air pollutants in the atmosphere; photochemical air pollution; federal and state regulations.
507. Advanced Unit Operations. 3 to 6 credits. Background equivalent to CHE 405 is expected. One or more of the following: fluid flow, heat flow, evaporation, humidification and dehumidification, drying, gas absorption, distillation, and extraction.
508. Advanced Unit Operations. 3 to 6 credits. Continuation of the first semester's work in advanced unit operations.
509. Advanced Chemical Engineering Thermodynamics. 3 credits. Background equivalent to CHE 403 is expected. Chemical Engineering processes from the standpoint of quantitative thermodynamics. Special emphasis on thermodynamics of chemical reactions.
510. Chemical Engineering Instrumentation. 3 credits. Background equivalent to Math 351 is expected. Theory and application of primary elements of instruments. Combination of dynamics of instruments and of processes to determine the response of complete systems.
511. Advanced Chemical Engineering Kinetics. 3 credits. Background equivalent to CHE 421 is expected. Theory and practice of industrial chemical reactor design. Advanced topics in kinetics of industrial chemical reactors.
515. Design of Engineering Experiments. 3 credits. Prerequisite: Mathematics 213. Design and analysis of experimental data including block and factorial arrangements, significance of data, and mathematical modeling.
562. Seminar in Chemical Engineering. 1 credit. Conferences and reports on current developments in Chemical Engineering.
591. Research. Credit hours to be arranged. Analysis, planning, and detailed study of definite problems; individual laboratory work on some selected problems to develop the power of independent investigation. S/U grading only.
593A. Special Topics. 1 to 3 credits. Topics of current interest to be considered each semester. Regular grading.
593B. Special Topics. 1 to 3 credits. Topics of current interest to be considered each semester. S/U grading only.
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.

Chemistry

Professors Abrahamson, Baltisberger (Chairperson), Woolsey; Associate Professors *Ballintine, Hoffmann; Assistant Professors *Jensen, Pierce, *Stahl, *Thomasson, and Tilotta; Adjunct Professor Hawthorne

Program Description

The Department of Chemistry offers graduate programs leading to the degrees of Master of Science and Doctor of Philosophy with majors in inorganic chemistry, organic chemistry, physical chemistry, and analytical chemistry.


All students beginning graduate work in chemistry must take orientation-diagnostic examinations over the fields of inorganic, organic, physical, and analytical chemistry during the week preceding their first registration. These examinations are used to determine the course level at which students begin their work and also to determine whether a student may enter a Ph.D. program. Students with an unsatisfactory performance on any of these exams may repeat the exam twice within the next year of study or pass a designated graduate course with a B grade or better.

Admission Requirements

1. A baccalaureate degree with a major in chemistry.
2. Undergraduate credit in mathematics through integral calculus.
3. One year of physics.
4. One year of German desirable.
5. Graduate Record Examination General and Advanced Chemistry tests for students with degrees from foreign institutions.
6. Students with a bachelor’s degree may be directly admitted into the Ph.D. program.

Degree Requirements

Master of Science

1. Chemistry 509.
2. Six (6) credit hours from major sequence (Analytical: 540, 541, 542, 543; Inorganic: 510, 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 an equivalent course has not been taken previously).
7. Chemistry 599 (Research).

Doctor of Philosophy Degree

The degree of Doctor of Philosophy with a major in chemistry is a research degree and is conferred only in recognition of high achievement in independent scientific research and scholarship.

A candidate for the Ph.D. degree with a major in chemistry must complete a research problem in one of the four fields of chemistry. The scope of the doctoral dissertation will be such as to require the equivalent of at least one full-time academic year of research. Some doctoral research will require a substantially longer time. This research is expected to make a significant contribution to the candidate’s chosen field of chemistry. When the major professor decides that the candidate has satisfactorily completed the research problem, the candidate, in accordance with the regulations of the University, is required to prepare a dissertation covering the research.

1. Chemistry 509 (two credit hours).
2.Nine (9) credit hours from major division (Analytical: 540 and six hours selected from 541, 542, or 543; Inorganic: 510, 511, 512; Organic: 520, 521, 522; Physical: 530, 531, 532).
3. Twelve (12) credit hours of elective courses (at least nine must be in 500-level Chemistry courses; six of these nine must be taken in two divisions other than the major).
4. Chemistry 455 (if an equivalent course has not been taken previously).
5. Chemistry 388 (if an equivalent course has not been taken previously).
6. Chemistry 599 (Research).
Civil Engineering

Professors Apanian (Chairperson), Jerath, Mason, *Phillips; Associate Professor *Gullicks; Assistant Professor *Moretti

Program Description

The Department of Civil Engineering offers graduate programs leading to the Master of Engineering degree with concentration in the four following options: Soils-Structures, Environmental-Water Resources, Surface Mining, and General Civil Engineering. The goal of the program is to develop the student as a practitioner capable of solving complex problems, and the focus of the program is on the development of competence in engineering design.

Admission Requirements

1. Bachelor of Science degree in Civil Engineering from an ABET accredited institution or for the Surface Mining Option, graduation from a Geology or Geotechnical Engineering program.
2. Graduate Record Examination General Test for applicants from non-ABET accredited programs.

Degree Requirements

1. Thirty (30 credit) hours.
2. Fifteen (15) required credits, including 6 credits of Engineering 595 (Design Project).
3. Fifteen (15) credits of electives chosen from engineering, physical sciences, life sciences, computer science, and mathematics.

Courses

501. Mechanics of Materials II, 3 credits. Prerequisite: Civil Engineering 301. Analysis of stress and strain, theories of failure, energy methods, torsion of thin-walled sections, unsymmetrical bending, shear center, curved beams, beams on elastic foundations, stress concentration.
502. Structural Stability, 3 credits. Prerequisite: Civil Engineering 301. Stability of columns, beam-columns and frames, inelastic buckling, critical loads by the energy method, torsional buckling, buckling of rings and curved bars.
523. Applied Hydraulics, 3 credits. Prerequisite: Civil Engineering 423. Study of advanced topics in hydraulics. Computer applications. Content will vary.
524. Open Channel Hydraulics, 3 credits. Prerequisite: Mechanical 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.
551. Plate and Slab Structures, 3 credits. Prerequisite: Civil Engineering 301 and 352. Classical plate bending theory, rectangular and circular plates, slab analysis by energy and numerical methods, anisotropic plates, large deflection theory, buckling of thin plates.
552. Thin Shell Structures, 3 credits. Prerequisite: Civil Engineering 301 and 352. Differential geometry of shell theory, membrane and bending theories of shells, shells of revolution, stress analysis of domes, pressure vessels, and storage tanks, numerical methods, buckling of shells.
555. Prestressed Concrete—Analysis and Design, 3 credits. Prerequisite: Civil Engineering 453. Methods of prestressing, design of simple and continuous beams, creep considerations, buckling, effect of time and load, and permissible stresses.

Child Study and Education

(See Education: Child Study and Education, p. 191.)
Communication

Professors Davis, Rakow (Director), Fischer; Associate Professors *Ganje, *Rendahl (Graduate Director); Assistant Professor *Holden

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 and Community,” an issue relevant to all areas of professional practice and academic scholarship in communication. Through the framework of community, course work enables students to investigate the most important contemporary communication issues. Students are prepared to undertake projects and theses on such topics as: the impact of changes in communication technologies on communities; the community service role of media; the interrelationships between communication and culture; interpersonal and small group communication in communities; cross-cultural communication; international communication; public media; public opinion and public culture; communication and cultural diversity; or communication and gender roles.

Admission Requirements

1. Graduate Record Examination General Test.
2. Completion of the equivalent of 20 undergraduate credits in speech communication and/or mass communication, including at least 12 upper division credits.

Degree Requirements

Master of Arts

1. Comm 500 (Graduate Studies in Communication), Comm 501 (Theories of Communication), and Comm 502 (Research Methods in Communication).
2. A major of at least 20 credits in communication for the thesis option or 22 credits for the non-thesis option.
3. Minor or cognate of at least 9 credits.
4. Written and oral final examinations. Thesis option M.A. candidates will defend their theses in the final oral examination. Non-thesis option M.A. candidates will be expected to defend and discuss their independent study reports and two term papers or projects completed in any course on their program of study during the final oral examination. The director of Graduate Study will appoint three-person examining committees from the Graduate Faculty, normally drawn from the School of Communication, chaired by the advisor to conduct the final oral examination for non-thesis students. The Advisory Committee will conduct the final oral examination for thesis students.

Courses

500. Graduate Studies in Communication. 1 credit. An overview of the study of communication emphasizing the differences between graduate and undergraduate studies. To develop a common core of knowledge for beginning graduate students; the course introduces students to the history of the communication field, current issues in communication studies and the future of communication.
501. Theories of Communication. 3 credits. Theory and model construction in communication with special attention to selected theories of speech communication and mass communication.
502. Research Methods in Communication. 3 credits. Study of the methodologies of historical, descriptive, survey and experimental research in communication.
520. Seminar: Rhetorical Theory and Criticism. 3 credits. Directed analysis and discussion of methods of rhetorical theory and criticism from classical through modern times.
525. Seminar: Interpersonal and Small Group Communication. 3 credits. Study of communication in dyads, triads, and small groups with attention to methods for exploring issues in interpersonal and small group communication.
540. Seminar: Organizational Communication. 3 credits. Study of theories and practice of communication in groups, intergroup and organizational settings with attention to methods of research and analysis.
545. Seminar: Public Opinion and Propaganda. 3 credits. Study of mass media, political communication, and interpersonal influence. Consideration of social change with attention to results of attitude and opinion research.
570. Seminar in Communication. 1 to 3 credits. Discussion of selected topics in speech communication and mass communication.
591. Individual Readings and Research. 1 to 3 credits. Directed readings and research in speech communication and mass communication topics and issues. May be repeated to a total of 6 credits.

Psychology

301. Psychology of Communication. 3 credits.
310. Communication and Diversity. 3 credits.
327. Editorial Photography. 3 credits.
401. Organizational Communication. 3 credits.
402. International/Intercultural Communication. 3 credits.
403. Community Relations. 3 credits.
404. Advertising and Society. 3 credits.
405. Social Implications of the Information Society. 3 credits.
406. Media Consequences and Effects. 3 credits.
407. Communication Technologies and the Future. 3 credits.
412. Communication Law. 3 credits.
428. History of American Journalism. 3 credits.
444. Advanced Advertising Production. 3 credits.
461. Rhetoric of Campaigns and Movements. 3 credits.

Communication Disorders

(See Speech-Language Pathology, page 223)

Computer Science

Professor Winrich; Associate Professors Ali (Chairperson), Wigen (Graduate Director), Flannery, O’Neil; Assistant Professors Dai, *Ram, *White

Program Description

The Department of Computer Science offers graduate study leading to the Master of Science degree. Both the thesis option and the non-thesis option are available. The department is a part of the Center for Aerospace Sciences which provides unique opportunities for research by faculty and graduate students. There is especially strong interest within
the department in the areas of artificial intelligence, software engineering, database, graphics, theoretical computer science, compiler design, operating systems, and simulation.

Admission Requirements

1. Bachelor’s degree, normally in Computer Science.
2. Overall undergraduate GPA of at least 2.85.
3. Graduate Record Examination General Test or an undergraduate degree from a CSAB/CSAC accredited degree program in Computer Science.
4. Eight prerequisites:
   1. Expertise in two high-level languages (CSci. 161, 260)
   2. Expertise in one assembly language (CSci. 223)
   3. Basic knowledge of discrete mathematics (Math 208)
   4. Basic knowledge of data structures (CSci. 242)
   5. Basic knowledge of computer architecture (CSci. 322)
   6. Basic knowledge of operating systems (CSci. 451)
   7. Completion of one year of calculus (Math 211 and 212)
   8. Completion of an additional course in statistics, probability, or linear algebra (Math 321, 342, 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

1. Twelve credit core of required courses in Computer Science, including CSci. 512, 522, 551 and 580. (Additional courses to complete the Program of Study will be selected on the basis of individual interest. Specialization within the field is dependent upon the teaching and research interests of the department faculty.)
2. A final examination.

Non-thesis option—a written examination on the required core of courses and a specialized area examination on a topic selected by the candidate with the approval of his/her advisor.

Thesis option—a written examination on the required core of courses from which a thesis option student will be exempted if grades of “B” or better are earned in each of the core courses, and a final oral examination which will include a defense of the thesis.

Courses

501. Topics in Computer Science. 1 to 3 credits. Prerequisite: Consent of instructor. Selected topics from current developments in Computer Science.
511. Advanced Data Structures. 3 credits. Prerequisite: CSci 351. Analysis of data structures and file organization based on graph-theoretic models. Topics include list management, tree traversal, sorting and searching, multi-linked and non-planar structures, and storage considerations.
513. Database Management System Design. 3 credits. Prerequisites: CSci 455, 512. A study of DBMS design techniques: relational versus hierarchical models, schema and canonical forms, query structure and query languages, natural language interfaces.
523. Theoretical Foundations of Computer Science II. 3 credits. Prerequisite: CSci 522. A study of computability and complexity using recursive function theory. Other formal models for computation are also examined.
536. Compiler Design. 3 credits. Prerequisite: CSci 465. Formal specification of programming languages, syntactic and semantic analysis, code generation and error handling.
540. Artificial Intelligence. 3 credits. Prerequisites: CSci 242. An in-depth study of some current problem area of artificial intelligence. Potential topics would include natural language processing, knowledge-based systems, computer vision, knowledge representation, logic programming and theorem proving, analogic reasoning and machine learning.
543. Expert Systems. 3 credits. Prerequisite: CSci 540. A study of the design and application of rule-based systems. Topics will include knowledge engineering, architecture of rule-based systems, inference techniques, uncertainty, knowledge representation, languages and shells, and verification of rule-based systems. A significant portion of the class will be the development of two small systems with different languages.

546. Advanced Computer Graphics. 3 credits. Prerequisites: CSci 446, Math 213. An introduction to current technology and techniques for support of graphics. Included are geometric transformations of two- and three-dimensional displays, shading, windowing, clipping, fractals, animation, visualization, user interfaces, real-time graphics, and consideration of display devices.
551. Structure of Operating Systems. 3 credits. Prerequisites: CSci 322, 451. A detailed study of the process model of operating systems. Topics include: Structure of the operating system kernel; resource creation, identification, and management; deadlock avoidance, detection, and recovery; virtual storage; virtual machines; mathematical modeling of operating systems; performance measurement and evaluation.
555. Computer Networks. 3 credits. Prerequisite: CSci 551. A study of network architectures and communication protocols. Broadband and baseband technologies will be considered including SNA, X.25, Ethernet, and other LANS protocols.
556. Real-Time Systems. 3 credits. Prerequisites: CSci 326, 451. This course concentrates on the techniques necessary for the identification and processing of interrupts and appropriate modifications to the operating system. Work is done in the context of synchronizing the operation of a digital computer with external devices in real time.
559. Software Engineering. 3 credits. Prerequisite: CSci 463. A study of current topics related to the design and implementation of large software systems. Course content may vary with instructor and student interest. Potential topics include: software testing and validation, programming environments, program metrics and complexity, design methodologies, software reliability and fault tolerance.
575. Analysis of Algorithms. 3 credits. Prerequisite: CSci 512. The time and space complexity of classical computer algorithms is analyzed. NP hard and NP complete problems are characterized and illustrated.
580. Principles of Computer Organization. 3 credits. Prerequisite: CSci 322 or CSci 326 or EE 351. An overview of organization of computer systems. Topics include system modularity and parallelization, programming, processors, control units, instruction sets, memory organization, and the design of multiprocessor machines.
591. Directed Studies. 1 to 3 credits. Prerequisite: Graduate standing, consent of instructor. An investigation of some specific area by an individual or small group of students working closely with a member of the graduate faculty.
411. Information Systems. 3 credits.
435. Formal Languages and Automata. 3 credits.
445. Modeling and Simulation. 3 credits.
446. Computer Graphics. 3 credits.
452. Operating Systems II. 3 credits.
455. Database Management Systems. 3 credits.
463. Software Design with ADA. 3 credits.
465. Principles of Translation. 3 credits.
472. Seminars in Computer Science. 1 credit.

Counseling

Professor Schmitt;
Associate Professors Barké (Chairperson),
Henly, Jacobs, Twohey;
Assistant Professors *Juntunen, *Henry

Program Description

The Department of Counseling offers graduate programs leading to the Master of Arts in Counseling and Doctor of Philosophy in Counseling Psychology. The Doctor of Philosophy in Counseling Psychology is accredited (Provostial) by the American Psychological Association (APA). Graduates of the M.A. program are eligible to apply for licensure as a Counselor in North Dakota. Completion of the M.A. program partially fulfills requirements for certification as a School Counselor or licensure as an Addiction Counselor in North Dakota. The Ph.D. in Counseling Psychology can lead to licensure as a Psychologist in North Dakota, as well as other states.

Master of Arts

The Master of Arts is appropriate for those who wish to become counselors in community agencies, such as addiction treatment clinics, mental health centers, rehabilitation display 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. Two years in residence for full-time students.
3. A core curriculum, which constitutes the emphasis in Community Agency Counseling.
4. 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 CTL 500.
   - Rehabilitation Emphasis. COUN 565 and four Social Work rehabilitation courses recommended as a cognate.
   - Addiction Counselor Emphasis. COUN 565 and COUN 900. To qualify for state certification students must complete a 15 hour cognate in addiction related fields (Psychology, Pharmacy, Sociology) and a 9 month clinical practicum at an approved addiction treatment facility.

   Students may enroll in the counseling practicum (COUN 580) after they have satisfactorily completed at least twelve credits in the program including COUN 510, Counseling Methods, and COUN 512, Methods Lab. After successfully completing practicum, students will enroll in COUN 584: Internship in Counseling, which is a two-semester, half-time (20 hours/week), supervised counseling experience at an external site. Internship will typically be completed during the second year in the program. Internship assignments are individually arranged and administered by the department’s Internship Coordinator.

   In addition to this practitioner course sequence, students are required to complete a series of research training experiences, culminating in the completion of the Independent Study (COUN 997), an independent research project conducted under the direction of the student’s advisor. Students are encouraged to begin considering and planning their research project early in their program.

   After completing the majority of course work for the degree, students are eligible to sit for the Masters Comprehensive Examination, which is offered once each semester. A passing grade on the examination, constructed and evaluated by department faculty, is required for graduation.

Prerequisites: 20 hours of Behavioral Sciences, including Abnormal Psychology, Statistics, and Developmental Psychology.

Required Core Course Work:
- COUN 505: Counseling in Community Agencies (or COUN 505)* 2
- COUN 510: Counseling Methods 3
- COUN 512: Counseling Lab 2
- COUN 512: 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: Counseling Personality and Development 3
- COUN 531: Women’s Psychological Development 3
- COUN 532: Multicultural Counseling 3
- COUN 533: Marriage and Family Counseling 3
- COUN 580: Practicum 6
- COUN 584: Internship (2 semesters, 4 credits each) 8
- COUN 597: Independent Study 2

TOTAL SEMESTER CREDIT HOURS: 48

*Students in School Counseling will take COUN 505 instead of COUN 503.

Doctor of Philosophy—Counseling Psychology

Program Description

The program provides preparation at the Ph.D. Level for employment in a variety of human service settings. These settings include: community mental health agencies, private practice, college and university counseling centers, 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 the scientist-practitioner model.

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 3.10, master’s GPA 3.70, GRE-V: 599, GRE-Q: 554, GRE-a: 541 and GRE-Psych: 539. A balance between numbers of male and female students is preferred in the program. Students from minority ethnic groups are encouraged to apply.

Degree Requirements

1. A major in Counseling Psychology, a minor in Psychology (24 credits).
2. Psychological foundations course work in the following areas: biological bases of behavior, cognitive/affective bases of behavior, social psychological bases of behavior, and individual differences bases of behavior.
3. Two scholarly tools (of four courses each)— (1) Research Methods/Statistics and (2) Assessment/Diagnosis.

Cognate in Counseling

A cognate in the Department of Counseling, consisting of a minimum of 9 semester credits of counseling course work may be taken by master’s or doctoral students in related fields. Cognate course work should be planned in consultation with a member of the department faculty. Cognates will not include practicum or internship; students interested in these experiences should consider a formal minor in Counseling (below).

Minor in Counseling

A minor in the Department of Counseling consisting of a minimum of 20 semester credits of counseling course work may be taken by master’s or doctoral students majoring in a related field. Such a minor should include the following six courses: COUN 510, 512, 517, 519, 524, and 530. All doctoral students who wish to complete a minor in the department must include a Counseling faculty member on the Faculty Advisory Committee and should seek advice about appropriate courses and course sequences.
Courses

503. Counseling in Community Agencies. 2 credits. An introduction to counseling practice and services in mental health and other community agencies. Includes an examination of service population characteristics and treatment needs, diagnostic systems, intervention strategies, ethical standards, professional issues, and related topics.

505. School Counseling. 3 credits. Examines principles of child and adolescent development and how those principles influence school counseling practice in elementary, junior high and high school settings. Includes consideration of the counselors' roles in dealing with personal and crisis problems of students. Professional relationships, ethical and legal issues are addressed.

510. Counseling Research Methods. 3 credits. Two training components are combined to provide an intensive prepracticum experience. The didactic component introduces the basic skills of effective interpersonal communication, participation in the co-requisite laboratory (COUN 512,) provides practice in the practical application of those skills in simulated counseling interviews.

512. Counseling Methods Laboratory. 2 credits. Designed to accompany COUN 510. This laboratory provides an opportunity for graduate students in counseling to practice basic counseling skills under supervision. Role-play counseling sessions are conducted, with live observation, video-taped review and feedback from peers and supervisors. First enrollment must be concurrent with COUN 510. Repeatable to 4 credits.

515. Methods of Research. 3 credits. Methods and procedures of research design, development and statistical analysis related to counseling and behavioral science. Experience in formulating, developing and implementing an individual research project.

516. Counseling Research Laboratory. 1 credit. Introduces basic procedures in analysis of counseling research data. Topics include data gathering, data entry and use of statistical packages are presented in an individualized manner. Repeatable to 2 credits.

517. Psychological Testing. 3 credits. The application of principles of psychological measurement to selected instruments in the areas of intellectual functioning and aptitudes; educational and occupational achievements; career interests; and personality. Development of test interpretation skills.

518. Group Dynamics. 3 credits. Addresses the principles and practices of social and therapeutic groups. Includes study of professional issues relevant to group processes. Involves participation in in-class group experiences.

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, the use of occupational information for career education and life planning. A survey of job-seeking and job-maintenance skills, and career counseling with disadvantaged, handicapped and other special populations.

522. Major Applications of School Counseling Programs. 2 credits. Study of the organization and administration of counseling programs in school settings, including foundations of program development and evaluation. Characteristics of effective school counselors. Consideration of professional and ethical concerns in school counseling.

530. Counseling, Personality and Development. 3 credits. Systematic study, analysis and role-played practice of counseling techniques and interventions. Includes an examination of the role of different theories in counseling interventions, demonstration and practice of theoretically based counseling interventions, research evidence, and coverage of professional issues.

531. Women's Psychological Development. 3 credits. Students will examine current trends in psychological development theory as they pertain to women. The focus of the course is on theory. Common issues of concern to women (e.g., depression, eating disorders, and abuse) and related treatment strategies will also be addressed. S/U grading only.

532. Multicultural Counseling. 3 credits. This course offers an introduction to counseling theories and interventions appropriate for American ethnic and non-ethnic minority clients. The values suppositions of various cultural groups will be examined. In-class group experience is included.

533. Marriage and Family Counseling. 3 credits. Prerequisite: COUN 510, or instructor approval. An introduction to the major theories of marriage and family counseling and their associated interventions. A combination of readings, lecture, discussion, demonstrations and role-plays will be used.

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. Applications of career psychology to career counseling practice.

550. Ethics and Professional Issues in Counseling Psychology. 3 credits. Study and analysis of the ethical, legal and professional issues in Counseling Psychology. Understanding and application of APA Ethical Guidelines 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. 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. 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.

567. Assessment of Cognitive Abilities and Personality. 3 credits. Theory, research evidence, and practice in the administration, scoring, interpretation and use of assessment instruments in the practice of Counseling Psychology. Special attention will be paid to issues of race, ethnicity, gender, age and disability in the use of these instruments.

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. 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 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.

998. Independent Study. 2 credits.

999. Thesis. 4 credits.

Education: Center for Teaching and Learning


PROGRAM COORDINATORS

Child Study and Education .............. G. Olsen
Educational Administration .............. Backes
Education-General Studies .............. Fuller
Elementary Education .............. Franklin
Research Methodologies .............. Williams
Special Education .............. M. Olson
Teaching and Learning .............. Harris

The Center is committed to a view of learning that centers on the learner. Learning is active construction of meaning from personal experience. It requires reflection and dialogue with others whose meanings may differ. The creative and critical capacities brought by the learner to the learning process influence its development. Graduate programs of the Center seek to admit active and passionate learners who are committed to continuing to grow in some of the directions available in the Center.
The formal domain of curriculum in the Center for Teaching and Learning is learning and teaching in its various settings. We view learning as a lifelong process. Because learning is the societal goal of schooling, our focus is on teaching and learning in school settings. Learning in school settings best occurs when educators recognize that knowledge is holistic, interconnected, and never fully defined. The Center faculty strive for interdisciplinary dialogue and for expansion of the repertoire of approaches to learning available to each member of the Center. Curricular goals common to all graduate programs of the Center include development of ability

- to communicate about educational issues in ways that take into account several curricular perspectives.
- to interpret and respond critically to current research and commentary on educational issues.
- to develop the habit of seeking and citing evidence in regard to educational decisions.
- to acquire knowledge, attitudes, and skills needed for practice of one or more areas of specialization or educational roles.
- to expand one’s ability to learn through dialogue, literature reviews, questioning, writing, application of research tools, and other appropriate means.
- to distinguish among educational practices on the basis of their contribution to the vision of teaching and learning embraced by the Center.

The entire faculty of the Center listed above and students in all programs work closely together and draw upon the experience, and offerings of each of the others.

Graduate programs of the Center for Teaching and Learning are accredited through the National Council for the Accreditation of Teacher Education and approved by the State of North Dakota.

Programs Offered

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Areas in which a graduate student may develop a minor or cognate within a master’s degree program include Child Study and Education; Educational Administration; Education, General Studies; Elementary Education; Higher Education Administration; Reading Education; Research Methodologies; and Special Education. A master’s degree with a major in a particular secondary teaching field is available through many of the appropriate departments.

Degrees Offered

The Master of Education degree (M.Ed.) and the Specialist Diploma (Ed.S) focus graduate study on professional practice from a broad educational perspective and admit only certified educators. Both programs require completion of a final research paper or special project to culminate degree study. Refer to page 168 of this catalog for a discussion of M.Ed. requirements and to page 170 for a discussion of requirements for the Specialist Diploma.

The Master of Science (M.S.) degrees offered through the Center for Teaching and Learning admit students who are certified educators and others interested in the study of education. Degree requirements vary according to the background of the student and are described in the section devoted to each program. M.S. degree programs are available with thesis and non-thesis options.

The Doctor of Education (Ed.D.) and Doctor of Philosophy (Ph.D.) degrees are designed to prepare persons for leadership in the public schools or other educational agencies and for teaching and administration in colleges or universities. Study at the doctoral level requires that the student demonstrate analytic inquiry and creative scholarship in the study of education. The Ed.D. program focuses on study of professional practice and requires completion of independent work leading to an original dissertation with implications for the practice of education. The Ph.D. program emphasizes educational research and requires completion of independent work leading to an original dissertation focussed on educational theory. Refer to pages 172 and 173 of this Catalog for delineation of requirements for the Doctor of Education and Doctor of Philosophy degrees.

For a complete picture of each degree program, the student is advised to read sections discussing the requirements of the Graduate School referenced in the paragraphs above, the requirements of the Center for Teaching and Learning in the following section, and the pages devoted to discussion of each of the programs offered.

Center for Teaching and Learning Requirements

ADMISSIONS AND REVIEW PROCESSES

The faculty of the Center for Teaching and Learning believe that success in the graduate study of education is related to qualities of mind, motivation, literacy, and experience. Among the qualities of mind sought in the Center are creativity, intelligence, independence of thought, willingness to take risks, openness to new ideas, openness to diversity, and flexibility of thought. Motivation is demonstrated by commitment to learners of all ages, professional growth, self-direction, and commitment to academic study leading to a graduate degree. Literacy is the ability to communicate effectively both orally and in writing. Experience may be demonstrated by diverse activities including work with children or adults in a variety of settings, foreign or domestic travel, and a liberal education. Each student brings a different mix of characteristics and strengths to graduate study.

In the admissions process, the applicant will develop a portfolio of materials which demonstrate the qualities of mind, levels of motivation and literacy, and quality of experience brought to study for an advanced degree. The portfolio will include the following items:

1. A completed Graduate School application form which includes a personal statement containing responses to the following three questions (no less than one typed page for each):
   a. Describe several personal and professional goals you would like to achieve in the next five years. Include in your description reasons why these goals are important to you.
   b. What are the characteristics, attitudes, values, and/or skills that you think will make you a good candidate for your chosen professional role?
   c. What have you already done professionally or personally of which you are proud?

2. Applicants for Master’s programs may supplement their portfolios with additional materials which represent their abilities (see 3 below).

3. Applicants for specialist or doctoral programs are expected to supplement their portfolios with additional materials which represent their abilities, such as:
   a. Any published writing, even if the material does not address educational issues;
   b. A detailed description and analysis of a day in a classroom or other professional setting;
   c. A personal interview (This is a structured interaction and is an 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). A test score will be mandatory if the applicant’s grade point averages do not meet the minimum standards.

Each student admitted to one of the graduate programs in the Center for Teaching and Learning will be assigned a temporary
advisor. As soon as possible after enrollment, students should (1) remove any entrance deficiencies; (2) identify a permanent advisor or Advisory Committee by consulting with the program chairperson; and (3) develop a formal program of study for the degree in consultation with the advisor or Advisory Committee.

After the completion of the equivalent of one full semester, but well before taking the comprehensive examination, a preliminary review of the progress of each doctoral student will be conducted. The specific admission requirements for each of the eight graduate programs in education are described with each program.

**SCHOLARLY TOOLS**

The scholarly tool requirement for the M.S., Ed.D., and Ph.D. degrees in the Center for Teaching and Learning is an integral part of the graduate degree program. Since the purpose of the scholarly tool in graduate study is to enable the student to read, understand and conduct research, the tools are to be directly related to the research interests of each graduate student and must be selected from the areas of research methods (e.g., historical, philosophical, clinical, survey, case study), research design, computer programming, measurement, statistics, or languages. Achievement levels will be established by satisfactory completion of course work in the appropriate scholarly tool area(s) or equivalent knowledge as determined by a proficiency examination. Even though the scholarly tool and appropriate level of competency is to be determined by each student’s Advisory Committee, a minimum of five semester credits in appropriate course work for the M.S. degree, six semester credits in appropriate course work for the Ed.D. degree, and ten semester credits in appropriate course work for the Ph.D. degree will normally fulfill the scholarly tool requirement. There is no scholarly tool requirement for the M.Ed. degree or Specialist Diploma.

**THESIS AND INDEPENDENT STUDY REPORTS**

All Master’s degrees and the Specialist Diploma 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 these, independent study reports, or other final degree requirement projects must be based on an approved proposal and must include a written summary, a bibliography, and an abstract.

**COMPREHENSIVE EXAMINATIONS**

Successful completion of a comprehensive examination is required of all graduate students. The comprehensive examination provides an opportunity to integrate information and experience gained during the program of study. Master’s and Specialist Diploma students take comprehensive examinations in the semester during which graduation is expected. Candidates take comprehensive examinations after making formal application to receive the Master’s or Specialist’s degree and having been notified of eligibility in writing by the Graduate School. Doctoral students take comprehensive examinations when most of the course work toward the degree has been completed and eligibility has been certified through formal application to the Graduate School. Comprehensive examination in the Foundations of Education is required of all students in Ed.D. programs, and a comprehensive examination in Educational Research is required of all students in the Ph.D. program in Teaching and Learning.

**Courses Offered**

The courses listed in this section are those which are normally used by all students in all graduate programs in education and are not unique to the specific program. Additional course listings are with the programs that follow this section.

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**Foundations of Education**

Professors Ahler and Dahl; Associate Professor Gershman; Assistant Professor Laycock

**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.
Education: Child Study and Education

Professor King; Associate Professors Hanhan, Franklin, Laycock, Olsen, and Strackbein

Program Description

The emphasis in this M.S. program is the study of children and the implications such study holds for educational practice. A unique feature of this program is the integration of fields, including early childhood, elementary, and special education, with faculty from all three of these areas serving as advisors to students in the program.

Admission Requirements

1. An undergraduate degree in early childhood, elementary, or special education
   or
   At least 20 semester credits in such related fields as child development, nursing, occupational therapy, social work, sociology, or psychology.
2. At least two non-introductory courses in the fine arts, the humanities, or the behavioral sciences, subject to the approval of program advisors.

Degree Requirements

1. CTL 528A and CTL 528B.
2. A minor or cognate area outside of CTL.

Courses

523A. Home-School Relations. 3 credits. Prerequisite: Classroom experience or permission of instructor. A study of the experience of parenting and the needs of parents and how these relate to the establishment of working relationships between parents and teachers; an introduction to conferencing skills and basic counseling skills.
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.
528A. Child Study and Education. 2 credits. This course explores the theories and issues related to young children’s development (ages 3-8) and curriculum development. The major focus is the study of children and their cognitive, language and socio-emotional development.
528B. Child Study Research Seminar. 2 credits. Prerequisite: CTL 528A. This course explores various techniques and procedures for studying young children (ages 3-8). These procedures range from informal observation techniques to more formal research strategies.

NOTE: Please refer to p. 190 for a list of Practica, Special Topics, and Individual Study options available.

Education: Educational Administration

Professor Lemon; Associate Professors Rice, Thomas; Associate Professor Backes (Chairperson)

Master of Education

The M.Ed. program is designed to prepare students for administrative positions in either elementary or secondary schools.

For information about admission and degree requirements for the M.Ed., please contact the chair of Educational Administration.

Note: Information about degree requirements for the M.S.Ed., Specialist, Ed.D., and Ph.D. is available separately.
local levels; basic administrative theories, processes, and techniques; and major areas of concern in the operation of local schools.

550B. Microcomputer Applications in Educational Administration. 2 credits. Students will develop an understanding of and skill in using the microcomputer as a tool for dealing with administrative procedures, problems, and decision-making in education. There will be hands-on experience with three kinds of user programs, viz., a word processor, a data base system, and a spreadsheet as well as the integrated use of these software systems.

551. Administration and Supervision in Elementary Schools. 4 credits. Leadership responsibilities and techniques for elementary principals. Includes topics such as instructional improvement, administrator-staff-student relationships, communication, public relations, planning, and business affairs at the building level in elementary schools.

552. Administration and Supervision in Secondary Schools. 4 credits. Leadership responsibilities and techniques for secondary school principals. Includes topics such as instructional improvement, supervision, evaluation, administrator-staff-student relationships, communication, public relations, planning, and programming at the building level in junior and senior high schools.

553. The Educational Plant. 2 credits. Planning, construction, modification, and maintenance of buildings. Includes techniques for developing and using the building, program, and community survey.

554. Educational Personnel Administration. 2 credits. Study of selection, assignment, evaluation, dismissal, and personnel policies and practices for certified and non-certified school personnel; salary and contract administration in schools.

555. Educational Revenue. 2 credits. A study of the legal basis for and the involvement in the funding of education by the federal, state, and local levels of government.

556. Educational Finance. 2 credits. An analysis of the business function of school districts with emphasis placed on budget development, purchasing practices, capital outlay management, and policy development.

557. Educational Law I. 3 credits. The initial survey course in educational law concerning building level issues. Includes topics such as religion and the public schools, tort liability, students’ rights, and the handling of student records. Some consideration is given to processes of legal research in education.

558. Educational Law II. 2 credits. An advanced course in educational law at the district level. Includes topics such as state and federal relationships, school boards, school finance laws, contracts, teachers’ rights, and tort liability of school districts and officers. Consideration is given to legal research and policy analysis.

559. Seminar in Educational Administration. 1 to 4 credits. S/U grading only.

560. 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.

561. Educational 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.

562. 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.

563. 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 relationships and conflict management; small group processes; and personality, values, and ethics.

564. Administration and Organizational Behavior II. 3 credits. A continuation of Administration and Organizational Behavior I. Provides the student with the opportunity to design and carry out an original field study project in organizational behavior, participate in critiquing studies designed and completed by fellow students, and engage in individualized study in a topic area related to behavior in organizations.

565. 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.

566. 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, arbitration, contract maintenance, grievance procedures, and results of the negotiations.

567. Special Education Law. 2 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.

568A. Introduction to Higher Education Administration. 3 credits. An overview of administration of America’s colleges and universities. Topics include roles of state and federal government, governing boards, institutional organization and culture, types of institutions, faculty, students, research about higher education, and the profession of administration of a college or university.

568B. Academic Administration in Higher Education. 3 credits. The roles and responsibilities of academic administration in higher education. Topics include the major academic roles (chairperson, dean, chief academic officer), curriculum and instruction, program evaluation, assessment, planning, faculty workload and evaluation, and the profession of administration.

568C. 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.

568D. 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.

569. Seminar in Superintendency. 1 credit. Prerequisite: Master’s degree or permission of instructor. A study of concerns and issues related to administration at the district level. Involvement of practicing administrators and visits to schools provide clinical and practical elements. Attention to such issues as board relations, staff relations, and fiscal management problems.

NOTE: Please refer to p. 190 for a list of Practica, Special Topics, and Individual Study options available.

Education: Elementary Education

Professors Fuller (Graduate Director), Harris, King; Associate Professors Franklin, Hanhan, Strackbein; Assistant Professors Barrentine, Guy, *Kelley

Program Description

The focus of the master’s degree programs in elementary education is on the advanced professional preparation of the classroom teacher. The 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.

A program of the study may include some course work in Early Childhood Education. Available courses focus on the relationship between theories of child development and educational practices designed to foster that development. In addition, supervised practicum experiences can be arranged for those students desiring direct involvement with young children.

Admission Requirements

(in addition to those listed on p. 160)

1. A bachelor’s degree in Elementary Education.

Master of Education

Certified teachers eligible. See pages 168 and 169 for Degree Requirements.

Master of Science

Certified and non-certified persons eligible. Available in two tracks. The first track, either thesis or non-thesis, is open to professional educators (certified or non-certified persons) who wish to follow a research oriented program of study. The second track, available only in the non-thesis option, provides opportunity for non-certified persons to study Elementary Education at the graduate level.

Degree Requirements

(in addition to those listed on p. 160)

1. Track I—Minimum of five credits of scholarly tool course work (maximum of two credits of readings).
2. Track II—At least six credits of course work in educational foundations.
Courses

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.

521. Classroom Strategies: Designs for Teaching and Learning. 4 credits. For students who are either preparing for or completing an academic year resident internship. Those strategies used in organizing for an individualized elementary school classroom are examined, with students drawing upon psychology and those subject matter areas normally taught in the elementary school.

522A. Mathematics in the Elementary School. 2 credits. Objectives of mathematical instruction, methods of teaching arithmetic, recent trends, measurement, and diagnosis.

522B. 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.

522C. Science in the Elementary School. 2 credits. Curricula, content, and curriculum problems in the field of science instruction at the elementary school level.

522D. Writing in the Elementary School. 2 credits. Content, methods, and theories in the field of writing instruction at the elementary school level.

523A. Home-School Relations. 3 credits. Prerequisite: Classroom experience or permission of instructor. A study of the experience of parenting and the needs of parents and how these relate to the establishment of working relationships between parents and teachers; an introduction to conferencing skills and basic counseling skills.

525A. 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.

528A. Child Study and Education. 2 credits. This course explores the theories and issues related to young children’s development (ages 3-8) and curriculum development. The major focus is the study of children and their cognitive, language and socio-emotional development.

528B. Child Study Research Seminar. 2 credits. Prerequisite: CTL-528A. This course explores various techniques and procedures for studying young children (ages 3-8). These procedures range from informal observation techniques to more formal research strategies.

529A. Seminar in Early Childhood Education. 1 to 4 credits. The seminar will focus on a specific topic relating to the elementary school. The specific content will vary depending upon student needs and faculty resources. May be repeated.

544A. Organization, Administration, and Supervision in Early Childhood Education. 2 credits. An investigation of patterns of curriculum organization, organization of space in pre-schools, nursery schools, child care centers, and kindergartens. Investigation of policies and laws affecting budget, staff, parents, and plant. Investigation of principles of supervision involved in working with professional and paraprofessional staff and with student teachers.

NOTE: Please refer to p. 190 for a list of Practica, Special Topics, and Individual Study options available.

Education: General Studies

Professors Ahler, Dahl; Associate Professor Gershman (Chairperson); Assistant Professors *Reid, Tyree, Guy

Program Description

This M.S. degree program (thesis or non-thesis) is designed for both the certified secondary teacher who seeks a major in education and a minor in another field, and those who wish to pursue a graduate degree in education that does not require, or lead to, teacher certification.

For certified teachers the major portion of the program of study must include 6 credits in foundations, 6 credits in curriculum and 5 credits in a major area. 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
2. Minimum of 12 credit hours of undergraduate study in education.
3. Minimum of 8 credit hours of social sciences or humanities.

Education: Reading Education

Professor Harris; Associate Professors Franklin, Stackbein; Assistant Professor Barrentine

Program Description

The master’s degree program in Reading Education is designed to enable elementary and secondary teachers to implement strong integrated programs in all of the language arts areas, and to evaluate and improve pupil performance in these areas. Related course work in language development, learning theory, and pre-school curriculum is offered by the Elementary/Early Childhood Education program areas. With careful planning students can meet the course requirements for the North Dakota Reading Credential and be certified as reading teachers.

Certified teachers may pursue the Master of Education degree. The Master of Science degree may be pursued by certified and non-certified persons.

Admission Requirements

Teacher certification and two years of teaching experience.

Degree Requirements

The Master of Science (M.S.) degree in Reading Education 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 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 Reading Education at the graduate level, and requires the inclusion of at least six credits of course work in educational foundations. A detailed description of the M.S. degree requirements may be found on page 167. The scholarly work requirements are described on page 190.

Courses

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 factors of readiness for 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 reading as a tool for learning.

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.

533A. Reading in the Content Areas. 2 credits. Pre or corequisite: CTL 530. How and why reading should be taught in the content areas (i.e., Social Studies, Science, Math, etc.). Research studies in the field of content reading and a variety of instructional practices are reviewed.

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. Prerequisites: CTL 530 and 534. Analysis of interrelationships of learning difficulties in language arts areas and procedures for remediation.

536. Teaching and Supervision of Elementary Language Arts. 3 credits. Pre or corequisite: CTL 530. Considers the objectives of the elementary language arts program, methods of instruction, and recent current trends. Recent research is read and critiqued.

538. 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.

NOTE: Please refer to p. 190 for a list of Practica, Special Topics, and Individual Study options available.

Education: Research Methodologies

Professors Ahler, Dahl, Landry, Williams (Chairperson); Associate Professor Gershman; Assistant Professor Tyree

Program Description

This program is designed for educators or other professionals interested in educational assessment or curriculum evaluation. The program offers the M.S. degree program with an emphasis on Research and Statistics. Students are required to develop skills in research design, qualitative research, measurement, evaluation, applied statistics, and computer applications.

Courses

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.

510A. Qualitative Research Methods. 3 credits. The study of philosophy, principles, and practical aspects of the field of non-statistical inquiry. Examines qualitative research methods and related studies of qualitative research. Students are required to do a limited ethnographic study in an educational setting.

510B. Advanced Qualitative Research Methods. 3 credits. The study of philosophy, principles and practices in the field of non-statistical inquiry. Examines several case studies of qualitative research. Students are required to do a limited ethnographic study in an educational setting.

511. Curriculum Evaluation. 3 credits. A study of the theoretical models of curriculum evaluation theory. Emphasis on the analysis of models for implementation and application in various educational and social programs.

512. Educational Tests and Measurements. 3 credits. Prerequisite: CTL 515 or consent of the instructor. Application and integration of measurement theory in a research framework; evaluation of cognitive and affective scales with emphasis on the statistical and psychometric properties of the scales.

513. Computer Applications in Education. 2 credits. Prerequisites: CTL 515 (or concurrent) or consent of the instructor. Basic skills in programming. A study of large scale computer system applications, usually involving relatively large data sets on mainframe (or other computer sharing device) applications including data file management. Becoming familiar with extant computer sharing systems-language is necessary.

514. Small System Computer Applications in Education. 3 credits. A study of small computer system applications to education, current and potential, including computer-assisted instruction, models, the computer as an educational tool, design factors, and the impact of computing on the educational and social environment.

515. Statistics I. 3 credits. An introduction to basic statistical methods, focusing primarily on descriptive statistics and inferential statistics up to and including one-way analysis of variance.

516. Statistics II. 3 credits. An in-depth study of inferential statistics with primary emphasis on analysis of variance models, multiple regression techniques, analysis of covariance and other higher-order statistical procedures.

517A. Advanced Research Methodologies. 3 credits. Both qualitative and quantitative aspects of research are considered for a variety of topics, including ethics in research, use of data banks, Q-methodology, survey research, Bayesian concepts, critical theory, longitudinal research and research consultation. Previous or concurrent involvement in research is highly desirable.

518. Multivariate Analysis. 3 credits. Multiple regression in generalized problem solving; discriminant analysis; factor analysis, multivariate analysis, canonical analysis; judgment analysis, and multivariate analysis of covariance. Students are encouraged to analyze their own data with multiple methods including student-generated computer applications.

519. Research Seminar. 1 to 4 credits. Experimental Design—An in-depth treatment of analysis of variance designs including factorial designs, treatment by subjects designs, groups within treatment designs, latin squares, higher dimensional designs, mixed effect designs, analysis of covariance, and trend analysis. Emphasis is placed on underlying linear models. Other seminars are held on specific research topics, particularly research proposals. May be repeated.

NOTE: Please refer to p. 190 for a list of Practica, Special Topics, and Individual Study options available.

Education: Special Education

Professors Olson (Graduate Director); Associate Professors Hoover, *Knowlton, Chalmers (Chairperson)

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 one or more of the disability areas, stopping short of the master’s degree. Detailed descriptions of all programs including prerequisites and course sequences are available in the Special Education Office.

Teachers certified in Elementary Education or Secondary Education may pursue the Master of Education or the Master of Science degree. Individuals who will complete certification in Elementary Education or Secondary Education by the time they complete their master’s degree in Special Education may also pursue the Master of Education or the Master of Science degree. Non-certified persons may only pursue the Master of Science degree. Certified individuals are eligible for employment in public school settings as well as in various agencies serving individuals with disabilities. Non-certified individuals are eligible for agency employment but not for public school positions.
Admission Requirements

1. Baccalaureate degree in education or in areas such as social work, communication disorders, nursing, or physical therapy.
2. For students with undergraduate degrees in other than education—
   a. Twelve (12) semester credits of undergraduate education
   b. Eight (8) semester credits of undergraduate study in social science or selected humanities prior to taking graduate level study in education.

Degree Requirements

The Master of Science (M.S.) degree is available in two tracks. The first track, with either a thesis or non-thesis option, is open to professional educators (certified) or non-certified persons who wish to follow a research-oriented program of study, and requires the inclusion of at least six credits of course work in educational foundations. A detailed description of the M.S. degree requirements may be found on page 167; a detailed description of the Master of Education (M.Ed.) degree can be found on page 168. The scholarly tool requirements are described on page 190. Applicants should refer to page 160 and 189 for application procedures.

A doctoral degree in Teaching and Learning is available with a concentration in Special Education. Interested persons are referred to page xxx 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.

Courses

573A. 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, multi-handicapped and adult populations.

573B. 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.

573C. Orientation and Mobility/Visually Impaired, 2 credits. This course introduces students to basic orientation and mobility techniques used by specialists when working with low vision and blind individuals. Concept development, kinesiology, tactile map construction, dog guides, electronic mobility devices and parental involvement are topics covered with respect to various populations (i.e. infants, school-age academic children, multi-handicapped children and adults).

573D. Low Vision Assessment and Remediation, 2 credits. Prerequisite: CTL 315 or consent of instructor. A course which focuses on children who have severe visual deficits but who have proper training are able to utilize their vision for learning. Effects of low vision are studied with respect to psychological/sociological development, academic learning, skills of independent living, and vocational choice. Methods of assessing visual function are examined with emphasis on adaptations needed in the educational setting. Optical and non-optical aids are compared and evaluated.

573E. Communication Media and Methods/Visually Impaired, 3 credits. Prerequisite: Consent of instructor. This course provides an overview of the communication devices and adaptive technology used by the visually handicapped. Students learn to read and write the braille codes for mathematics and music, do basic calculations on the abacus, braid every and talking calculator and gain familiarity with computers and software currently used in the field.

574A. Early Intervention for Children with Special Needs, 2 credits. An introduction to the field of Early Childhood Special Education, primarily for students interested in entering the field. Issues such as program design, parent involvement, identification, infant education, and effects of handicaps will be covered.

574B. Identification and Assessment of Young Children with Special Needs, 3 credits. A study of the principles and procedures for screening, identifying and evaluating young children with special needs. Emphasis will be placed on exposing students to available assessment instruments and providing opportunities for actual testing of preschoolers.


574D. Working with Families of Young Children with Special Needs, 2 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.

574A. Introduction to Learning and Behavior Problems, 3 credits. Characteristics of learning disabled and emotional/behavior disordered children and youth; theoretical backgrounds; models for delivery of service.

574B. 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.

574C. Methods and Materials: Learning and Behavior Problems, 3 credits. Study of a variety of methods and materials for teaching children and youth with learning and behavior problems: Individual Education Program (IEP) planning; field experience in school programs.

574D. Advanced Methods for Learning Disabilities Teachers, 3 credits. Techniques for complex and severe learning problems—a review of recent developments in the field. Supervised experience in individual testing with standardized educational tests. Supervision of SLD personnel.

574E. Collaborative Relationships, 2 credits. A course appropriate for anyone working with parents, general educators, special educators, paraprofessionals, related service personnel, and administrators. Topics covered include: (1) the various models of collaboration and consultation and the stages of each; (2) communication skills; (3) problem-solving; (4) conflict management; (5) diverse perspectives; (6) information collection procedures; and (7) supervisory skills.

574F. 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 techniques with special needs students.

574G. Seminar in Special Education, 2 credits. General education of the exceptional student; issues and research; emotionally disturbed child; learning disabled child; mentally handicapped child; preschool handicapped child; visually handicapped child; gifted child. May be repeated to a maximum of eight credits.

419. Curriculum and Materials in Special Education, 3 credits.

422. Education of Gifted and Talented, 2 credits.

423. Assessment Program Planning/Special Needs Students, 3 credits.

493. Problems in Special Education, 2 to 5 credits.

NOTE: Please refer to p. 190 for a list of Practica, Special Topics, and Individual Study options available.
Admission Requirements

See Graduate School requirements (p. 160) and CTL requirements (p. 189).

Degree Requirements

Doctor of Philosophy

1. A major area which must be no less than half of the total credits for the degree in Elementary Education/Child Study, Secondary/Higher Education, Special Education, or Research Methodologies, including a dissertation of at least 10 credits.
2. A minor or cognate of at least 12 credits.
3. A minimum of six credits in the Foundations of Education.
4. A minimum of 10 credits of scholarly tools selected to reflect the research interests of the student.
5. The residence requirement for graduate study in the Center for Teaching and Learning leading to the Ph.D. degree will be full-time enrollment for two consecutive semesters (Fall, Spring or Spring, Fall) on the University of North Dakota campus. (See page 164 of the catalog for a definition of Residence).

Doctor of Education

1. A major area consisting of a minimum of 58 hours in Elementary Education/Child Study, Secondary/Higher Education, Special Education, or Research Methodologies, including a dissertation of 10 credits.
2. A minor or cognate of at least 12 credits.
3. A minimum of 12 credits in the Foundations of Education.
4. A minimum of six credits of scholarly tools selected to reflect the research interests of the student.

Major Options

The Elementary Education/Child Study option focuses on teaching, learning, curriculum development, and the study of children at the early childhood, elementary, and middle school levels. Students in the program choose two or three curricular or child study areas as focal points for their major work.

The Special Education option prepares special educators and persons in related human services disciplines to provide educational leadership in roles that require teacher education, coordination of services, and consultation or advocacy on behalf of learners of all ages. Special Education programs of the Center for Teaching and Learning address needs of learners who are identified as mentally retarded, learning disabled, emotionally disturbed, visually impaired, or eligible for early childhood special education services. Students admitted to the program are expected to hold certification in at least one area of exceptionality or to have significant experience in special education. The major area includes 13 specified credits of core course work and advanced work in at least one of the special education areas listed above.

The Secondary/Higher Education option focuses on issues of teaching and learning of older adolescent and adult learners with focus on pedagogy in a particular content field. Approximately half of the work of the major is in the content field of the student and half in education. For students entering the program with a Master’s degree in the content field and without previous background in the study of education, the Ph.D. program is recommended. For students with this background, the major will be completely in education supported by a minor of at least 20 credits in the content field.

The Research Methodologies option focuses on the study of quantitative and qualitative research in education. Students are prepared to assume roles as educational researchers or teachers of research methodologies. In this major option, half of the major consists of work in research methodologies, and half consists of selected work in the study of education.

Course offerings for this degree are listed under Child Study and Education, Elementary Education, Reading Education (Elementary Education/Child Study); General Studies in Education, Reading Education, and Center for Teaching and Learning (Secondary/Higher Education); Special Education; and Research Methodologies.

Electrical Engineering

Professors Bengiamin (Chairperson), Hootman; Associate Professors Miles, *Moe

Program Description

The Department of Electrical Engineering offers graduate programs leading to the Master of Engineering and the Master of Science degrees. The M.S. degree is offered under both the thesis and the non-thesis options.

Admission Requirements

Master of Science

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.

Master of Engineering

1. B.S. degree in Electrical Engineering from an ABET accredited program.
2. Overall GPA of at least 2.50 or a GPA of at least 3.00 for the last two years.

Applicants for admission to any of the programs for graduate studies in Electrical Engineering from non-ABET accredited universities/programs must submit scores from the General Test of the Graduate Record Examination.

Degree Requirements

1. Possible concentrations or combinations: a) Systems including circuits, communications, control, signal processing, electronic computers, microprocessors, and power; b) Energy conversion, machine design, and electric power networks; c) High Frequency devices and fields.
2. Minors and cognates are encouraged in areas such as mathematics, physics, engineering, computer science, and/or related areas.
3. The Master of Engineering program requires one-third engineering design, one-third advanced engineering, and one-third in related areas, which must include at least six credits outside of the department.

Courses

504. Statistical Communications Theory and Signal Processing II. 3 credits.
505. Control Systems II. 3 credits. Prerequisite: Electrical Engineering 405.
509. Decision Systems. 3 credits. Prerequisite: consent of instructor. Systems and networks will be designed to work in an uncertain environment. Systems will be optimized using Neural Networks and Fuzzy Logic concepts.
510. Digital Control Systems. 3 credits. Prerequisite: Electrical Engineering 405 and general knowledge of microprocessor programming. Digital systems representation, analysis and simulation; Z-transform; digital controllers design and realization; microprocessor based controllers.
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. Prerequisite: Consent of instructor. Logic design analysis of electrical digital computers with some applications to counter circuits.
520. Electronic Computing Systems. 3 credits. Prerequisite: Electrical Engineering 422 or consent of instructor. Design of basic computer systems; simulation of computers’ special purpose controller design; advanced microprocessor design and use.

521. Discrete Real Time Filtering. 3 credits. 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.

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 the student’s advisor. A three to six credit course of engineering design experience involving individual effort and formal written report. SU 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.

Elementary Education

(See Education: Elementary Education, p. 192.)

Energy Engineering

Associate Professor Schulz (Chairperson)

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
2. A bachelor’s degree from an ABET accredited engineering program
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 the 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 p. 173.

1. Scholarly Tools: Proficiency in mathematics demonstrated by completing 9 approved mathmetics 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)

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.


590. Special Topics in Energy Engineering. 1 to 6 credits. Prerequisite: Consent of instructor. Investigation of special topics in energy engineering dictated by student and faculty interests. These topics must include 3 credits of alternative energy sources/systems. May be repeated up to a total of 9 credits.

599. Doctoral Research. 1 to 15 credits repeatable to 30.
English Language and Literature

Professors Anderegg, Beard, Borden, Donaldson, Hampsten, King, Lewis, Marshall, McKenzie, J. Meek, O’Donnell, Rankin, Sheridan (Chairperson); Associate Professors Koprince, Little, Wiener; Assistant Professors Carson (Graduate Director), Coleman, Dixon, Huang, M. Meek

Program Description

The department offers the degrees of Master of Arts, Master of Education, and Doctor of Philosophy.

The English department offers courses in many areas of English and American language and literature, including courses in major authors, periods, and genres. Areas of faculty expertise include nineteenth and twentieth century literatures, creative writing, linguistics and ESL, film study, gender and culture studies, composition, translation, and literary theory. The department accepts both scholarly-critical and creative theses and dissertations.

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 Czeslaw Milosz, Joseph Brodsky, Louise Erdrich, James Merrill, Larry McMurtry, Leslie Silko, James Welch, Reginald McKnight, Luisa Valenzuela, and Tobias Wolff.

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.
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 for the Master of Arts.
2. A master’s degree of at least 30 semester credits of courses in literature and English language or in an acceptable combination of these and related subjects. (Graduate courses taken elsewhere may, at the discretion of the department, be accepted in lieu of courses that would otherwise be required at the University of North Dakota.)

Financial Assistance

Financial Aid available to graduate students includes Board of Higher Education tuition scholarships for North Dakota residents and Graduate Teaching Assistantships for native speakers of English.

Degree Requirements

Master of Arts (thesis and non-thesis options)

1. English 500, English 442 (or equivalent language course), English 501 and 501L if serving as a Graduate Teaching Assistant, and either English 510 or 511 with grades of A or B.
2. Up to six credits of Readings and Research courses may be used to supplement the standard graduate offerings.
3. Four credits allowed for thesis.

Master of Education

The work for this degree is designed for high school teachers of English who desire preparation in education as well as graduate work in English. Application is made through the Center for Teaching and Learning.

1. A minimum of 12 semester hours (including English 442 and 500) in graduate courses in English.
2. A cognate area of at least six credits.
3. Written final comprehensive examinations covering the courses in English, the courses in the cognate fields, and Foundation courses. (An oral comprehensive examination may also be required.)

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, which may be entirely written or may consist of a combination of three written parts and one oral part in areas or topics relevant to a student’s individual interests as recommended by the student’s 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; genres, modes, or themes; studies in language; special topics.
5. The oral portion of the examination may be drawn from any of the above categories and may consist of a lecture delivered by the student in a formal or informal setting. These examinations will normally be taken after the course work is completed.
6. 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 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 or equivalent language course, 500, 501 and 501L (GTAs 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. The course is required of Graduate Teaching Assistants in English.
501L. Teaching College English Lab, 1 credit. The practicum part of 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 the 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 a topic included within the bounds of the announced general subject of the seminar. 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
   C. Cinema
   E. English Literature
   L. English Language
   W. 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. Prerequisite: 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
   C. Cinema
   E. English Literature
   L. English Language
   W. 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.

315, 316. Shakespeare, 6 credits.
320. Studies in American Fiction, 3 credits.
322. Studies in American Drama, 3 credits.
330. Studies in English Fiction, 3 credits.
331. Studies in English Poetry, 3 credits.
332. Studies in English Drama, 3 credits.
357. Women Writers and Readers, 2 to 4 credits.
361, 362. American Indian Languages, 6 credits.
365. Black American Writers, 3 credits.
367. American Indian Literature, 3 credits.
369. Literature and Culture, 1 to 3 credits.
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.
411, 412. The Art of Writing, 6 credits.
413. Studies in Literature for Young Readers, 3 credits.
415. Special Topics in Literature, 1 to 4 credits.
417. Special Topics in Language, 1 to 4 credits.
419. Teaching English as a Second Language, 3 credits.
442. History of the English Language, 3 credits.

2. A minimum of 18 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.

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 (Cultural) for the M.A.
3. A minor or cognate areas of study that reflects the student’s focus on physical or cultural topics.

Thesis

1. A minimum of 30 semester credits including 9 semester credits for approved minor 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.
University of North Dakota

Geology

Professors Gosnold, Karner, Kelley (Chairperson), Perkins, Reid, Saluja; Associate Professors Gerla, Groenewold, Lefever (Graduate Director), Matheny; Assistant Professors *Forsman, *Korom; Adjunct Assistant Professors Hartman, Jones

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 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 field camp (the equivalent of approximately 14 semester credits).
3. One year minimum of chemistry and physics.
4. One semester of analytic geometry and calculus (equivalent to Math 211 at UND) for the M.A. degree; the entire calculus sequence (equivalent to Math 211, 212, 213 at UND) for the M.S. and Ph.D. degrees.

Deficiencies in the required undergraduate preparation in mathematics or the related sciences may be corrected by taking the required courses, without graduate credit, after beginning graduate work in provisional or qualified status.
5. General and Advanced portions of the Graduate Record Examination.

Initial decisions for admission and financial aid are made about March 1 for the fall semester and about September 1 for the spring semester.

Degree Requirements

Please see pp. 167 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 master’s degree in geology is about two years of full-time work. Students with graduate teaching or research assistantships may need more time.

Depending upon the total number of 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 p. 173 for the general degree requirements. Students normally take the equivalent of three years of full-time work beyond the master’s degree for the doctorate.
1. In certain cases, a qualifying examination may be required before the end of the student’s first year in a doctoral program.
2. Demonstration of (1) proficiency in two foreign languages, or (2) proficiency in one foreign language and two scholarly tools courses, or (3) proficiency in four scholarly tools courses. (Scholarly tools courses typically are advanced undergraduate courses in related fields in mathematics, science, or engineering.)

Courses

Most of the 500-level courses listed below are offered at least once every three semesters. Others are offered less frequently, on demand.

500. Sedimentary Geology. 1 to 4 credits. Prerequisite: Consent of instructor. A sequence of courses emphasizing: A. sedimentary processes and deposits; B. carbonate petrology; C. clastic petrology; and D. analysis of depositional systems.

505. Isotope Geochemistry. 3 credits. Prerequisites: Geology 321, or permission of instructor. Geochemistry and cosmochemistry of radioactive and stable isotopes; isotopic 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. Paleoecology; D. Palaeontological procedures; E. Micropaleontology.

517. SEM/Microprobe Analysis. 3 credits. Prerequisite: Geology 319. Principles and applications of scanning electron microscopy and electron microprobe analysis.

518. Topics in Advanced Stratigraphy. 2 to 4 credits. Prerequisites: Geology 411, 415. Selected topics in lithospheric stratigraphy and biostratigraphy.

519. Advanced Stratigraphy—Mesozoic and Cenozoic. 4 credits Prerequisites: Geology 415, 416. Distribution, sequence, and biotic zonation of Mesozoic and Cenozoic rocks.

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. Prerequisite: Geology 417. Mathematics 211. Selected topics in ground and soil water movement, numerical modeling, and ground water supply.

531. Hydrogeochemistry. 3 credits. Prerequisite: Geology 321, Math 212, or permission of instructor. The origin, characteristics and modeling of surface and ground water geochemistry.

532. Contaminant Hydrogeology. 3 credits. Prerequisite: Geology 417. Transport phenomena in porous media, case studies of ground water contamination, hydrogeological aspects of ground water monitoring and remedial design.

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.

316. Introduction to Oceanography. 3 credits.

320. Petrology. 3 credits.

321. Geochemistry. 3 credits.

323. 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.

412. 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.

442. Topics in Coal Geology. 1 to 3 credits.

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**History**

**Professors Beringer (Chairperson), Iseminger (Graduate Director), Vivian; Associate Professors Berger, Ellis, Rowley, Howard, Assistant Professor *Mochoruk***

**Program Description**

The department of History offers programs leading to the Master of Arts degree and the Doctor of Arts degrees. The M.Ed. degree is also available for students who wish to achieve an education degree with an area of concentration in History. See pp. 168 and 169 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 the Center for Teaching and Learning.

Some Teaching Assistantships are available. They include a stipend and a waiver of tuition. Applications for assistantships should normally be submitted by March 1, but later applications will be considered when all allocated awards have not been made by that date.

**Master of Arts**

**Admission Requirements**

1. Undergraduate preparation of a minimum of 20 semester credits in history with at least 6 credits at the upper division level.

2. An overall undergraduate GPA of at least 3.00 and at least 3.25 in all undergraduate history courses.

3. A writing sample of 8-10 pages, preferably a research or seminar paper (submitted directly to the department’s Director of Graduate Study).

**Degree Requirements**

1. A total of 30 credits including 20 in either United States or European history and 10 credits in: a) a field of history not included in the primary concentration, such as United States or European History, Latin American History, Public History, or b) a minor in a related discipline such as Anthropology, Communications, Economics, English, Geography, Political Science, or Sociology, or c) a cognate as defined on page 175 of this catalog.

2. Research seminars, either 511 or 515.

3. History 502, Historiography, counted as 3 credits in the major concentration.


**Doctor of Arts**

This degree is designed to prepare those whose primary interest is teaching history at the undergraduate collegiate level. It places heavy emphasis upon subject matter and a supervised teaching internship. The internship requires teaching a survey course for one semester during the second year of the program, and a second course for one semester at the 200 or 300 level during the third year. The department offers five fields of study: Ancient World, Early Modern Europe, Modern Europe, United States to 1877, and United States since 1877.

The Doctor of Arts program has been designated a Western Regional Graduate Program by the Western Interstate Commission on Higher Education (WICHE) because of its uniqueness and strength. It is, therefore, open to residents of the thirteen western states at North Dakota resident tuition rates.

**Admission Requirements**

1. All M.A. admission requirements.

2. A master’s degree, preferably in history and with thesis, but at least 15 semester credits of history at the graduate level.

3. A GPA of at least 3.50 for the master’s level work.

4. General and advanced (history) tests of the Graduate Record Examination are optional, but strongly suggested for those whose previous academic record makes their admission questionable or those who have been out of school for several years. High GRE scores may indicate sufficient promise to permit admission of applicants with inadequate grade point averages or insufficient courses. The department may require the GRE as a condition of admission if preliminary examination of the student’s application indicates that the score would be helpful in determining ability to do graduate level work.

Applicants will be evaluated on an individual basis, with preference given to those with at least two years of teaching experience in history, the social sciences, or the humanities, or comparable experience.
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.

343. Ancient Greece. 3 credits.
344. Ancient Rome. 3 credits.
345. The Ancient Near East. 3 credits.
350. Europe: The Reformation, 1500-1648. 3 credits.
351. Europe: Age of Absolutism, 1648-1789. 3 credits.
352. Europe: French Revolution and Napoleonic Era, 1789-1815. 3 credits.
353. Europe: 1815-1918. 3 credits.
355. Europe: Since 1918. 3 credits.
403. The United States Colonial Period. 3 credits.
404. The United States Revolutionary Era, 1765-1789. 3 credits.
405. The United States: Age of Jefferson and Jackson, 1789-1850. 3 credits.
406. The United States: Civil War—Reconstruction, 1850-1877. 3 credits.
407. The United States: Rise of Industrial America, 1877-1920. 3 credits.
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 1845. 3 credits.
414. France Since 1815. 3 credits.
415. Germany Since 1815. 3 credits.
417. Russia Since 1855. 3 credits.
419. Great Britain Since 1815. 3 credits.
431. History of the Great Plains. 3 credits.
480. Introduction to Public History. 3 credits.
481. Public History Practice. 3 credits.

Industrial Technology

Professor Bender (Chairperson);
Associate Professors *Nwoke, Wang;
Assistant Professors *Diez, *Holten, *Smart

Program Description

The Department of Industrial Technology offers programs leading to the Master of Science. The program for the degree is designed on an individual basis to serve students who desire to go on to college, technical institute, or secondary level teaching, supervision, or administration, or to technical/managerial careers in industry.

Admission Requirements

1. A minimum of 20 semester hours of undergraduate preparation in the discipline or related fields.

Degree Requirements

Master of Science

A. Thesis Option.

1. A minimum of 30 semester credits including 9 semester credits for approved minor/cognate courses.
2. Six (6) semester credits for thesis.
3. Require a statistics or computer programming scholarly tool.
4. IT 525, Research in Industrial Technology, 2 semester credits.

B. Non-Thesis Option.

1. A minimum of 32 semester credits including 9 semester credits for approved minor/cognate courses.
2. Two (2) semester credits for an independent study (creative endeavor involving applied research in product or instructional development).
3. IT 525, Research in Industrial Technology, 2 credits.

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.
Linguistics

Special Summer Faculty: Alexander, Bickford, C. Black, H. Black, Clifton, Dooley, Everett, Frantz, Levinsohn, Lowe, Marlet (Chairperson), Matthews, Meyer, Quakenbush, Rhodes, Roberts, Tuggy, Weber

Program Description

The Master of Arts degree in Linguistics emphasizes training for independent linguistic field work, with heavy emphasis on phonetics, field methods, and problem-solving techniques. The program centers around the course offerings of the Summer Institute of Linguistics (SIL), which operates only during the summer sessions. Candidates for the degree will therefore be expected to spend at least two summers enrolled in SIL.

Admission Requirements

1. A minimum of 20 semester credits in linguistics and foreign language, of which at least 10 must be in linguistics.

Students deficient in undergraduate credit requirements but otherwise qualifying for acceptance may use their first summer's work at SIL (or 10 graduate credits in courses designated as linguistics) in lieu of the undergraduate requirement in linguistics. The foreign language requirement may be met by passing a reading examination in a foreign language.

Degree Requirements

1. A minimum of 32 credits including 4 credits for a thesis and may include a minor or cognate (see p. xx).

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.

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. Readings in Linguistics. 1 to 4 credits. Supervised individual study. May be repeated up to four hours total.

594. Research in Linguistics. 2 to 6 credits. Analysis of field data and preparation of a technical description under staff supervision. May be repeated.

456. Articulatory Phonetics. 2 credits.

451. Phonology I. 3 credits.
University of North Dakota

Degree Requirements

Master of Science

1. A major of 30 (thesis) or 32 (non-thesis) credits or a major with a minor or cognate.
2. Two full graduate sequences of the five available: 512-513, 515-516, 518-519, 520-521 and 541-542.
3. At least one additional mathematics graduate course.

The remainder of the program will be determined in consultation with an advisor based on the student’s mathematical aims, interests and background.

Master of Education

1. A minimum of 16 credit hours of graduate work in mathematics, with at least 6 credits being at the 500 level or above, including 2 hours of Math 597, 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. Modern Analysis I, 3 credits. Prerequisite: Math 432. Lebesque measure and integration, abstract measure and integration theory, product integral, the L^1 classes, Hilbert and Banach spaces.
513. Modern Analysis II, 3 credits. Prerequisite: Math 512. Lebesque measure and integration, abstract measure and integration theory, product integral, the L^1 classes, Hilbert and Banach spaces.
515, 516. Applied Mathematics, 6 credits. Prerequisite: Math 351 or consent of instructor. The content of the course varies but includes current topics in applied mathematics such as: (1) ordinary or partial differential equations, (2) approximation theory and perturbation techniques, (3) modeling and computer simulation, (4) special functions, (5) numerical analysis, (6) variational methods, (7) transforms, (8) integral equations.
518. Algebra I, 3 credits. Prerequisite: Math 441 and 442. Group theory, rings and fields, vector spaces, Galois theory and finite fields.
520. Topology I, 3 credits. Prerequisite: Math 431. Point set topology, including metric spaces and such topics as homeomorphisms, separation axioms, compactness, connectedness, general convergence, compactifications and metrizability.
521. Topology II, 3 credits. Prerequisite: Math 520. 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. Distributions of quadratic forms, general linear hypothesis 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 and several multivariate means, multivariate linear regression models, principle components, factor analysis.
403. Linear 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.

Mechanical Engineering

Professors Bandyopadhyay, Grewal;
Associate Professors Bibel, *Goddard, *Moen, *Vermeersch

Program Description

The Department of Mechanical Engineering offers graduate study leading to the Master of Science (thesis and non-thesis options) and Master of Engineering degrees.

Admission Requirements

1. Bachelor degree in Mechanical Engineering from an ABET accredited program. Students who hold another engineering degree or a science degree may be admitted to Provisional or Qualified Status until they have removed undergraduate deficiencies.
2. Graduate Record Examination—General and Advanced Engineering Test for those with undergraduate degrees from other than ABET accredited engineering programs.

Degree Requirements

Master of Science

Thesis option—completion of a research project and its presentation in a thesis.
Non-thesis option—completion of an independent study.

Master of Engineering

1. Completion of a design project.
2. At least 12 credits of engineering design and at least 9 credits of engineering science, basic science and/or mathematics.

The research project, independent study, or design project may be from interdisciplinary areas such as bioengineering, or environmental engineering, or they may be topics in design, manufacturing processes, vibrations, stress analysis, materials, power, fluid mechanics, heat transfer, thermodynamics, or combustion.

Course Offerings

A minimum of one 500-level course will be offered each semester. The courses will alternate between the thermal science-fluids-energy areas and the mechanics-materials-manufacturing-processes areas. All graduate students who have not completed their course work will be required to enroll in these courses. A course will not be repeated in less than 2 years unless by student demand. All other courses listed will be taught on appropriate student demand.

Courses

513. Advanced Engineering Materials, 3 credits. Two hours recitation, three hours laboratory. Prerequisite: Mechanical Engineering 413. Topics to be covered are crystal geometry and metal structures, diffusion mechanisms, phase transformations, phase equilibria, phase diagram interpretation, recrystallization and grain growth, plastic and elastic properties of alloys, and advanced dislocation theory.
523. Advanced Machine Design, 3 credits. Prerequisite: Mechanical Engineering 322 and 421. Advanced design and analysis of machine components; kinematic synthesis and analysis of mechanisms, force analysis, rotor dynamics, gyrodynamics, stresses in thick cylinders and flywheels, lubrication, statistical considerations, energy methods, curved beams.
526. Advanced Vibrations, 3 credits. Prerequisite: Mechanical Engineering 426. Advanced vibration theory including the solutions of multi-degree of freedom coupled systems, continuous systems, energy methods, non-linear vibrations.
**Medical Technology**

**Professor *Sopher, Associate Professor Bruce (Graduate Director); Assistant Professor Larson**

**Program Description**

The Department of Pathology offers a graduate program leading to the Master of Science Degree in Medical Technology, non-thesis option. The M.S. degree is offered both on campus and through teleconferencing. It provides a broad medical science background. This curriculum is designed to prepare students for careers as administrative laboratory directors, clinical laboratory consultants, technical supervisors or laboratory educators.

**Admission Requirements**

1. General requirements for admission to the UND Graduate School.
2. B.A. or B.S. degree and successful achievement in the CLS(NCA) or in the MT(ASCP) certification examinations.
3. Experience in a medical laboratory prior to admission is recommended.

**Degree Requirements**

1. A minimum of 32 semester credits, with a maximum of 16 credits available through teleconferencing.
2. Must be on the UND campus for a minimum of one regular summer session and three one week courses (e.g., Pathology 510, 511, 512).
3. Major area is 22 credits in the clinical laboratory sciences.

4. A cognate area of study or minor (minimum of 9 credits) is optional.
5. The required core is as follows:
   - 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 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 521 Seminar 1 cr
   - PATH 591 Directed Studies 2 cr
   - PATH 997 Independent Study 2 cr
   - MBIO 509 Immunology 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)."
Microbiology and Immunology

Professor Kelleher (Chairperson); Associate Professor Young; Assistant Professors Reinitz, Spanier

Program Description

The Department of Microbiology and Immunology offers graduate programs leading to an M.S., Ph.D., and Ph.D./M.D. degree. Graduate study is available in a number of disciplines including cell biology, clinical microbiology, ecology, genetics, immunology, microbial physiology and biochemistry, molecular biology, parasitology and virology. The goals of the program are to provide scientific training and experience for careers in research and teaching in universities, clinical and research laboratories and in fields of related employment. Additional background is available in disciplines such as biochemistry, computer sciences, statistics and electron microscopy in other departments in the School of Medicine and the University.

Students rotate through each faculty member’s laboratory in their first semester of graduate study. Subsequently to this experience the student and his/her advisor are expected to choose a specific research program.

Core requirements for M.S. and Ph.D. degrees include courses in biochemistry, microbiology, molecular biology, immunology, and graduate seminars. The scholarly tool requirement for Ph.D. students consists of a minimum of six credits of statistics and/or computer science. For both the M.S. and Ph.D. degrees students are expected to carry out original research suitable for publication in a professional journal.

Master’s degree candidates are required to write a thesis and defend their research in a final oral examination. Doctoral candidates are required to successfully complete both a written and oral comprehensive examination as well as to write a dissertation and defend their research in a final oral examination.

Research Facilities

A new, modern science building and an adjacent bioinformation learning resources center which house the research laboratories, library and teaching facilities of the School of Medicine were constructed in 1994. These facilities provide a state-of-the-art environment for teaching and research. The Department of Microbiology and Immunology occupies the fourth floor of the research building. Other basic science departments in this facility include the Departments of Anatomy and Cell Biology, Biochemistry and Molecular Biology, Pharmacology and Toxicology, and Physiology. Additional resources in neighboring buildings include the Department of Pathology, the Energy and Environmental Research Center, the USDA Human Nutrition Center and the Computer Center. The proximity of these departments and facilities provides the opportunity for cooperative and collaborative research and training in the basic sciences.

Financial Assistance

Graduate students are supported by University fellowships, teaching assistantships and research assistantships. The stipends are competitive, normally provide support for the entire calendar year and include a waiver of tuition and fees. Applications for admission are accepted throughout the year. Applications from students seeking financial assistance should be completed by 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 is recommended.
4. A course in Microbiology and a background in chemistry, preferably through organic chemistry, are recommended.
5. Students entering with graduate credit will be given a diagnostic examination, the sole purpose being to aid in determining the student’s future study program.

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 teach and to present and participate in journal clubs, general seminars, and research seminars.

Degree Requirements

Master of Science

See Graduate School Requirements for the M.S. on p. 167.

Doctor of Philosophy

See Graduate School Requirements for the Ph.D. on p. 173.

Joint Ph.D.-M.D. Degree

See Program Requirements for Ph.D./M.D. Degree on p. 175.

Courses

Courses marked with an asterisk(*) are offered in alternate years only.

*501. Viruses. 3 credits. Prerequisites: Microbiology and biochemistry and/or consent of instructor. Chemistry and biochemistry of bacterial and animal viruses.

502. Clinical Virology. 2 credits. Prerequisite: Previous course in microbiology and/or consent of instructor. Emphasizes current concepts about human viruses regarding pathogenesis, clinical syndromes, epidemiology, prophylaxis and treatment.

*504. Microbial Physiology. 3 credits. Prerequisites: A basic course in microbiology and immunology, or consent of instructor. The morphology, growth characteristics, and nutrition of microorganisms will be discussed. Special consideration will be given to microbial metabolism, protein synthesis, and structure-function relationships.

505. Environmental Microbiology. 3 credits. One lecture and two laboratory periods per week. Prerequisites: Microbiology 302 or permission of the instructor. An introduction to soil, sewage and aquatic microbiology. The students will use soil and water samples collected by the instructor as sources from which to isolate and identify organisms that are important in element (e.g., carbon, nitrogen) cycling and/or are able to grow in unique environments (e.g., mining sites, hot springs).

506. Biology of Microorganisms. 2 credits. Prerequisite: Biochemistry 301 or equivalent. Structural characteristics of bacteria, fungi, viruses, and protozoa. The physiology, metabolism, and genetics of bacteria; modes of action and spectrum of activity of antimicrobial agents.

507. Seminar in Microbiology. 1 credit. S/U grading only.

508. Clinical Microbiology. 2 to 4 credits. Prerequisite: Biochemistry 301 or equivalent. A detailed study of pathogenic microbes with respect to morphologic, physiologic, serologic characteristics, and of the epidemiology and pathogenesis of infectious disease.

509. Immunology. 2 credits. Prerequisite: Biochemistry 301 or equivalent. Fundamentals in immunology and immunological techniques.

511. 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.

512. Microbial Genetics. 3 credits. Prerequisites: Basic courses in genetics and microbiology or biochemistry and/or consent of instructor. Genetic mechanisms in microorganisms, mutagenesis, fine structure of genetic material, genetic engineering. Selected Readings.

513. Research Tools. 2 credits. Orientation to research and laboratory safety. The theory and application of modern laboratory techniques include tissue culture, cell fractionation, enzyme assay, immunization procedures, bacterial growth curves, photomicroscopy, strain construction, genetic engineering, gel electrophoresis, enzyme immunoassay, and western blot techniques are presented. S/U grading only.

514. Radiosotope Techniques. 2 credits. Prerequisite: M BIO 302 or equivalent. Laboratory procedures utilized in working with radioisotopes. Care and handling of radioactive by-products, radiation survey and survey records, monitoring techniques and instruments, and licensing procedures are covered.
515. 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.

516. Virology Laboratory. 3 credits. Prerequisite: Microbiology 508 or consent of instructor. Basic techniques in virology and tissue culture.

517. Advanced Immunology Laboratory. 2 credits. Prerequisite: Microbiology 509 or equivalent. Laboratory experience will include procedures for analysis of antigens, antibodies, and cell mediated immune responses.

518. Molecular Genetics Laboratory. 2 credits. Prerequisites: Basic courses in microbiology and genetics or consent of instructor. Fundamental techniques in gene manipulation, cloning and engineering.

590. Research in Microbiology. 2 to 6 credits. Hours arranged. Advanced problems in microbiology and related fields. SU grading only.

591. Special Problems in Microbiology. 1 to 6 credits. Short term research projects performed under the supervision of a department faculty member. Intended to provide interested capable students with a challenge and an opportunity to conduct scientific research in microbiology. Arranged by consultation with participating faculty members.

Music

Professors Fry, Miller (Chairperson); Associate Professors Jacobson, Koozin, Lewis, Rodde, Sedgwick, Towne; Assistant Professor Solose

Program Description

The Department of Music offers graduate programs leading to the Master of Music degree with specializations in Music Education and Performance (Voice and Piano) and Composition. 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 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 or voice. (Students who are unable to perform an audition in person may submit a tape recording indicative of their performing abilities on their major instrument or voice. This tape recording should be of a recent live performance.)

7. Interview by the appropriate music faculty. (Students who are unable to visit the UND campus and meet with the music faculty will be telephoned for an interview. This conference call will assess the student’s goals regarding graduate study in music at UND.)

(Vocal Performance students must meet the following German and/or French language requirements: 2 years of German or French, or 1 year of each, or the equivalent in reading and diction skills. Language requirements may be met with the required amount of course work [one or two years] or by demonstrating Level II [for one year] or Level IV [for two years] proficiency in the Languages Department Placement Examinations. Students must also demonstrate adequate French, German and Italian language diction skills to the Department of Music.)

Language deficiencies may be removed during the master’s degree program of study, but such credits will not count toward the master’s degree.

All students admitted to graduate study in music, whether to Approved, Qualified, or Provisional status, will be examined upon their arrival on campus so that the faculty of the department of music may more fully assess the background, accomplishments, and ability of each student and in order to provide appropriate advisement for the beginning of graduate study. This process will involve the following activities:

1. A Music History Styles Test
2. A Music Theory Test
3. An Ear Training and Sight-singing 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 three specializations: (1) Music Education, (2) Performance (Voice, Piano or Organ), and (3) Composition.

Music Education Specialization (13 credits)

MUS 503 Curricular and Psychological Foundations of Music Learning 3 credits

MUS 507 Foundations of Music Education 3 credits

MUS 598 Research in Music Education 3 credits

MUS 997 Independent Study (Music Education topic) 2 credits

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

MUS 594 and/or MUS 595 Individual Lessons 2 credits

Electives (3 credits)

MM in Performance or Pedagogy (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)

Performance/Pedagogy Specialization (12 credits)

Performance Track

MUS 596 Individual Lessons 8 credits

MUS 599 Graduate Recital 2 credits

Pedagogy Track

MUS 596 Individual Lessons 4 credits

MUS 553 or 554 Vocal or Keyboard Pedagogy II 3 credits

MUS 590 or 591 Vocal or Keyboard Internship 1 credit

MUS 597 Special Projects (Pedagogy topic) 2 credits

MUS 997 Independent Study 2 credits

Total 32 credits

Music Composition Specialization (12 credits)

MUS 506 Advanced Composition 8 credits

MUS 593 Final Project in Composition 4 credits
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 adviser. 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 an Outline of Independent Study on a form available from the Graduate School. This outline, when approved by the Faculty Advisory Committee and deposited in the Graduate School, indicates acceptance of a topic for study and incorporation into an independent study. The outline form and three copies should be filed no later than the beginning of the semester or session in which the student expects to graduate.

Students and their advisors will be notified in writing of the advancement to candidacy. Students should 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 the principal areas of research in music. 

**501. Graduate Music Theory Review, 3 credits.** A comprehensive review of the harmonic, contrapuntal and formal elements of music, designed to prepare students for graduate-level music courses. Does not count toward fulfillment of the minimum 32 hours of the graduate music degree requirements. May be waived by examination. 

**502. Perspectives in Music Theory, 3 credits.** Prerequisite: Music 501 or passing grade on placement examination. A comparison and evaluation of formal systems in music with emphasis on developing performance concepts through the study of specific representative compositions.

**503. Historical and Psychological Foundations of Music Learning, 3 credits.** An in-depth study of curriculum construction and implementation and the psychological processes of learning.

**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 examining current historical musical research approaches for the use of other music professionals. Topics include: Ethnomusicology, Music Criticism, Music History, Editing, Sources, Performance Practice, Musical Research for Teaching.

**521. Instrumental Literature, 3 credits.** The study of instrumental music literature through scores and recordings.

**523. Keyboard Literature, 3 credits.** The study of keyboard literature through scores and recordings.
524. Choral Literature. 3 credits. The study of choral literature through scores and recordings.

525. Vocal Literature. 3 credits. The study of solo vocal literature through scores and recordings.

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.

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.

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.

554. Keyboard Pedagogy II. 3 credits. Prerequisite: Music 552, Keyboard Pedagogy I. Teaching procedures, methods, and literature for teaching keyboard students from the late intermediate through advanced levels, addressing questions of style, performance practices, editions, and techniques. Includes observation and teaching in both group and individual settings. Regular grading.

561. Advanced Choral Conducting. 2 credits. Choral schools and composers since the sixteenth century, study of interpretations based on scores, recordings, and class performance.

562. Advanced Instrumental Conducting. 2 credits. Advanced techniques of instrumental conducting and score reading.

568. Administration and Supervision of 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, conducting or any orchestral instrument, “Voice” or the name of the instrument serves as the title of the course. For the final examination (excluding conducting), the student will perform before a faculty committee. May be repeated for credit without limitation.

595. Individual Lessons. 1 to 2 credits. Individual lessons in the major instrument, conducting or voice for the music education major. In registering for private lessons in voice, piano, organ, conducting or any orchestral instrument, “Voice” or the name of the instrument serves as the title of the course. For the final examination (excluding conducting), the student will perform before a faculty committee. May be repeated for credit without limitation.

596. Individual Lessons. 1 to 4 credits. Individual lessons in voice, piano or organ for the performance major. In registering for private lessons, “Voice” or the name of the instrument serves as the title of the course. For the final examination, the student will perform before a faculty committee. May be repeated for credit without limitation.

597. Special Projects. 1 to 3 credits. Individual study in an approved area of interest to the student.

598. Research in Music Education. 3 credits. An introduction to qualitative and quantitative research methodology relative to music education.

418. Electronic Music Techniques. 2 credits.

430. Advanced Methods for the Teaching of Woodwind, Brass, and Percussion Instruments. 1 credit. For summer camps and workshops only.

437. Music for Elementary Teachers. 1 to 4 credits.

438. Music in the Junior High School. 1 to 4 credits.

443. Advanced Conducting and Interpretation of Band Literature. 1 credit. For summer camps and workshops only.

490. Individual Research in Band Literature and Method Books. 1 credit. For summer camps and workshops only.

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Nursing

Professors Langemo, Monnig (Graduate Director), Szigeti; Associate Professors *Gilje, Henly, Juhl, Lindseth, Milburn, Vermeersch, Wilhite; Assistant Professors *Blaise, *Downey, *Gullicks, *Larson,

Program Description

The College of Nursing offers a National League for Nursing accredited graduate program leading to a Master of Science (M.S.) degree with a major in nursing and following the thesis or non-thesis options. Five areas of clinical specialization are offered:

1. Adult Health Nursing
2. Anesthesia Nursing
3. Family Nurse Practitioner
4. Rural Health Nursing
5. Parent-Child Nursing

The program is targeted to prepare clinical specialists, nurse educators or nurse administrators; and to expand the scientific knowledge of nursing practice through research.

Admission Requirements

1. A Bachelor’s degree in nursing from an NLN accredited program.
2. An undergraduate or graduate course in statistics.
3. A minimum GPA of 3.00 for the last two years of baccalaureate study.
5. A minimum of one year of experience as a registered nurse (preferred).
6. An undergraduate course in biochemistry (Biochemistry 301 or equivalent), one year of nursing critical care and a successful interview for those choosing Anesthesia Nursing specialization.
7. Successful interview for those choosing Family Nurse Practitioner specialization.
8. Meet current health and immunization requirements of the College of Nursing before being permitted to enroll in a clinical nursing program.

Applications for admission will be considered as they are completed. Students anticipating full-time study should plan on starting their course of study in the fall.

Clinical Specialization

The focus of the major is clinical specialization. The student also selects a functional role which offers preparation for nurse administrator, nurse educator or clinical nurse specialist roles. For the clinical specialization of Adult Health, Rural Health and Parent-Child Nursing, six credits of electives outside of nursing which support the selected role function: nurse clinical specialist (N555); nurse educator (N565); or nurse administrator (N560) must be taken. The thesis or non-thesis options are available for all clinical specializations. No residence requirement.

The Adult Health Nursing area of specialization requires a minimum of 36 credits, including: N500, 515, 516, 525, 530, 577, Physiology 512, and either N555, 560, or 565, plus six credits of functional role electives.

The Anesthesia Nursing area of specialization, which is accredited by the Council on Accreditation of Nurse Anesthesia programs, requires:

2. Additional clinical credits (N597) are required to meet CRNA certification eligibility.
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. The development, research, and administration of nursing knowledge will be examined.

514. Parent-Child Specialization: Practicum and Seminar I. 3 credits. Pre- or corequisites: Nursing 533. The course focuses upon the educator and researcher roles of the parent-child and clinical nurse specialist in providing advanced nursing care to client(s) and their families. Theoretical clinical care and community setting provides opportunities for the assessment of client(s) 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. Pre- or corequisites: Nursing 515 and PYS 512. Adult advanced health nursing concepts applied to nursing problems in acute/critical care or long-term care setting. Includes six hours of clinical experience weekly.

516. Advanced Adult Health Clinical Practicum and Seminar II. 3 credits. Pre- or corequisites: Nursing 515. The primary emphasis of this course is the in-depth study of complex health problems of adult populations. The primary emphasis of this course is the in-depth study of complex health problems of adult populations. The primary emphasis of this course is the in-depth study of complex health problems of adult populations.

517. Anesthesia Nursing Clinical Specialization Practicum and Seminar. 3 credits. Pre-requisites: Nursing 515 and consent of instructor; pre- or corequisites: Nursing 530. Advanced anesthesia principles are applied to geriatric, pediatric, and obstetric clients. Concepts are applied in a variety of clinical situations.

518. Parent-Child Specialization: Practicum and Seminar II. 3 credits. Pre-requisite: Nursing 514, Nursing 532; corequisite: Nursing 532. 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. The course focuses upon the educator and researcher roles of the parent-child and clinical nurse specialist in providing advanced nursing care to client(s) and their families. Theoritical clinical care and community setting provides opportunities for the assessment of client(s) status and appropriate nursing intervention and evaluation based upon nursing theory and research. Includes six hours of clinical experience weekly.

525. Issues in Health Care Delivery. 3 credits. Pre-requisites: Admission to Nursing or consent of instructor. The focus of this course is on comprehensive investigation and analysis of the issues and influences which challenge the profession of nursing and the delivery of health care by nurses prepared at an advanced level. Strengths and weaknesses of, threats to, and opportunities for nursing and health care delivery, particularly in rural America, will be examined.

530. Research Design and Methods in Nursing. 3 credits. Core course focused on examining the research process in nursing, critiquing nursing research, and writing a research proposal. Knowledge of statistics is essential.

532. Family Theory and Assessment. 3 credits. Selected family theories, concepts, models and research will be introduced. Role theory will be examined from a family interaction and health care provider perspective. Emphasis is placed on assessment of families across the life span. Concepts related to family integration and family adaptation patterns will also be examined.

533. Health and Illness in Childbearing and Childrearing. 3 credits. Responses of individuals and families to complex health problems during childbearing and childrearing are examined from perspective of mid-range concepts and theories in nursing. Emphasis is on use of standardized instrument assessment for family decision making and development of acute and emergent health conditions during the lifespan. Health promotion, health protection, and disease prevention are emphasized.

534. Specialization in Family Nurse Practitioner I: Management of Acute/Emergent Conditions in Primary Care. 4 credits. Pre-requisite: Prior NUR 500. Clinical decision making skills are developed in the diagnosis and management of acute and emergent health conditions throughout the lifespan. Health promotion, health protection, and disease prevention are emphasized.

535. Specialization in Family Nurse Practitioner II. 5 credits. Pre-requisites: Nursing 534 and 555. The focus of this course is on the development of clinical competency in the management of chronic conditions in all age groups. Concepts from the basic and social sciences are applied in developing intervention strategies. The role of the FNP as case manager is emphasized as it relates to the maintenance and restoration of the client’s health status.

555. Role Dimensions of Advanced Nursing Practice: Seminar and Practicum. 3 credits. Pre- and corequisites: Nursing 534, 577, or 580, or consent of instructor. The focus of this course is role dimensions inherent in clinical nursing specialization. Theory- and research-based content enhance the graduate student’s knowledge for directing care, providing leadership, and developing advanced nursing practice roles. A clinical/practicum component is included.

556. Epidemiology in Nursing. 3 credits. This course will focus on social/behavioral, biostatistical, and biophysical techniques and research for advanced nursing practice.

557. Rural Nursing Strategies. 3 credits. This course will focus on nursing strategies in assessment of and intervention for the health care of rural populations.

558. Rural Nursing Resource Management. 3 credits. Pre- and corequisites: Nursing 556 and 557. The focus of this course is the development and management of nursing resources in rural communities.

559. Physical and Chemical Concepts Related to Nurse Anesthesia Practice, 1 credit. Prerequisite: Nursing 517. The course is a study of chemical, physical, and pharmacokinetic principles as they relate to life support and anesthesia management.

560. Nursing Administration: Practicum and Seminar. 3 credits. Pre- or corequisites: Nursing 577 or 580, or consent of instructor. This course focuses on educational concepts and strategies pertinent to education in nursing.

565. Teaching Practicum and Seminar. 3 credits. Pre- or corequisite: Nursing 577 or 580, or consent of instructor. This course focuses on educational concepts and strategies pertinent to education in nursing.

577. Seminar in Advanced Nursing Practice. 3 credits. Pre- or corequisite: Nursing 515, 517, or 518. A study of selected topics related to the practice of nursing. The course provides students the opportunity to examine, promote, or defend various ethical aspects of clinical situations. The major focus of the course is to broaden the student’s understanding of personal, economic, and ethical dilemmas facing nursing by being exposed to a variety of philosophical and theoretical viewpoints. Includes a clinical practicum.

580. Rural Nursing Practicum I. 3 credits. Prerequisite: Nursing 556, 557. Corequisites: Nursing 556, 557. This practicum provides the graduate student opportunities to test nursing and related theories with families, groups, and communities. In addition, nursing roles in assessment, planning and interventions within a rural community will be assumed and critiqued.

581. Rural Nursing Practicum II. 3 credits. Prerequisite: Nursing 580. This practicum will provide graduate students opportunities to test nursing and related theories and to analyze nursing roles in the implementation and evaluation of the health program developed in NURS 580.

586. Advanced Health Assessment Across the Lifespan. 2 credits. Prerequisites: Completion of an undergraduate course in health assessment techniques and Phys 512 or its equivalent. Nurs 532, or consent of the instructor. A theory and research-based approach will be used to present methodologies for graduate student performance of health histories, developmental assessments, and physical/psychosocial assessments of individuals across the lifespan. The research and intervention techniques for advanced nursing practice are applied. A clinical/laboratory component is included.

590. Directed Studies. 1 to 3 credits. Prerequisite: Consent of instructor. Designed to meet the needs of individual and/or small groups of graduate students. The course content will be based on student interests and needs in conjunction with the faculty member’s area of specialization.

591. Readings in Nursing. 1 to 3 credits. Prerequisite: Consent of instructor. Readings in selected nursing and health-care topics with written and/or oral reports.

597. Advanced Clinical Practicum. 1 to 12 credits. Prerequisite: Nursing 517 or Nursing 532 or consent of instructor. This clinical practicum course provides the student with the opportunity to obtain extended clinical experience in the area of specialization. The issues and influences facing nursing will be analyzed.

598. Family Nurse Practitioner. 3 credits. Prerequisite: Consent of instructor. This course focuses on the development and management of nursing resources in rural communities.

Pharmacology and Toxicology

Professors Hein (Chairperson), Martsolf; Associate Professors Blake, Buckley; Assistant Professors Epstein, Kang (Graduate Director)

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. Individual student programs involve multidisciplinary instruction and research activities. Students who complete the program will be well prepared for a diversity of research and other professional careers in academia, industry, and government. Departmental research programs specialize in a number of areas of pharmacology and toxicology and the graduate program can be designed to
emphasize either discipline. Research programs within the department focus upon molecular and cellular aspects of biomedical research. The present faculty have strong expertise in endocrinology, toxicology, genetics, neuropharmacology, and molecular biology. Specific details are available from the department.

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 (Subject test not required, but recommended).
5. MCAT (Medical College Admission Test)
6. 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 selecting the non-thesis M.S. program, are supported by Graduate Research Assistantships with waiver of tuition and fees. Applicants are encouraged to complete their applications as early as possible to assure full consideration for financial assistance.

Degree Requirements

Master of Science (thesis or non-thesis)

1. Average of 40-50 hours of graduate credit.
2. Core courses: Biochemistry and Molecular Biology 500 and 510, Medical Physiology 523, Biology 470, and Pharmacology and Toxicology 501, 502, 503, 504, 505, 506, 507, 521, 593.
3. For thesis option—Pharmacology and Toxicology 590 and 998.
4. For non-thesis option—Pharmacology and Toxicology 304, 595, and 997, and a Special Topics or equivalent elective.
5. Minor or cognate—normally fulfilled with Biochemistry and Molecular Biology 500 and 510.
6. May include a pharmacology or toxicology emphasis.

Doctor of Philosophy

1. All requirements for the master’s degree (thesis option).
2. Pharmacology and Toxicology 511.
3. Rotations in faculty laboratories to actively participate in a variety of research subdisciplines and experimental approaches.
4. Scholarly tool—Normally Biology 470 or equivalent.
5. Minor or cognate—normally met by Biochemistry and Molecular Biology 500 and 510.

M.D./Ph.D. Program

The department also participates in the M.D./Ph.D. program. For further details, see p. 175.

Courses

501. Medical Pharmacology/General Principles and Toxicology. 1 credit. Prerequisite: Biochemistry and Molecular Biology 301 or equivalent. Introductory presentation of the basic principles of pharmacology and toxicology, including pharmacodynamics, pharmacokinetics, pharmacogenetics, drug-drug interactions, and drug and chemical toxicity. Fall Semester.

502. Medical Pharmacology/Autonomic Nervous System. 1 credit. Pre- or corequisites: Physiology 301 and PhTx 501 or equivalent. Basic pharmacology of the drugs affecting the autonomic nervous system, including mechanisms of action, pharmacokinetics, adverse reactions, and clinical uses. Fall Semester.

503. Medical Pharmacology/Chemotherapy of Infectious and NeoPlastic Diseases. 1 credit. Pre- or corequisites: 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.

504. Medical Pharmacology/Cardiovascular System. 1 credit. Pre- or corequisites: PhTx 501 and 502 or equivalent. Basic pharmacology of drugs affecting the cardiovascular system including mechanisms of action, pharmacokinetics, adverse reactions, and clinical uses. Fall Semester.

505. Medical Pharmacology/Endocrine and Gastrointestinal System. 1 credit. 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.

506. Medical Pharmacology/Respiratory and Renal System. 1 credit. Prerequisites: PhTx 501, 502, and 504 or equivalent. Basic pharmacology of drugs affecting the respiratory and renal systems, including mechanisms of action, pharmacokinetics, adverse reactions, and clinical uses. Spring Semester.

507. Medical Pharmacology/Central Nervous System and Musculoskeletal System. 2 credits. Prerequisites: PhTx 501 and 502 or equivalent. Basic pharmacology of drugs affecting the central nervous system and the musculoskeletal system, including mechanisms of action, pharmacokinetics, adverse reactions, and clinical uses. Spring Semester.

511. Biochemical/Molecular Mechanisms of Pharmacology and Toxicology. 3 to 5 credits. Prerequisites: Biochemistry and Molecular Biology 500 and Physiology 301. Fundamental concepts of drug receptor interactions, dose-response relationships, pharmacodynamics, pharmacokinetics, pharmacogenetics, and toxicology. Biochemical and molecular mechanisms are emphasized. Consent of instructor required.

512. Special Topics in Pharmacology and Toxicology. 2 credits. An in-depth coverage of a particular topic chosen by the instructor. Topics and instructors vary semester to semester. Repeatable to eight credits. Consent of instructor required.

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.

591. 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.

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.

996. Continuing Enrollment. Consent of instructor required.


998. Thesis. 4 to 9 credits.

999. Dissertation. 4 to 9 credits. Preparation and defense of a dissertation based on original research. Repeatable to eighteen credits. Consent of instructor required.

Physical Education

Associate Professors *Anderson, *Brinkert, Eklund, Humphries, Parker, Schroeder, *Steen, Whitehead

Program Description

The Department of Health, Physical Education and Recreation offers programs of study leading to the Master of Science degrees (thesis or non-thesis option) with a major in physical education.

The Sport and Exercise Science area of emphasis is designed for students who wish to pursue further graduate study or careers in the private sector.

The Sport Pedagogy emphasis is designed for students who wish to pursue careers or further study in teaching and/or coaching.

Admission Requirements

1. Graduate Record Examination scores.
2. A minimum of 20 undergraduate semester credits in physical education and related areas. The undergraduate work should normally include courses in exercise physiology, biomechanics or kinesiology, motor behavior, psychosocial aspects of physical activity, and sport pedagogy; the requirement excludes basic activity courses.

Degree Requirements

1. Program of study may include a major, the major and a minor, or the major and a cognate.
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2. Completion of HPER 501, 523, 560 (two 1-credit seminars), and an approved research methods course to meet the departmental scholarly tools requirement.

3. Other courses, to complete the program, are selected by the student in consultation with the faculty advisor (non-thesis) or the advisory committee (thesis).

Courses

501. Introduction to Research in Physical Education, 3 credits. The study and practice of problem solving including statements of problem and hypothesis, study design, interpretation of analysis and statement of conclusion.

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 430 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.


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.

522. 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.

523. 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, Physiology 301 or consent of instructor. A study of human motor development. The course will focus on research examining somatic and mental changes with age and how they affect developing motor skills. Content will emphasize, but not be restricted to, changes occurring in elementary and middle school children.

530. Sports Biomechanics, 4 credits. Prerequisite: HPER 332 or consent of the instructor. The application of principles of mechanics to the study of human motion in sports and exercise.

531. Sport Psychology, 3 credits. Prerequisite: HPER 440 or consent of the instructor. A research-based study of the psychological aspects associated with participation in sport and physical activity.

532. Advanced Exercise Physiology, 4 credits. Prerequisite: HPER 402 or consent of the instructor. The persistent effects of exercise on various physiological systems and consideration for prescriptive exercise to elicit a specific training response.

533. Movement Behavior and Motor Learning, 4 credits. Prerequisite: HPER 276 or consent of the instructor. Provides an understanding of individual movement and motor learning based upon research findings in physical education and allied fields.

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.

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 Physical Education, 1 credit. Prerequisite: Consent of instructor. Presentations of current topics in physical education based on reviews of literature. Repeatable to 4 credits. S/U grading only.

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 Physical Education, 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 Physical Education, 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).

Physical Therapy

Professor Mohr, (Chairperson, Graduate Faculty); Assistant Professor *Johnson (Graduate Faculty), Keck, P. Mohr; Instructors Jeno, Mabey, Romanick, Simunds

Program Description

The Department of Physical Therapy offers the clinically oriented, rural emphasis, entry level Master of Physical Therapy (M.P.T.) degree. Application for Interim Accreditation (AIA) for the M.P.T. was filed with the physical accrediting agency, the Commission on Accreditation in Physical Therapy Education (CAPTE) in July, 1991. Interim accreditation was approved. An on-site accreditation visit can be anticipated in late 1995.

With approval of the AIA, the students enrolled in the professional program have protected eligibility to sit for licensure as a physical therapist via the interim accreditation status of the program. Full accreditation of the program will be available upon successful completion of on-site visit by the CAPTE.

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 63 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-PH 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-PH. UND-PH 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 63-71 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 semesters; the majority of these affiliation sites are at geographical locations other than the City of Grand Forks.

The faculty reserves the right to place on professional probation or to cancel the registration of any student in Physical Therapy whose performance in the classroom or the clinic is unsatisfactory.

**Master of Physical Therapy**

I. Graduation Requirements

   See page 168 of this catalog for a description of the requirements for the non-thesis option for master’s degrees, including the Independent Study requirements and Comprehensive Examinations.

II. The following Curriculum:

   **Pre-Physical Therapy**

   **ENGL 101, 102** Composition I, II .......................... (6)

   **BIOL 101, 102** Introduction to Biology ......................... (8)

   **CHEM 105, 106** Gen. Chemistry I, II (Qual. Analysis) .......... (8)

   **SP 101** Intro to Sociology (or approved substitute) ........... (3)

   **PSY 101** Intro to Psychology ................................ (3)

   **PHYS 101, 102** Intro to College Physics ....................... (8)

   **ANAT 204** Anatomy for Paramedical Personnel ............... (3)

   **PHYS 301** Mechanics of Human Physiology ................... (4)

   **COMM 161** Fundamentals of Public Speaking ................. (3)

   **PSY 251** Development Psychology ............................ (4)

   **PT 101** Orientation to Physical Therapy ...................... (1)

   **Electives (required)** ........................................ (3-8)

   **Professional Program - Physical Therapy**

   **PT 309, 310** Medical Sciences I, II ............................ (6)

   **PT 311** Orientation and Ethics ................................ (1)

   **PT 312** Public Health and Medical Legal Aspects ............... (1)

   **PT 314** Bandaging, Aseptic, and Isolation Techniques .......... (2)

   **PT 318** Techniques I: Theory and Techniques of Massage .... (2)

   **PT 319** Techniques II: Theory and Techniques of Thermo-Photo-Hydrotherapy .......................... (4)

   **PT 320** Research I: Research Methods .......................... (2)

   **PT 322** Anatomy for Physical Therapy ........................ (2)

   **PT 326** Introduction to Manual Therapy ....................... (2)

   **PSY 370** Abnormal Psychology ................................ (3)

   **PT 412** Muscle Function in Health and Disease ............... (4)

   **PT 413** Theory and Technique of Therapeutic Exercise I: Mobility-Strength-Endurance .............. (3)

   **PT 415** Theory and Technique of Therapeutic Exercise II: Muscle Control and Coordination ............. (3)

   **PT 417** Theory and Technique of Therapeutic Exercise III: Tests and Measurements—Specialized Exercise ............... (3)

   **PT 419** Techniques III: Theory and Technique of Electrotherapy and Electrodiagnosis ......................... (2)

   **PT 421** Administration—Physical Therapy ..................... (1)

   **PT 423** Neuroscience for Physical Therapy ................... (3)

   **PT 482** Clinic I: Clinical Practice ............................ (14)

   **PT 490** Special Topics ......................................... (1-4)

   **PT 491** Independent Study in Physical Therapy ............... (1-4)

   **PT 493** Psychological Aspects of Disability ................... (2)

   **PT 494** Research II: Clinical Conference and Paper .......... (1-2)

   **PT 511** Applied Movement Science and Rehabilitation Procedures ........................................... (3)

   **PSY 515** Statistics I (or substitute) ............................ (3)

   **PT 525** Techniques IV: Clinical Evaluation .................... (3)

   **PT 526** Techniques V: Joint Mobilization/Soft Tissue Treatment .................................................. (2)

   **PT 530** Health Law for Health Care Providers .......................... (2)

   **PT 531** Bioethics .................................................. (2)

   **PT 532** Current Topics in P.T. Administration .................. (2)

   **PT 533** Quality Assurance in Health Care Delivery ........... (2)

   **PT 534** Industrial Rehabilitation/Occupational Medicine .... (2)

   **PT 535** Gerontology Seminar .................................. (2)

   **PT 537** Strategies for Early Intervention ..................... (2)

   **PT 538** Advanced Pediatrics Assessment and Treatment Techniques ................................................. (2)

   **PT 549** Advanced Applied Anatomy/Clinical Kinesiology .... (2)

   **PT 552** Clinic II: Clinical Practice ............................. (7-14)

   **PT 561** Seminar: Physical Therapy (may repeat 4 times) .... (1-4)

   **PT 562** Readings: Physical Therapy ............................. (1-3)

   **PT 570** Patient Education Techniques—Physical Therapy .... (2)

   **PT 572** Teaching Experience in Physical Therapy ............ (1-4)

   **PT 582** Instrumentation for Physical Therapy ................. (2)

   **PT 590** Directed Studies/Clincal Concepts ..................... (1-12)

   **PT 900** Continuing Education Workshops in Physical Therapy .................................................. (1-8)

   **PT 906** Continuing Enrollment/Physical Therapy .............. (1-8)

   **PT 907** Research III: Independent Study Report ............... (2)

   *Core courses in M.P.T. Graduate Component: Minimum of 32 credits.

The required courses will be offered in the following sequence.

**Professional Year 01—Fall Semester (16 cr.)**

**PT 309:** Medical Sciences I—3 credits

**PT 311:** Orientation and Ethics—1 credit

**PT 314:** Bandaging, Aseptic, and Isolation Techniques—2 credits

**PT 318:** Techniques I: Theory and Technique of Massage—2 credits

**PT 322:** Anatomy for Physical Therapy—3 credits

**PT 423:** Neuroscience for Physical Therapy—3 credits

**Professional Year 01—Spring Semester (19 cr.)**

**PT 310:** Medical Sciences II—3 credits

**PT 312:** Public Health and Medical Legal Aspects—1 credit

**PT 319:** Techniques II: Theory and Technique of Thermo-Photo-Hydrotherapy—4 credits

**PT 320:** Research I: Research Methods—2 credits

**PT 326:** Introduction to Manual Therapy—2 credits

**PT 412:** Muscle Function in Health and Disease—4 credits

**PT 415:** Theory and Technique of Therapeutic Exercise II: Mobility-Strength-Endurance—3 credits

**Professional Year 01-02—Summer Session (8 cr.)**

**PT 413:** Theory and Technique of Therapeutic Exercise I: Mobility-Strength-Endurance—3 credits

**PT 417:** Theory and Technique of Therapeutic Exercise III: Tests and Measurements—Specialized Exercise—3 credits

**PT 419:** Techniques III: Theory and Technique of Electrotherapy and Electrodiagnosis—2 credits

**Professional Year 02—Fall Semester (15 cr.)**

**PT 482:** Clinic I: Clinical Practice—14 credits

**PT 494:** Research II: Clinical Conference and Paper—2 credits
University of North Dakota

Professional Year 02—Spring Semester (12-17 cr.)

*Student will complete GRE and Application to UND Graduate School during this semester.

PT 421: Administration-Physical Therapy—1 credit
PT 493: Psychosocial Aspects of Disability—2 credits
PT 494: Research II: Clinical Conference and Paper—1 credit
PT 526: Techniques V: Joint Mobilization/Soft Tissue Treatment—2 credits
PSY 370: Abnormal Psychology—3 credits

ELECTIVES: 2-5 credits

Professional Year 03—Fall Semester (13-16 cr.)

PT 511: Applied Movement Science and Rehabilitation—3 credits
PT 525: Preventive Medicine I, II, III, IV—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 the clinic with emphasis on preparation of the patient for therapy. Professional ethics and professional literature will also be discussed. Laboratory.

312. Public Health and Medical Legal Aspects, 1 credit. Prerequisite: Registered in Professional Physical Therapy Curriculum. Discussion of the role of the Physical Therapist in the public health field, with attention to various state and federal health programs. Issues of licensure, documentation, legal liability are addressed.

314. Bandaging, Aseptic and Isolation Techniques, 2 credits. Prerequisite: Registered in Professional Physical Therapy Curriculum. The theory and practice of medical, aseptic and isolation techniques and principles of bandaging, taping, and splinting are discussed and practiced. Laboratory.


319. Techniques II: Theory and Technique of Thermo-Photo-Hydrotherapy, 4 credits. Prerequisite: Registered in Professional Physical Therapy Curriculum. Theory and application of various hydrotherapy, phototherapy, and thermotherapy modalities in Physical Therapy, including heat, light, sound, and water. Laboratory.

320. Research I: Research Methods, 2 credits. Prerequisite: Registered in Professional Physical Therapy Curriculum. Lectures and practice in the proper use of research design, source material, elementary statistics, and scientific manuscript preparation.

322. Anatomy for Physical Therapy, 5 credits. Prerequisite: Registered in Professional Physical Therapy Curriculum. Detailed lectures and demonstrations on neuromotority and in anatomy of the extremities. Laboratory.

326. Introduction to Manual Therapy, 2 credits. Prerequisite: Registered in Professional Physical Therapy Curriculum. Introduction to joint mobilization with emphasis on peripheral joints. Basic Evaluation treatment techniques and exercises for the limb and cervical spine. Laboratory.


413. Theory and Technique of Therapeutic Exercise I: Mobility-Strength-Endurance, 3 credits. Prerequisite: Registered in Professional Physical Therapy Curriculum. Lecture and laboratory work in therapeutic exercise to increase and maintain mobility, strength, and endurance in the human body. Laboratory.

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: Tests and Measurements—Specialized Exercise, 3 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 Electrodagnosis, 2 credits. Prerequisite: Registered in Professional Physical Therapy Curriculum. Theory and application of the use of low voltage electrical currents in physical therapy, including strength duration curves, electromyography, and nerve conduction velocity. Laboratory.

421 Administration—Physical Therapy, 1 credit. Prerequisite: Registered in Professional Physical Therapy Curriculum. Lectures and discussion of administration procedures as they apply to the Physical Therapy Department.

423. Neuroscience for Physical Therapy, 3 credits. Prerequisite: Registered in Professional Physical Therapy Curriculum. Structure and function of the nervous system including clinical application relevant to physical therapy practice.

425. 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 the 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 and selected by student and faculty.

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 370, 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.

494. Research II: Clinical Conference and Paper, 1-2 credits. Prerequisite: Registered in Professional Physical Therapy Curriculum. Preparation of one paper on a clinical topic. Clinical conference as needed by the student either in person or by telephone communication.

511. Applied Movement Science and Rehabilitation Procedures, 3 credits. Integration of clinical evaluation, functional goals, and treatment planning for individuals with neurological and multiple musculoskeletal dysfunction. The primary focus is on rehabilitation skills including assessment, exercise, handling techniques, functional activities, equipment prescription, patient education, ADLs, as well as community mobility and governmental services. Laboratory.

525. Techniques IV: Clinical Evaluation, 3 credits. Prerequisite: Registered in Professional Physical Therapy Curriculum. Specific clinical evaluation techniques including neurological testing, soft tissue assessment, joint mobility, and related written documentation of results.


530. Health Law for Health Care Providers, 2 credits. Discussion and readings course relevant to the “ordering” capability of law as it relates to health care. This course addresses the issues of quality of health care, risk management, health planning, access and “networking,” tort questions, and contemporary issues (bioethics, AIDS, press relations, drug screening) as they relate to health law. Emphasis is placed on the “continuum of care” concept, particularly in rural areas such as North Dakota.

532. Current Topics in P.T. Administration, 2 credits. Discussion and readings course relevant to administrative problems in physical therapy. Focus on independent research exploring topics of current problem areas in P.T. administration with seminar-discussion format.

533. Quality Assurance in Health Care Delivery, 2 credits. Lecture/discussion and seminar format used to explore the concepts of Total Quality Management and Continuous Quality Improvement as it impacts on the health care delivery system. Special emphasis on the “learning organization.”

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.

536. 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 an interdisciplinary approach. Topics also covered include: current issues, assessment of the child/family unit and legislative guidelines for service provision.

537. 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.
Physics

Professors Lykken, Rao (Chairperson), Schwalm, Associate Professors Chen, Dewar; Assistant Professor Wagner; Adjunct Professor Butler

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, and health physics. Departmental facilities permit both theoretical and experimental research investigations.

Admission Requirements

1. Completed a minimum of 21 semester credits of undergraduate physics, plus mathematics through differential equations or the equivalent.

2. Course work should include intermediate courses in mechanics, electricity and magnetism, optics, thermal physics, and modern quantum physics. Adequate preparation in general chemistry also is necessary.

3. An applicant without satisfactory undergraduate training may be admitted to the program, but will be required to remove deficiencies by completing the necessary undergraduate courses without receiving graduate credit for them.

4. Ph.D. applicants are encouraged to submit the Graduate Record Examination scores for the general test and advanced physics test.

Degree Requirements

Master of Science

The program is designed to provide the student with basic physics courses at the graduate level and an introduction to research.

1. Successfully completed a basic core of courses which includes: classical mechanics, quantum mechanics, methods of theoretical physics, classical electricity and magnetism.

2. Completion of a research project and the writing of a thesis.

Doctor of Philosophy

The degree is a research degree and is conferred only in recognition of high achievement in independent scientific research and scholarship.

1. In addition to Physics 590, Research, the course work will amount to approximately 36 hours.

2. Completion of a regular core of courses which includes:
   - PHYS 509 and 510, Methods of Theoretical Physics
   - PHYS 539 and 540, Quantum Mechanics
   - PHYS 541 and 542, Theory of Electricity and Magnetism
   - PHYS 543, Statistical Physics
   - PHYS 545, Analytical Mechanics
   - PHYS 549, Seminar

3. Completion of several specialized graduate level courses in physics in order to obtain the in-depth training essential for the development of their research interests.

4. Completion of at least nine semester hours of graduate work (400 level or above) in a single related field.

5. After successful completion of the first two semesters of course work, students who entered the program with a bachelor’s degree will take a written qualifying examination which covers undergraduate and first-year graduate level courses. Student with a master’s degree will take this examination in the second semester of enrollment.

6. A student who fails to perform satisfactorily in this examination may be re-examined after waiting one semester. In general, no student will be allowed to take the qualifying examination more than twice.

7. No student may proceed formally toward the Ph.D. degree until this examination has been passed.

8. Written doctoral comprehensive examination in physics will normally be taken in the fifth semester of graduate enrollment. This must be completed before advancement to candidacy is granted.

9. Candidates for the Ph.D. must complete a research investigation. Upon satisfactory completion of the research investigation, the student is required to prepare a dissertation covering the research.

10. At the final oral examination, the candidate presents and defends the dissertation.

Courses

509. Methods of Theoretical Physics, 3 credits. 3 hours per week. An introduction to the mathematical methods currently used in physics.

510. Method of Theoretical Physics, 3 credits. 3 hours per week. A continuation of PHYS 509.

535. Solid State Physics, 3 credits. 3 hours per week. The crystal lattice, electron theory of metals and semiconductors, and transport phenomena in solids.

536. Solid State Physics, 3 credits. 3 hours per week. Lattice vibrations, phonon-electron interactions, and cooperative phenomena in solids.
539. Quantum Mechanics. 3 credits. 3 hours per week. The Schrödinger equation, perturbation methods, and simple quantum mechanical systems.

540. Quantum Mechanics. 3 credits. 3 hours per week. Matrix methods, spin, and scattering phenomena.

541. Theory of Electricity and Magnetism. 3 credits. 3 hours per week. Electrostatics, magnetostatics, electromagnetic waves.

542. Theory of Electricity and Magnetism. 3 credits. 3 hours per week. Special theory of relativity, scattering of charged particles, and radiation.

543. Statistical Physics. 3 credits. 3 hours per week. The Maxwell-Boltzmann, Bose-Einstein, and Fermi-Dirac statistics, and their application to the description of physical systems.

545. Analytical Mechanics. 3 credits. 3 hours per week. Variational methods. Lagrange’s equations, oscillations, Hamilton equations, and special relativity.

549. Seminar. 1 credit. Repeatable to maximum of 3 credits.

550. Special Topics. 1 to 3 credits. Prerequisite: Consent of department. Investigation of special topics in advanced physics; the subject matter determined by student-faculty interest. May be repeated to a total of 6 credits.

590. Research. Credit arranged.

428. Modern Physics Laboratory. 2 credits.

431. Introductory Quantum Physics. 3 credits.

434. Nuclear Physics. 3 credits.

437. Introductory Solid State Physics. 3 credits.

460. Introduction to Astrophysics. 3 credits.

490. Special Problems. 1 to 3 credits.

**Physiology**

Professor Samson (Chairperson); Associate Professor Bode (Graduate Director), Vari

Program Description

The degrees of Master of Science and Doctor of Philosophy are offered by the department of Physiology.

The department research is directed toward mammalian physiology at the cellular level and includes opportunity for clinical research.

Admission Requirements

Master of Science

1. Chemistry—8 credit hours, including organic (2 semesters equivalent to UND 300 or above) and the courses which normally precede organic.
2. Physics—8 credit hours.
3. Biology—one course beyond the introductory level—introductory biology is considered one course of two semesters (may include anatomy or embryology).
5. Grade point average for all undergraduate courses—2.75 minimum. Grade point average for the last two years (undergraduate)—3.00 minimum.

Doctor of Philosophy

1. Master’s degree or equivalent with a GPA of at least 3.50.
2. Graduate Record Examination—Scores on General and Advanced tests (biology or chemistry or cognate).

Degree Requirements

Master of Science

1. Minimum of 20 credits of graduate work in the major area and a minimum of 10 credits in a cognate drawn from related areas. These areas include, but are not limited to, human anatomy, biochemistry, pharmacology, biology, and psychology.
2. Students must prepare a thesis based on results from experimental research.
3. Experience in teaching physiology is required before the degree is granted.
4. After approximately one year of graduate work for the Master of Science degree, a student may request admission to the Doctor of Philosophy program. To change programs, the physiology faculty must approve and the student must successfully complete a set of diagnostic-qualifying examinations administered by the department.

Doctor of Philosophy

1. Acceptable knowledge of physiology, anatomy, biochemistry, pharmacology, chemistry, physics, mathematics, instrumentation, experimental design, and computer techniques.
2. Teaching experience is required and can be obtained within the department.
3. Biometry (Biology 470).
4. One of the following areas must be presented as a scholarly tool for the Ph.D. degree:
   a. Foreign language
   b. Statistics
   c. Computer Programming, or
   d. Statistics and computer programming.
5. Complete a dissertation based on the results of original laboratory research.
6. Students may select a cognate or a minor from related fields.

Courses

502. Physiology of the Central Nervous System. 3 credits. Prerequisites: Physiology 527 and/or consent of instructor. The emphasis in this course is the correlation of the structure, function and chemistry of the cerebral hemispheres. Of particular interest are the relationships of behavioral changes to electrophysiological and chemical changes and the interactions of cellular tract systems to the whole physiological measurement systems used to assess brain functions.

503. Advanced Physiology. Credits arranged. Prerequisite: Physiology 523 or 652 and/or consent of instructor.

505. Introduction to Surgical Techniques. 2 credits. Three to six laboratory hours a week. Prerequisite: consent of instructor.

512. Theory of Physiology. 5 credits. Prerequisite: Physiology 301 or equivalent and consent of instructor. 6 hours of lecture. This course is designed for graduate students in nursing and allied health fields and the content is related to the functions of these professionals. An exploration of the normal basic functions or organ systems separately and integrated in whole activities.

521. Seminar in Physiology. 1 credit.

523. Medical Physiology for Graduate Students. 8 credits.

525. Renal Physiology. 1 to 3 credits. Prerequisites: Physiology 523 or 652 and/or consent of instructor.

526. Respiratory Physiology. 1 to 3 credits. Prerequisites: Physiology 301 or 512 and/or consent of instructor.

527. Neurophysiology. 1 to 3 credits. Prerequisite: consent of instructor.

528. Endocrinology. 1 to 3 credits. Prerequisites Physiology 523 or 652 and/or consent of instructor.

529. Cardiovascular Physiology. 1 to 3 credits. Prerequisites: Physiology 523.

590. Problems. Credits arranged.

591. Research in Physiology. Credits arranged.


**Political Science**

Professors  M. Kweit, R. Kweit (Chairperson), Markovich, Pedeliski, Pynn; Associate Professor Cozzetto (Graduate Director); Assistant Professor “Coker

Program Description

The Master of Arts degree with a major in Political Science is offered by the Political Science Department, which also offers a Public Administration program leading to the M.P.A. degree (see p. 219).

The purposes of the M.A. program are to prepare students for doctoral work, law school, teaching, and governmental service. In the M.A. program, students will concentrate their studies in American Government. The degree may be pursued through the thesis option or the non-thesis option.

Admission Requirements

1. Graduate Record Examination (General) or Graduate Management Admission Test scores.
2. Minimum of twenty (20) hours of undergraduate work in the discipline or Fifteen (15) hours supported by a suitable concentration in the social sciences.

3. A course in statistics.

Degree Requirements

1. Completion of P SCI 500 and 501 are required of all degree candidates.
2. The thesis option requires four to six credits of thesis.
3. The non-thesis option requires two credits of independent study.
4. Graduate students who do not meet the minimum undergraduate requirements will be required to fulfill them.
5. Graduate students who wish to select Political Science as a minor must consult with the chairperson before declaring the minor.

Courses

500. Research Methods. 3 credits. Prerequisite: A statistics course or consent of instructor. This course will first focus on various approaches to analyzing political phenomena with the goal of developing students’ ability to think analytically and to distinguish between empirical and normative analysis. The course will then introduce techniques of empirical research including research design, measurement, data gathering, and data analysis.

501. Political and Public Policy Analysis. 3 credits. Prerequisite: Political Science 500 or consent of instructor. This course focuses on the use of empirical data both to develop empirical theory and to make policy choices. Topics to be discussed include hypothesis testing, public choice, and policy evaluation. Students will be required to complete an original research project.

502. Seminar: Problems in State and Local Government. 3 credits. Prerequisite: Political Science 402 or consent of instructor. Directed in-depth inquiry into the contemporary structural and policy problems of state and local governments. During the course, each student will prepare a research paper relevant to a current official and citizens for problem-solving purposes.

503. Seminar: Legislative and Executive Processes. 3 credits. Description, analysis, and evaluation of the structures, processes, procedures, and positions of the legislative and executive offices in government.

531. Seminar: Public Administration. 3 credits. An extensive overview of Public Administration stressing the basic conceptions and trends in the discipline as well as the classic scholars.

532. Public Policy. 3 credits. A discussion of the initiation, formulation, adoption, implementation, and evaluation of American public policy. Various policy areas such as agriculture, education, environment, and welfare will be analyzed.

535. Public Organizations. 3 credits. Description and analysis of bureaucratic organizations with particular emphasis on concepts and characteristics common to public bureaucracies.

537. Administering the Public Bureaucracy. 3 credits. Introduces the graduate student to the dynamics of public personnel administration and public sector budgeting. The contrasting norms and behaviors of participants, their impacts on policy, and the implications for government are examined. Specific processes include financial control, performance appraisal and intergovernmental interaction.

539. Administrative Law. 3 credits. Study of the legal dimension of public administration. Study of requirements for rule-making and adjudication and of judicial review of administrative decisions.

580. Administrative Internship. 1 to 6 credits. Prior approval of instructor required before enrollment. Students are employed on a full-time or part-time basis in on-the-job learning situations in federal, state, or local government. Students are required to make an analytical report on some facet of their work.

591. Readings in Political Science. 1 to 3 credits. Prior approval of instructor required before enrollment. Selected readings with oral and written reports.

593. Seminar: Problems in Political Science. 1 to 3 credits. Prior approval of instructor required before enrollment. Students study special topics under the direction and supervision of a member of the staff.

301. Development of Political Thought I. 3 credits.

302. Development of Political Thought II. 3 credits.

308. Intergovernmental Relations. 3 credits.

309. American Constitution. 3 credits. Civil Liberties.

310. Governmental Powers. 3 credits.

312. Development of Political Thought III. 3 credits.

318. American Political Thought. 3 credits.

402. Problems in State and Local Government. 3 credits.

404. Urban Politics and Administration. 3 credits.

405. Political Behavior. 3 credits.

Psychology

Professors Antes, Grabe (Chairperson), Peters, Petros, Till, Tyler, Wright; Associate Professors Holm, Honts, King; Assistant Professors Ferraro, *McDonald, *Manning, Plaud; Adjunct Associate Professor Miltenberger

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 15.

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.
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.

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.

504. Implementing Research. 1 to 3 credits. Prerequisites: Psychology 543 and graduate standing in the Department of Psychology. Philosophy of science as applied to behavioral research; instrumentation in behavioral research; funding supports for behavioral research.

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 current trends.

521. Counseling. 3 credits. Prerequisites: Graduate standing and consent of instructor. Types of counseling, techniques of motivation, structuring, analyzing, and summarizing progress in interviews.

522. Quantitative Methods in Psychology. 4 credits. Prerequisite: Psychology 541. Implementation of advanced quantitative methods, including psychophysical scaling, factor analysis, pattern analysis and multivariate statistics, such as canonical correlation.

523. Individual Intelligence Testing. 3 credits. One hour lecture, four hours laboratory. Prerequisites: Psychology 291, 370. A course in statistics, graduate standing, and consent of instructor. Theories of intelligence and the evaluation of the intellectual assessment techniques; practicum in the use of Stanford-Binet and Wechsler Scales for intellectual assessment.

524. Vocational Psychology. 3 credits. Prerequisite: Psychology 421 or consent of instructor. Psychology of individual differences in intelligence, aptitudes, interests, and training as related to vocational choice and occupational adjustment.

531. Cognitive and Affective Bases of Behavior. 3 credits. Prerequisite: graduate status in Psychology or special permission of instructor. Perception, motivation, emotion, learning, and cognition.

532. Theories of Learning. 3 credits. Prerequisite: Psychology 433. Examination of the evidences in support of the various systematic theories of learning.

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. Test Construction and Multivariate Analysis. 3 credits. Prerequisites: Graduate standing, college algebra, and elementary statistics. Construction and interpretation of psychological tests. The general linear model as a multivariate statistical method encompassing multiple regression and analysis of variance.

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. Prerequisite: 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 Appraisal I: Intellectual Assessment. 3 credits. One hour lecture, four hour laboratory. Prerequisites: Graduate regular status, and consent of instructor. Theory and practicum in the use of the Stanford-Binet and the Wechsler Scales.
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 9 credits in cognate fields or 32 credits in public administration.
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 21 credits or
   - PSCI Electives 12 credits & 9 credits in cognate courses.

   Total: 32 credit hours

Residence Requirement. There is no residence requirement for the M.P.A. degree. However, at least one-half of the credits for the degree must be taken on campus or at an approved extended degree center.

Independent Study. The independent study is designed to require the student independently to investigate a topic related to the field of public administration. The study need not be an original contribution to knowledge but may be a presentation, analysis, and discussion of information and ideas already in the literature of the field. The requirement is to ensure that a student can investigate a topic and organize a scholarly report on the investigation.

The topic for an independent study must be approved by the student’s advisor. Approval is effected by the student’s completing a form titled Outline of Independent Study, available from the Graduate School, then submitting the outline to the advisor for approval. The outline, which should be approved no later than the beginning of the semester or session in which the student expects to graduate, must be filed in the Graduate School before a student is advanced to candidacy for a master’s degree.

Each student must prepare and secure the advisor’s approval of an independent study report. Three copies of the report (one each for the student, the advisor, and the department) must be accepted by the advisor, who will certify completion of the report to the Graduate School by the deadline specified in the Academic Calendar and submit a grade for 997-Independent Study to the Registrar’s Office.

Candidacy for the Degree. Admission of a student to the Graduate School as a degree student in Approved Status implies only that the student has met minimum entrance requirements and will be permitted to take graduate courses which normally may be expected to lead to a degree. The student has not been admitted as a candidate for a degree. Advancement to candidacy can be granted only after the student has met certain academic requirements in approximately the following sequence:

1. Completion of the equivalent of one full-time semester (12 semester credits).
2. A GPA of at least 3.00 for all work attempted.
3. The early appointment of an advisor. The advisor, who must be a member of the Graduate Faculty, will be appointed by the dean upon the written recommendation of the M.P.A. program director. The advisor is responsible to the department and the Graduate School for the supervision of the student’s work.
4. Approval of a Program of Study on a form available from the Graduate School. The program, which should be developed in consultation with the advisor, normally will be completed in the second semester, must carry the signature of the student, the advisor, and the program director and must be submitted to the dean of the Graduate School for approval.
5. Approval of a topic for the independent study by having the advisor sign the Outline of Independent Study and submitting the Outline and three copies to the Graduate School.

The student and the advisor will be notified in writing of the advancement to candidacy. Students should complete all requirements for advancement to candidacy prior to the semester in which they plan to graduate.

Final Examinations. Candidates must pass a written final comprehensive examination which must cover the course work included in the program of study. The results will be certified to the Graduate School by the advisor and the program director on the form Final Report on Candidate by the deadline specified in the Academic Calendar. The appropriate comprehensive examination(s) required for the degree will be arranged for by the advisor and given and evaluated by the department no earlier than the semester preceding the semester in which the candidate intends to graduate. Comprehensive examinations which are failed may be repeated only with the approval of the advisor, the program director, and the dean, but in no event earlier than at the next regularly scheduled offering.

Courses

500. Research Methods. 3 credits. Prerequisite: A statistics course or consent of instructor. This course will first focus on various approaches to analyzing political phenomena with the goal of developing students’ ability to think analytically and to distinguish between empirical and normative analysis. The course will then introduce techniques of empirical research including research design, measurement, data gathering, and data analysis.

501. Political and Public Policy Analysis. 3 credits. Prerequisite: Political Science 500 or consent of instructor. This course focuses on the use of empirical data both to develop empirical theory and to make policy choices. Topics to be discussed include hypothesis testing, public choice, and policy evaluation. Students will be required to complete an original research project.

502. Seminar: Problems in State and Local Governments. 3 credits. Prerequisite: Political Science 402 or consent of instructor. Directed in-depth inquiry into contemporary structural and policy problems of state and local governments. During the course, each student will prepare a research paper relevant to a current problem and suitable for publication and distribution to an identifiable body of public officials and citizens for problem-solving purposes.

508. Seminar: Legislative and Executive Processes. 3 credits. Description, analysis, and evaluation of the structures, processes, procedures, and positions of the legislative and executive offices in government.

511. Seminar: Political Theory. 3 credits. Prerequisite: Political Science 311 or consent of instructor. Study of major political theories and the methodologies employed in their formulation.

531. Seminar: Public Administration. 3 credits. An extensive overview of Public Administration stressing the basic conceptions and trends in the discipline as well as the classic scholars.

552. Public Policy. 3 credits. A discussion of the initiation, formulation, adoption, implementation, and evaluation of American public policy. Various policy areas such as agriculture, education, environment, and welfare will be analyzed.

555. Public Organizations. 3 credits. Description and analysis of bureaucratic organizations with particular emphasis on concepts and characteristics common to public bureaucracies.

557. Administering the Public Bureaucracy. 3 credits. Introduces the graduate student to the dynamics of public personnel administration and public sector budgeting. The contrasting norms and behaviors of participants, their impacts on policy, and the implications for government are examined. Specific processes include financial control, performance appraisal and intergovernmental interaction.

559. Administrative Law. 3 credits. Study of the legal dimension of public administration. Study of requirements for rule-making and adjudication and of judicial review of administrative decisions.

560. Administrative Internship. 1 to 6 credits. Prior approval of instructor required before enrollment. Students are employed on full-time or part-time basis in on-the-job learning situations in federal, state, or local government. Students are required to make an analytical report on some facet of their work.

591. Readings in Political Science. 1 to 3 credits. Prior approval of instructor required before enrollment. Selected readings with oral and written reports.

593. Problems in Political Science. 1 to 3 credits. Prior approval of instructor required before enrollment. Students study special topics under the direction and supervision of a member of the staff.

404. Urban Politics and Administration. 3 credits.

405. Political Behavior. 3 credits.
Reading Education  
(See Education: Reading Education, p. 193).

Social Work  

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 (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 services organizations, child welfare agencies, community mental health agencies, hospital 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 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 hours of liberal arts courses in such fields as Economics, Political Science, History, Literature, Sociology, Psychology and Philosophy. A course in Human Biology is required.
3. Satisfactory completion of courses in social work related research methodology and statistics. Those who do not meet this requirement may be admitted but the requirement must be met prior to enrollment in the first social work class.
4. Submission of a statement delineating the reasons for pursuing a master’s degree in social work.
5. Submission of three letters of reference regarding the applicant’s qualifications and potential for graduate social work education.

Advanced Standing  
Applicants with baccalaureate degrees in social work within the last 5 years from Council on Social Work Education (CSWE) accredited schools and have a GPA of 3.0 for their degree are eligible to have up to 21 hours of foundation credits waived. Students must have a grade of B or better for each of the courses for which advanced standing is required. Students with accredited degrees older than 5 years may petition to take a challenge examination in one or more of the following foundation courses:

- SW 510, The Person in the Environment I  
- SW 511, Social Work Practice I  
- SW 512, Social Work Practice Lab  
- SW 513, Social Welfare Policies I  
- SW 514, Social Work Research I  
- SW 586/587, Field Instruction I/II

Applications who believe they are eligible to take the challenge examinations should make their intent known within three weeks of being notified of their acceptance into the graduate program in social work.

Degree Requirements  
1. Successful completion of a minimum of 60 semester credit hours of courses approved by the Social Work faculty with at least a 3.0 grade point average.
2. The required courses must be completed in the recommended sequence unless other arrangements are negotiated.
3. Complete 900 clock hours of field instruction (SW 586, 587, and 588).
4. Completion of a thesis or independent study.
5. Maximum of 15 semester credits may be transferred from another institution. Transfer credits for required social work courses will only be approved if obtained at institutions which offer a graduate degree in social work and which are accredited by the Council on Social Work Education. (See General Academic Policies–Transfer of Graduate Credits for additional restrictions.)
6. Program of Study should be developed early in the second semester of enrollment.

Thesis Option  
1. Establish the Faculty Advisory Committee by the end of the second semester.
2. Submit the Outline of Thesis by the middle of their second semester of study.

Non-Thesis Option  
1. Select advisor and submit the Outline of Independent Study by the end of the second semester.
2. Pass a written final comprehensive examination administered by the department.

Courses  
510. The Person in the Environment I. 2 credits. Prerequisites: admission to the program or consent of the instructor. This Initial Generalist course on Human Behavior in the Social Environment adopts Ecological Social Systems theory that provides the overall conceptual framework. The bio-psycho-socio-cultural aspects of human development are emphasized along with a recognition of the reciprocal interactions and transactions of multiple systems (micro and macro) that influence human development throughout the life span. A diversity framework is used for presenting Human Behavior Theory.
511. Social Work Practice I. 3 credits. Prerequisites: admission to the program. The purpose of Practice I is to provide the foundation knowledge, values, and skills for beginning generalist social work practice. A problem-solving framework for social work practice with individuals, families, groups, organizations, and communities is presented. Students are provided the opportunity for skill development in the practice lab.
512. Social Work Practice II. 2 credits. Prerequisites: admission to the program. The purpose of Practice II is to provide the foundation knowledge, values, and skills for beginning generalist social work practice. A problem-solving framework for social work practice with individuals, families, groups, organizations, and communities is presented. Students are provided the opportunity for skill development in the practice lab.
513. Social Welfare Policy I. 2 credits. Prerequisite: admission to the program or consent of the instructor. This course is designed to provide the students with the beginning understanding of the institution of social welfare, its historical landmarks, and the values and ideologies that influence its formulation. The students will also learn about the composition of the poor in the United States and the major social welfare programs that benefit them. The course also will provide a basic analytic model to evaluate social welfare policies.
514. Social Work Research Methodology. 2 credits. 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. The Person in the Environment II. 2 credits. Prerequisite: SW 520. This course develops the student’s understanding of human development in a regional context. It presents human development from a strength perspective utilizing principles of empowerment to facilitate development. Students will learn about regional, contextual and interfunctional human development issues as they relate to personal social development. Much of the content will focus on the processes between systems that reciprocally influence individuals, families, and communities.
521. Social Welfare Practice II. 3 credits. Prerequisites: SW 511 and SW 512 or Advanced Standing. This course builds upon the foundation of knowledge of generalist practice and the problem solving process provided in SW 511 and 512. The focus of this course is towards providing the value, skills, and knowledge for advanced generalist practice in a frontier/rural environment with diverse populations of interest/concern within the targeted region. (i.e. elderly, children and families, Native American peoples, Hispanic peoples, etc.)

523. Social Welfare Policy II. 2 credits. Prerequisites: SW 513, advanced standing or permission of the instructor. This course provides a deeper understanding of the social welfare institution with special emphasis on the issues and processes of social policy formulation within the regional context. Policy practice will be presented as an important component of the social work practice. The students also will learn various models of policy analysis and the structure and functions of the judiciary and the legislature in the United States.

524. Social Work Research II. 2 credits. Prerequisite: SW 514, advanced standing or permission of the instructor. This course will assist students in developing an understanding of the ideological context of social work research. Macro issues required to social work research will be discussed, including epistemological controversies and paradigmatic discussions. The course is designed to challenge students to develop an understanding of both qualitative and quantitative data analysis in the research process, especially as they are applied to this region of the United States. Statistical techniques are reviewed, and the use of computers in research is introduced.

525. Proposal Writing. 1 credit. Prerequisites: SW 514, advanced standing or permission of the instructor. In this course students will develop skills related to proposal writing. Proposals for research studies, program evaluations, and grants will be emphasized.

531. Practice with Micro Systems. 3 credits. Prerequisites: SW 521 or consent of the instructor. Advanced generalist practice directed toward individuals, families and person-centered groups. Particular attention is focused on the development of knowledge, values and skills related to in-home family treatment, case management and managed care procedures, the evaluation of micro-practice processes, as well as clinical supervision and consultation.

533. Practice with Macro Systems. 2 credits. Co-requisite: SW 531. Advanced generalist practice directed toward community and societal change. Particular attention is focused on 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. Practice with Mezzo Systems. 2 credits. Co-requisites: SW 531, Advanced generalist practice directed toward task groups and complex organizations. Particular attention is focused on the development of knowledge, values, and skills related to practice and program evaluation, organizational development, 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 through their practice experience and to explore the professional issues they have encountered in their educational experience.

586. Field Instruction I. 5 credits. Prerequisite: admission to the program. This beginning practicum is a concurrent placement designed to enable the student to develop effective problem-solving skills in relation to individuals, groups, family, the community and/or the organizations which deliver social services. Students will be expected to demonstrate self-directed learning skills in addition to problem-solving interpersonal skills and personal awareness competencies. S/U Grading.

587. Field Instruction II. 5 credits. This course is a continuation of Field Instruction I. The emphasis is on developing a more effective use of self with a diverse population of clients and the further integration of practice for use. There is an emphasis on accurate analysis of the problem situation and the development and implementation of appropriate interventions with client systems. S/U Grading.

588. Field Instruction III. 10 credits. Prerequisite: completion of SW 531 and SWK 532 and SWK 587, or permission of instructor. 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 a considerable absence from campus. Students are expected to demonstrate advanced problem-solving and interactive skills in an autonomous manner with increasingly complex situations. There is an increasing emphasis on differential assessment and use of differential methodologies with families. S/U Grading.

997. Independent Study. 1-2 credits.
998. Thesis. 1-2 credits.

Sociology

Professors Larson, Ludtke (Chairperson);
Associate Professors Geller, *Meyer, Moen,
Staples, Stofferahn (Graduate Director), Tiemann
Assistant Professors *Driscoll

Program Description

Thirty graduate credits, including thesis work, are required for a Master of Arts degree. The program of study is divided into four components: scholarly tools, core curriculum, cognate, and thesis. The core courses include sociological thinking, social theory, research design, and research methods. Courses in the scholarly tools component include one course in statistics and other courses in research methods. The cognate includes nine credits in a minor or cognate; and thesis is comprised of four credits. The program emphasizes two different tracks: predoctoral or sociological practice. Students in both tracks take a common core of courses, but the emphasis in their cognates differ.

Admission Requirements

1. Completion of a minimum of twenty semester hours of undergraduate sociology or related fields with an overall grade point average of 3.00 (A=4.0), a GPA of at least 3.25 for the last two years of undergraduate study; and 3.25 GPA in their major. Under exceptional circumstances the student not meeting these requirements may be admitted provisionally.
2. Approved status presupposes some undergraduate training in methods of social research, statistics, and theory with a minimum grade of B in each. Students lacking this preparation must take, during the first semester and without graduate credit, the appropriate undergraduate courses including: Contemporary Sociological Theory (Soc. 301), Sociological Research Methods (Soc. 323), Sociological Statistics (Soc. 326), and Social Psychology (Soc. 361).

Degree Requirements

1. Program must include a systematic treatment of the field of sociological theory plus sufficient training in research methods and statistical techniques to assure understanding and competence in their use. This is fulfilled upon successful completion of (grade B or higher) in Soc 510, Soc 511, Soc 520, Soc 521, and CTL 516.
2. One course from the following: Soc. 512, Soc. 538, Soc. 558, or Soc. 568.
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 and/or to teach at a junior or community college.
4. Students in the sociological practice track typically declare cognates in planned intervention, applied research and public policy, or administration and management. 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 p. 164 for a definition of Residence.)

Courses

500. Professional Seminar. 1 credit. Prerequisites: Admission to the graduate program in Sociology. The course is intended as an introduction to graduate studies, the university and to the opportunities in the discipline of Sociology.
510. Sociological Inquiry. 3 credits. This course focuses on the processes by which sociologists perceive, understand, and study social phenomena.
511. Contemporary Sociological Theory. 3 credits. An examination and comparison of the major current sociological theories.
Space Studies

Professors Wood (Chairperson), Gabryniewicz (Graduate Director), Seielstad; Assistant Professor *Williams

Program Description

The Department of Space Studies offers a program leading to a Master of Science degree. This interdisciplinary program is a policy oriented study of the implications of humankind’s entry into space: the social, political, and legal impacts, on a national and international level, that are associated with the evolutionary development of a new frontier away from Earth. In addition, the biomedical and ecological effects of long-term, or continuous stay-times in a micro or low gravity environment, will also be emphasized, as will the new information and possibilities of global management afforded by remote sensing satellites looking back at Earth.

The program is designed to prepare the student for positions in both the commercial and governmental sectors of the rapidly growing field of space exploration, development and settlement.

Admission Requirements

1. A baccalaureate degree with a major in one of the following fields: Engineering, Science, Business, Social Science, Communication and Information Systems.
2. One course in statistics, calculus, or computer programming language (Computer Science 201, 250, 323, or equivalent) at the college level.
3. One course in sociology, psychology, or political science.
4. One course in science.

Degree Requirements

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

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-request 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.

525. Technical Issues in Space. 3 credits. An examination of the highly developed technological base required for the exploration and development of space. An understanding of this technology and of its impact upon humans is essential to an appreciation of many of the issues and problem areas that are and will be associated with our continuing efforts to explore and settle this new frontier.

535. Satellite Information Processing. 3 credits. The complex issues raised by the creation of new means of observing and managing our planet will be examined. Three billion bits of data per day are already being transmitted to Earth from satellites in space. This 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.

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 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.

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. Independent student projects designed to develop advanced knowledge in a specific area of expertise. A written report is required. May be repeated for up to 6 credits.


405. Advanced Space Mission Design, 3 credits.

410. Life Support Systems, 3 credits.

420. Space Science and Exploration, 3 credits.

430. Earth System Science, 3 credits.

440. Commercialization of Space, 3 credits.

COURSE DESIGNATIONS

POLICY AREA COURSES: 440, 545, 555, 565.

Special Education

(See Education: Special Education, p. 194).
Speech-Language Pathology

Program Description

The Master of Science degree with thesis or without thesis is available with a major emphasis in Speech-Language Pathology and with supporting work in Audiology. The master’s degree program has been accredited by the Educational Standards Board of the Boards of Examiners in Speech-Language Pathology and Audiology. It is anticipated that graduates with a master’s degree will meet the academic and practicum requirements for the Certificate of Clinical Competence of the Boards of Examiners in Speech-Language Pathology and Audiology.

Admission Requirements

1. Graduate Record Examination—General Test.
2. Overall undergraduate GPA of at least 2.85 and a 3.00 in the courses required for an undergraduate major in Communication Disorders.
3. Admittance to approved status typically requires an undergraduate major in Communication Disorders.
4. Those admitted to Qualified Status must have at least 12 semester credits of undergraduate work in the field, but will be required to complete the course work for the undergraduate major.
5. Criteria used in admission decisions:
   a. Scores on the Graduate Record Examination General test,
   b. All grade point averages from previous undergraduate, post-baccalaureate and graduate studies,
   c. The extent and quality of previous clinical research, and service activities, and the
   d. Quality of speaking, writing, and interpersonal skills.
6. Admissions applications should include documentation of their qualifications relative to the criteria above.
7. Admissions for summer and fall enrollment and the award of financial aid will be based on applications completed by February 15.

Degree Requirements

1. The typical program of study includes the following courses: 522, 525, 531, 532, 533, 535, 536, 537, 538, 542, 552, 562, 583, and 584.
2. CTL 515 Statistics I or an approved equivalent is required.
3. Thesis students will register for 998 (Thesis) and non-thesis students will register for 584 (10 or more weeks of external practicum) and 997 (Independent Study).
4. Students wishing to qualify for employment in a school setting must complete requirements for a teaching credential as a graduate student. This will include CTL 400, Methods and Materials for Speech Clinicians, and CDIS 585, Practicum in the School Setting.
5. Graduate students already having a teaching credential with some other major must take CTL 400 and practicum in a school before being recommended for employment in a school.

Courses

501. Seminar in Speech-Language Pathology-Audiology. 1 to 3 credits

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: CDIs 431 or consent of instructor. Advanced audiological concepts and techniques including speech audiometry, masking, bone conduction, advanced pure tone testing, pediatric hearing evaluation, and the psychoacoustical bases of audiometric assessment.

532. Adult Neurogenic Communication Disorders. 3 credits. Prerequisites: CDIs 231 and 522. Investigation of the nature, differential diagnosis, and treatment of neurologically-based speech and language disorders (aphasia, apraxia, dysarthria, cerebral palsy. and other disorders).

533. Investigations in Child Language. 3 credits. Prerequisites: CDIs 343. Student formulation of questions and concerns about normal and disordered child language which are studied through a search of pertinent literature and through observation and analysis of children’s linguistic production.

535. Seminar in Speech and Hearing Science, 1 credit. Prerequisites: CDIs 231 and CDIs 235. A study of the application of instrumental analysis of speech production, transmission and perception to the diagnosis and treatment of communication impairments in children and adults.

536. Stuttering Intervention. 3 credits. Prerequisite: CDIs 436. A study of the theoretical bases for and the clinical management of stuttering in children and adults.

537. Advanced Clinical Management. 2 credits. Prerequisite: completion of undergraduate major sequence in CDIs or consent of instructor. Integrated study of the process involved in total clinical case management including the development of communication and observation competence, clinical literacy, creative problem solving, decision making, supervisory and consultation skills.


542. Child Neurogenic Communication Disorders. 2 credits. Prerequisite: CDIs 522. An overview of cerebral palsy and other neuromuscular disorders including consideration of evaluation techniques and oral and non-speech/aurgmentative communication systems.

552. Motor Speech Disorders. 2 credits. Prerequisite: CDIs 532. A study of the diagnoses and management of motor speech disorders, including dysarthria, apraxia, and dysphagia.

562. Augmentative/Alternative Communication. 2 credits. Prerequisites: CDIs 522 and CDIs 542. A study of the evaluation and application of manual and electronic communication aids for the severely handicapped.

583. Advanced Diagnostic Procedures. 3 credits. Prerequisites: CDIs 383. Administration and interpretation of diagnostic instruments for evaluation of communication problems, interviews, case histories, and parent counseling.

584. Advanced Clinical Practicum. 1 to 16 credits. Prerequisites: CDIs 485 and consent of instructor, provision of clinical services to individual with communication disorders under the supervision of an ASAA certified supervisor. Placement will be with either the Speech-Language-Hearing Clinic or a departmentally-approved external site.

585. Practicum in the School Setting. 1 to 10 credits. Prerequisites: Graduate standing and consent of the department. Supervised practicum in a University-approved cooperating school.

586. Advanced Clinical Practicum: Audiology. 1 to 16 credits. The administration and interpretation of tests and procedures for evaluation human auditory functioning. Practice involving interviews, case histories and client counseling.

595. Research Problems in Speech-Language Pathology-Audiology. 1 to 3 credits. Prerequisite: consent of instructor. A. Speech-Language Pathology, B. Audiology.

597. Special Problems in Communication Disorders. 1 to 3 credits. Prerequisite: consent of instructor. A. Examination of special topics in communication disorders.

997. Independent Study. 2 credits.

998. Thesis, 4 credits.

345. Language Development and Disorders I. 1 to 4 credits.

353. Language Development and Disorders II. 3 credits.

431. Introduction to Audiology. 3 credits.

434. Auditory Training and Speech Reading. 3 credits.

497. Special Problems in Communication Disorders. 1 to 3 credits.

Teaching and Learning

(See Education: Teaching and Learning, p. 195).
Theatre Arts

Professors Engle, Jacobsen;
Associate Professors Gillette, Plato (Chairperson),
Assistant Professor *Cutler, *Lindberg

Program Description

The Department of Theatre Arts offers graduate study leading to a Master of Arts degree. The student may select a special area of emphasis such as directing, design and technical theatre, playwriting, children’s theatre, literature, or history. Course work emphasizes both the practical and theoretical aspects of the discipline. An active production schedule provides students with opportunities in all areas of performance, directing, and technical theatre. A minor or cognate field of study in visual arts, music, English, communications, or other related fields is available.

Admission Requirements

1. Twenty-three credits of undergraduate course work in theatre, drama, or a related discipline.
2. If previous academic work is judged deficient, certain courses may be required by the department, without graduate credit, as a condition of admittance.

Degree Requirements

1. The following are required:
   TA 500.00 Introduction to Graduate Research 2 credits
   TA 501.01 Sem. in Dramatic Lit. I 3 credits
   TA 501.02 Sem. in Dramatic Lit. II 3 credits
   Total 8 credits
2. Minimum of 6 credit hours in the production areas, i.e., Acting, Directing, and Design and Technical Theatre courses.
3. Minimum of 6 credit hours in the theory areas, i.e., Playwriting, Literature (except those listed in 1 above), Criticism, and History courses.
4. All students must take a written comprehensive examination before enrolling in TA Thesis 998. The content of the examination will be determined by the Graduate Faculty of the department and will be given at a time announced by the department. The examination shall cover the field of knowledge in Theatre Arts and course work completed by the student.

Courses

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. 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.
255. Period and Style in Dramatic Production. 3 credits. Prerequisite: Theatre 425 or equivalent. Study of a wide variety of production styles in the staging of dramatic literature from Aeschylus to the present.
595. Research Problems in Theatre. 1 to 3 credits. Individual study under the direction of the graduate faculty.
328. Acting II. 3 credits.
336. Lighting for Stage II. 2 credits.
339. Production Design. 3 credits.
402. Acting III. 3 credits.
415. Selected Problems in Theatre Arts. 1 to 3 credits.
422. American Theatre History. 3 credits.
423. History of the Theatre: Classical, Medieval, and Renaissance. 3 credits.
424. History of the Theatre: Seventeenth Century to the Present. 3 credits.
425. Play Direction II. 3 credits.
426. Scene Design for the Stage. 3 credits.
498. Playwriting. 3 credits.

Visual Arts

Professors Auyong, Fundingsland, Mc Cleery, McElroy-Edwards (Chairperson), Miller, Paulsen, Schaefer (Graduate Director); Associate Professors Kelley, Monsebroten; Assistant Professor Luber

Program Description

The Master of Fine Arts degree program in Visual Arts is a strongly studio-oriented professional preparation in the media areas of ceramics, drawing, metalsmithing, painting, printmaking, and sculpture with ample opportunity (and encouragement) for balancing study in art history, and supporting media areas and disciplines, both within and outside the visual arts areas.

Admission Requirements

1. Admission to Approved Status requires a BA or BFA degree (at least 105 quarter or 70 semester hours in studio courses plus a minimum of 15 semester hours in art history) from a regionally accredited college or equivalent.
2. Twenty (20) color slides (2" x 2" cardboard or plastic mounted) of representative examples of the student’s recent work. The slides should be submitted to the Department of Visual Arts Graduate Committee and accompanied by a list containing their sequence, titles, size and medium.
3. For students who have earned graduate credit in art or hold an MA degree, a maximum of 15 credits may be accepted towards the MFA degree. Of those 15 credits, up to 6 credits in Art History may be accepted towards the 9 credit art history requirement.

Degree Requirements

1. The program consists of 60 credits in the following areas:

<table>
<thead>
<tr>
<th>Category</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Major Media Area (Ceramics, Painting, Drawing, Metalsmithing, Printmaking 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 and contemporary trends in the visual arts from the 1960s forward and discussion of contemporary theory and criticism.

**511. Graduate Seminar.** 1 credit repeatable to 2 credits. Group critiques of graduate student work conducted by faculty and visiting artists. Presentation of faculty work and discussion of contemporary issues as appropriate.

**520. Painting.** 1 to 6 credits. Prerequisite: Permission of instructor. Individual research and experimentation in painting. Repeatable to 30 credits.

**530. Drawing.** 1 to 6 credits. Prerequisite: Permission of instructor. Experimentation and elaboration to drawing skills and techniques, both innovative and traditional. Emphasis on individual exploration. Repeatable to 30 credits.

**540. Printmaking.** 1 to 6 credits. Prerequisite: Permission of instructor. Individual research and experimentation in printmaking. Repeatable to 30 credits.

**550. Ceramics.** 1 to 6 credits. Prerequisite: Permission of instructor. Individual instruction and experimentation in Ceramics. Repeatable to 30 credits.

**560. Metalsmithing: Jewelry and Small Sculpture.** 1 to 6 credits. Prerequisite: Permission of instructor. Exploration of historical, traditional, and innovative jewelry and small sculpture techniques using non-ferrous metals, gems, and other materials. Repeatable to 30 credits.

**581. Workshop.** 1 to 6 credits. Prerequisite: Permission of instructor. Special emphasis and encouragement in the use of new materials. Primary course objectives are to be accomplished by by-passing traditional techniques and establishing new approaches to problem solving. Repeatable to twelve credits.

**590. Individual Research.** 1 to 9 credits. Research and creative experiences within a specific area of interest in the Visual Arts and emphasis on refinements of aesthetic applications of techniques and media. By permission of instructor. Repeatable to twenty-two credits.

**599. Professional Exhibition.** 3 credits. Prerequisite: Permission of student’s Graduate Committee. Artist statement, preparation, design, installation, and catalog of solo show.

**410. Art History: Selected Topics.** 1 to 4 credits.

**411. Art History: 20th Century to (1930’s).** 3 credits.

**413. Art History: 20th Century (1930’s to present).** 3 credits.

**414. Art History: 20th Century 1960–present.** 2 credits

**415. Art History: Museum Internship.** 1 to 3 credits.

**416. Art History: Italian Renaissance.** 3 credits.

**417. Art History: Northern Renaissance.** 3 credits.

**418. Art History: Baroque Art and Architecture.** 3 credits.

**419. Art History: 19th Century.** 3 credits.

**490. Individual Research/Special Projects.** 1 to 6 credits. Repeatable to twelve credits.

**496. Fine Arts: Symposium in the Arts.** 1 to 3 credits.

### Vocational Education

(See Business and Vocational Education, p. 181)
University of North Dakota

Administration and Faculty

STATE BOARD OF HIGHER EDUCATION

The University of North Dakota is a part of the North Dakota University System consisting of eight publicly supported colleges and universities and three branch campuses. The State Board of Higher Education, constitutionally responsible for the management of the University, is final authority in all matters affecting the University exercising jurisdiction over its financial, educational, and other policies, and its relations with the state and federal governments. Certain administrative responsibilities of the Board have been delegated to the Chancellor of Higher Education. The Board entrusts the execution of its plans and policies, together with the internal governance and administration of the University, to the President and the faculty and such other officers as it may select.

Board Members

ALLAN BRAATEN, Bismarck; term expires June 30, 1996
PATRICIA HILL, Bismarck; term expires June 30, 1997
CYNTHIA KALDOR, Hillsboro; term expires June 30, 1998
PAUL EBELTOFT, Dickinson; term expires June 30, 1999
JOSEPH PELTIER, Arthur; term expires June 30, 2000
JEANETTE SATROM, Oriska; term expires June 30, 2001
JOHN HOEVEN, Jr., Minot; term expires June 30, 2002
Chancellor of Higher Education, LARRY A. ISAAC, Bismarck

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JAMES F. PENWARDEN, B.A., Director, Office of University Relations
TIMOTHY RERIC, B.S.B.A., Internal Auditor
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DEAN SCHEIVE, Ph.D., Interim Director for Enrollment Services
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W. JEREMY DAVIS, J.D., I.L.M., Dean, School of Law
MARY HARRIS, Ph.D., Dean, Center for Teaching and Learning
BRUCE JACOBSEN, Ph.D., Dean, College of Fine Arts and Communication
HARVEY KNULL, Ph.D., Dean, Graduate School
W. FRED LAWRENCE, Ph.D., Dean, College of Business and Public Administration
ELIZABETH G. NICHOLS, D.N.S., Dean, College of Nursing
JOHN ODEGARD, M.S., Dean, Center for Aerospace Sciences
SUE SCHMITT, Ed.D., Dean, College for Human Resources Development
BE TO ANNOUNCED, Dean, College of Arts and Sciences
BE TO ANNOUNCED, Dean, School of Engineering and Mines

Other administrators reporting to the academic vice president:
JEANNE ANDEREGG, M.L.S., Coordinator, Honors Program
WILLIAM J. KLOSTER, M.S., Lieutenant Colonel, Professor, Military Science
FRANK D. ANDRAJO, M.L.S., Director, Libraries
KENNETH DAWES, Ph.D., Director, Office of Research and Development
DAVID MARSHALL, Ph.D., Director, International Programs
ALICE C. POEHLS, Ph.D., Director, Office of Records
SHARON REZAC ANDERSEN, B.A., Coordinator, International Centre
DANIEL R. RICE, Ph.D., Director, Office of Instructional Development
TO BE ANNOUNCED, Director, Office of Institutional Analysis

H. DAVID WILSON, M.D., Dean, School of Medicine

LYLE BEISWENGER, B.S.B.A., Vice President for Finance
ALICE BREKE, M.Acc., Director, Budget and Grants Administration
PEGGY LUCE, B.S.B.A., Controller, Accounting Office
FRED MACGREGOR, B.A., Director, Personnel Services and Payroll
WANDA SPORBIERT, B.S., Manager, Business Office
VALE VETTER, B.S.B.A., Director, Computer Center
AL HOFFARTH, B.S.B.A., Vice President for Operations
DONALD FORBES, B.S.B.A., Manager, University Bookstore
MELVIN FOSTER, Supervisor, Mailing Services

RICHARD GANYO, Director, Printing Center
DELORES JACOBSON, B.A., Administrative Officer
RICHARD LEHN, Director, Telecommunications
SHERRY METZGER, Supervisor, Duplicating Services
MARGARET MYERS, B.S. B.A., Accountant
LEBOY SONDROL, Director, Physical Plant
JAMES UHLIR, Director, Auxiliary Services
TERRY WEBB, M.A., Director, Residence Services

GORDON HENRY, Ed.D., Vice President for Student Affairs
LILLIAN ELSONG, M.A., Dean of Students
RICHARD GROZ, Ed.D., Director, Counseling Center
LEIGH JEANOTTE, Ed.D., Director, Native American Programs
MARY JANNE LUSTGRAAF, M.Ed., Director, Memorial Union
DEAN SCHEIVE, Ph.D., Assistant Vice President for Student Affairs
MARK THOMPSON, B.A., Director, Career Services
HAROLD VANSCOVY, P.A. C., Director, Student Health Service
TO BE ANNOUNCED, Director, Student Financial Aid

FACULTY

This list is intended for general public information purposes only and must not be construed as an official or definitive list of faculty members and their tenure or other status. Also, because the number and locations of clinical faculty in the School of Medicine vary with the departmental appointments, only full-time medical faculty are listed. A listing of clinical faculty may be obtained from the school on request.

**BAKER, KENDALL L., President of the University and Professor of Political Science, Ph.D., Georgetown University A
ABBOTT, DAVID, Assistant Professor of Neuroscience; M.D., Tulane University, New Orleans**
**ABRAHAMSON, HARMON B., Professor of Chemistry; Ph.D., Massachusetts Institute of Technology**
**ADAMS, MARTHA J., Assistant Professor of Community Medicine and Rural Health; M.S., University of Colorado**
**AHLEN, MICHAEL J., Professor of Law; J.D., Vanderbilt**
**AHLER, JANET, Professor of Foundations of Education, Center for Teaching and Learning; Ph.D., University of Missouri**
**AHMED, KAZI, Adjunct Assistant Professor of Social Work; Adjunct Assistant Professor of Sociology, Project Director, Child Welfare Research Bureau; Ph.D., Iowa State University**
**ALI, MAHRI, Associate Professor of Computer Science and Chairperson of Department; Ph.D., Nottingham University, U.K.**
**ALLEN, BRADLEY S., Cape, United States Army, Assistant Professor of Military Science; B.A., Eastern Kentucky University**
**ALLEVA, PATTI A., Associate Professor of Law; J.D., Hofstra University School of Law**
**ANDEREGG, MICHAEL A., Professor of English, Ph.D., Yale University**
**ANDERSON, CINDY, Assistant Professor of Nursing; M.S., University of North Dakota**
**ANDERSON, DALE A., Assistant Professor of Health, Physical Education and Recreation; M.S., University of North Dakota**
**ANDERSON, LYNN, Associate Professor of Health, Physical Education and Recreation; M.S., University of Oregon**
**ANDERSON, SIDNEY B., Adjunct Associate Professor of Geology, Ph.B., University of North Dakota**
**ANTES, JAMES R., Professor of Psychology; Ph.D., Iowa State University**
**ANTONENKO, DAVID R., Chairperson and Professor of Surgery; Ph.D., M.D., University of Utah**
**APANIAN, RONALD A., P.E., Professor of Civil Engineering and Chairperson of Department; Ph.D., Oklahoma State University**
**ARAZI, RICHARD, Assistant Professor of Neuroscience; M.D., University of Illinois, Chicago**
**ASKIM, MARY KAY, Assistant Professor of Family and Consumer Sciences; M.S., North Dakota State University**

*adjunct graduate faculty status
**full graduate faculty status
***associate graduate faculty status
**ELBERT, DENNIS,** Professor of Marketing; Ph.D., University of Missouri-Columbia

ELLINGSON, DEE ANN, Assistant Professor of Accounting and Business Law; M.A., University of North Dakota

**ELLIS, WALTER,** Associate Professor of History; Ph.D., University of California-Los Angeles

ELNESS, ELAINE, Education Specialist, Learning Services; Adjunct Instructor of Academic Skills, College of Arts and Sciences; M.S.T., University of Wisconsin

ELSINGA, LILLIAN J., Dean of Students and Adjunct Assistant Professor of Human Resources Development; M.A., Michigan State University

EMERY, RUSELL J., Director of Biomark Family Practice Center and Assistant Professor of Family Medicine, M.D., University of North Dakota

ENDER, MORTEN, Assistant Professor of Sociology; M.A., University of Maryland

**ENGLE, RONALD G.,** Professor of Theatre Arts and Chester Fitt; Distinguished Professor; Ph.D., University of Illinois

**EPSTEIN, PAUL N.** Assistant Professor of Pharmacology and Toxicology; Ph.D., Baylor College of Medicine

**ERJAVEC, JOHN,** Associate Professor of Chemical Engineering; Ph.D., University of Wisconsin

**ESCARRAZ, DONALD R.,** Professor of Finance; Ph.D., Oklahoma State University

EVANS, DIXIE, Clinical Instructor of Law; J.D., University of North Dakota

EVERETT, DANIEL L., Adjunct Assistant Professor, Summer Institute of Linguistics; Ph.D., University of Campinas

**F**

FABEL, CRAIG, Associate Director of Fargo Family Practice Center and Assistant Professor of Family Medicine, M.D., University of North Dakota

**FERRARO, RICHARD F.,** Assistant Professor of Psychology; Ph.D., University of Kansas

**FIRE, KEVIN M.** Associate Professor of Communication Disorders; Ph.D., Ohio State University

**FISCHER, RAYMOND L.,** Professor of Communication; Ph.D., University of Illinois

**FIVIZZANI, ALBERT J., JR.,** Professor of Biology and Chairperson of Department; Associate Dean, College of Arts and Sciences; Ph.D., Louisiana State University

**FLANNERY, KEVIN,** Associate Professor of Computer Science; Ph.D., Virginia Polytechnic Institute and State University

**FORSMAN, NELS F.,** Assistant Professor of Geology and Geological Engineering; Ph.D., University of North Dakota

**FRANKLIN, ELIZABETH A.,** Associate Professor of Elementary Education, Center for Teaching and Learning; Chairperson of program area; Ph.D., Indiana University

FRANTZ, DONALD, Adjunct Assistant Professor of Summer Institute of Linguistics; Ph.D., University of Alberta-Edmonton

**FREI, GEORGE H.,** Professor of Religion; Ph.D., Catholic University of America

**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

**FRY, SUZANNE,** Assistant Professor of Social Work; M.S.W., University of Southern Mississippi

**FULLER, MARY LOU,** Professor of Elementary Education, Center for Teaching and Learning; Ph.D., University of New Mexico

**FUNDINGSLAND, PAUL E.,** Professor of Visual Arts; M.F.A., University of Washington

**FURMAN, LEOLA E.,** Associate Professor of Social Work; Ph.D., Fielding Institute

**G**

**GABRYNOWICZ, JOANNE,** Professor of Space Studies, Center for Aerospace Sciences; J.D., Yeshiva University

GAINES-STONER, KELLY, Clinical Instructor of Law; J.D., University of Oklahoma

**GALEWSKY, SAMUEL,** Assistant Professor of Biology; Ph.D., Texas A & M University

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**GELLER, JACK M.,** Associate Professor of Community Medicine and Rural Health and Adjunct Associate Professor of Sociology; Director, Center for Rural Health; Ph.D., Iowa State University

**GERLA, PHILIP,** Associate Professor of Geology and Geological Engineering; Ph.D., University of Arizona

**GERSHMAN, KATHLEEN,** Associate Professor of Secondary Education and Educational Foundation and Research and Chairperson of Program area, Center for Teaching and Learning; Ed.D., Harvard University

GIBBENS, BRAD, Assistant Professor of Community Medicine and Rural Health; M.F.A., University of North Dakota

**GILLETTE, GREG,** Associate Professor of Theatre Arts; M.F.A., Brandeis University

**GILIE, FREDRICKA,** Associate Professor of Statewide Psychiatric Nursing Education Program at Jamestown, College of Nursing; Ph.D., University of Colorado

**GILSDORF, THOMAS,** Associate Professor of Mathematics; Ph.D., Washington State University

GILTSER, ERIC T., Assistant to the Dean, MBA Program Administrator, and Assistant Professor, College of Business and Public Administration; MBA, University of North Dakota

GICK, AUDREY, Clinical Assistant Professor in Communication Disorders; M.S., University of North Dakota

**GODDARD, DONALD,** Associate Professor of Mechanical Engineering; Ph.D., University of Nebraska

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**GOODMAN, LOWELL R.**, Associate Professor of Geography; Ph.D., University of Illinois

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**GONSOld, 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

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GREENWOOD, RAYMOND, Adjunct Assistant Professor of Psychology; Ph.D., University of North Dakota

**GROSS, RICHARD D.,** Associate Professor and Chairperson of Department; Director of Grand Forks Family Medicine Residency Program and Assistant Professor of Family Medicine, M.D., University of North Dakota

**GUNN, MARY LOU,** Director of Internal Medicine Residency Program and Associate Professor of Internal Medicine; M.D., Case Western Reserve University

**GUY, MARK,** Assistant Professor of Elementary Education; Ph.D., The University of Georgia
University of North Dakota

**H**

**HAAGENSTAD, SONYA,** 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

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**HANSON, DARLENE,** Clinical Assistant Professor of Nursing; B.S.N., Minot State University

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**HASAN, ABU RASHID,** Professor of Chemical Engineering; Ph.D., University of Waterloo, (Canada)

**HASEGAWA, KAZUMI,** Assistant Professor of Communication; M.A., Southern Illinois University at Carbondale

**HAWTHORNE, STEVEN B.,** Adjunct Assistant Professor of Chemistry; Ph.D., University of Miami at Coral Gables

**HASELTIN, JAMES,** Assistant Professor of Physiology; Ph.D., University of Miami at Coral Gables

**HAYNES, JUDITH A.,** Counselor, Counseling Center, Adjunct Assistant Professor of Counseling; Ph.D., University of North Dakota

**HEIN, DAVID W.,** Professor of Pharmacology and Toxicology and Chairperson of Department; Chester Fritz; Distinguished Professor; Ph.D., University of Michigan

**HEITKAMP, THOMASINE,** Associate Professor of Social Work; M.S.W., University of Wisconsin-Madison

**HEITMANN, JOYCE,** Clinical Assistant Professor of Statewide Psychiatric Nursing Education Program at Jamestown, College of Nursing; M.A., North Dakota State University

**HELGESON, DIANE,** Associate Professor of Nursing; M.S., University of North Dakota

**HEMMAHI, MOHAMMED,** Professor of Geography and Chairperson of Department; 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

**HENRIKSEN, MARK,** Assistant Professor of Physics; Ph.D., University of Maryland

**HENRY, GORDON H.,** Vice President for Student Affairs and Assistant Professor of Counseling; Ed.D., University of North Dakota

**HESS, CARLA,** Professor of Communication Disorders and Chester Fritz; Distinguished Professor; Ph.D., Ohio University

**HEITLAND, BRUCE,** Assistant Professor of Internal Medicine; M.D., Southwestern University

**HEUER, LORETTA,** Clinical Instructor of Nursing; M.S., University of North Dakota

**HEYDE, CATHY,** Instructor of Family Medicine; M.S., South Dakota State University

**HILTNER, ARTHUR,** Professor of Accounting and Business Law; Ph.D., University of Nebraska

**HOF, MILTON,** Assistant Professor of Elementary Education and Chairperson of the Program Area of Middle School Junior High; Center for Teaching and Learning; Ed.D., University of North Dakota

**HOFFMAN, KATHERINE,** Instructor of Pathology; B.S., University of North Dakota

**HOFMANN, MARK R.,** Associate Professor of Chemistry; Ph.D., University of California

**HOLDEN, VICTORIA,** Assistant Professor of Communication; Ph.D., University of Minnesota

**HOLLOWAY, HARRY L.,** Professor of Biology; Ph.D., University of Virginia

**HOLM, JEFFREY E.,** Associate Professor of Psychology; Ph.D., Ohio University

**HOLTEN, RONALD,** Assistant Professor of Industrial Technology; Ph.D., Iowa State University

**HOMBACH, H. PETER,** Adjunct Professor of Chemical Engineering; Ph.D., University of Muenster (Germany)

**HONTS, CHARLES,** Associate Professor of Psychology; Ph.D., University of Utah

**HOOPER, PATRICIA,** Instructor of Communication; M.A., Marquette University

**HOOFMAN, JOALLAN,** Professor of Electrical Engineering; Ph.D., Iowa State University

**HOOVER, JOHN,** Associate Professor of Special Education, Center for Teaching and Learning; Ph.D., Southern Illinois University

**HOROWITZ, THOMAS W.,** Associate Professor of History; Ph.D., Indiana University

**HUANG, XIAOZHOA,** Assistant Professor of English; Ph.D., Ball State University

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**HUMPHRIES, CHARLOTTE,** Associate Professor of Health, Physical Education and Recreation; Ph.D., Louisiana State University

**HUNT, CURTISS D.,** Adjunct Assistant Professor of Anatomy and Cell Biology; Ph.D., University of North Dakota

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**HURLEY, ROXANNE,** Clinical Assistant Professor of Nursing; M.S., University of North Dakota

**INGEBRETSON, MARK,** Assistant Professor of Internal Medicine; M.D., University of North Dakota

**ISSENGER, GORDON L.,** Professor of History; Ph.D., University of Oklahoma

**ISZLER, DONNA,** Clinical Assistant Professor of Statewide Psychiatric Nursing Education Program at Jamestown, College of Nursing; M.A., North Dakota State University

**IVERSON, DIANNE,** Medical Director of Cystology and Assistant Professor of Pathology; M.D., University of North Dakota

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TUGGY, DAVID H., Adjunct Assistant Professor, Summer Institute of Linguistics; Ph.D., University of California-San Diego
**TWOHEY, DENISE, Associate Professor of Counseling; Ed.D., Western Michigan University
**TYLER, JOHN D., Professor of Psychology and Director of Psychological Services Center; Ph.D., University of Texas
**TYREE, JR., ALEXANDER, Assistant Professor of Secondary Education, Center for Teaching and Learning; Ph.D., University of Wisconsin-Madison
TYREE, ELIZABETH, Clinical Associate Professor of Nursing and Chairperson of the Department of Family and Community Health Nursing; M.P.H., University of Michigan

U
**UHERKA, DAVID J., Professor of Mathematics and Chairperson of Department; Ph.D., University of Utah
UHLENBERG, BEVERLY, Associate Professor of Family and Consumer Sciences; Ph.D., University of North Dakota

V
VANDERPOOL, STARIA, Assistant Research Professor of Biology; Ph.D., University of Oklahoma
**VARI, RICHARD C., Associate Professor of Physiology, Ph.D., University of Kentucky
VERMEERSCH, MICHAEL., Associate Professor of Mechanical Engineering; Ph.D., Princeton
**VERMEERSCH, PATRICIA, Associate Professor of Nursing; Ph.D., Case Western Reserve University
VITTON, JOHN J., Associate Professor of Management; Ph.D., University of Nebraska-Lincoln
**VIVIAN, JAMES P., Professor of History; Ph.D., American University
VOGELTANZ, NANCY D., Assistant Professor of Neuroscience, Assistant Professor of Psychology; Ph.D., University of Maine
VOLDEN, CECILIA, Professor of Nursing; M.S., University of Minnesota

W
WACKER, DUWAYNE M., Associate Professor of Accounting and Business Law; M.S., University of North Dakota
WACKSMAN, RICHARD M., Associate Professor of Internal Medicine; M.D., American University of the Caribbean
WAGNER, GREGORY, Assistant Professor of Aviation; M.S., Webster University
**WAGNER, JOHN L., Assistant Professor of Physics, Ph.D., University of Virginia
WALKER, DEBRA, Assistant Professor of Family Medicine, M.D., University of Minnesota School of Medicine
WALLER, JAMES R., Associate Professor of Microbiology and Immunology; Ph.D., University of Minnesota
**WAMBISGANSS, JACOB, Associate 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
**WANG, JUN, Associate Professor of Industrial Technology; Ph.D., Case Western Reserve University
WATSON, DIETTA, Assistant Professor of Health, Physical Education and Recreation; M.A., Adams State College
WEBER, DAVID, Adjunct Assistant Professor, Summer Institute of Linguistics; Ph.D., University of California
WEILAND, TIM, Assistant Professor of Pathology; M.D. Mayo Medical School
**WELLS, DIANA, Assistant Professor of Mathematics; Ph.D., Washington State University
WHITE, FRANCIS, Instructor of Sociology; M.A., University of North Dakota
**WHITE, WILLIAM, Assistant Professor of Computer Science; Ph.D., Ohio State University-Columbus
**WHITEHEAD, JAMES R., Associate Professor of Health, Physical Education and Recreation; 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
WINTEKEN, RONALD E., Associate Professor of Family Medicine and Director of the Fargo Family Practice Center; M.D., University of Minnesota Medical School
**WILDE, HAROLD H., Associate Professor of Accounting and Business Law and Chairperson of Department; Ph.D., University of Nebraska
**WILHITE, MARY J., Associate Professor of Nursing; Ed.D., University of Tulsa
WILLIAMS, JOHN A., Professor of Anthropology and Chairperson of Department; Ph.D., Ohio State University
WILLIAMS, JOHN D., Professor of Research Methods, Chairperson of Program Area of Educational Foundation and Research, Center for Teaching and Learning; Ph.D., Colorado State College
WILLIAMS, STEVEN, Assistant Professor of Space Studies; Ph.D., Arizona State University
**WILSNACK, RICHARD W., Professor of Neuroscience and Adjunct Professor of Social Work; Ph.D., Harvard University
**WILSNACK, SHARON C., Chester Fritz Distinguished Professor, Professor of Neuroscience and Adjunct Professor of Psychology; Ph.D., Harvard University
WILSON, H. DAVID, Associate Professor of Pediatrics and Dean School of Medicine; M.D., St. Louis University School of Medicine
**WINRICH, LONNY B., Professor of Computer Science; Ph.D., Iowa State University
WOLD, KEVIN D., Major North Dakota Army National Guard, Assistant Professor of Military Sciences; B.S., NDUS, B.S., Colorado State University
WONDERLICH, STEPHEN, Associate Professor of Neurosciences; Ph.D., University of Missouri
**WOOD, CHARLES, Professor of Space Studies and Chairperson of the Department; Ph.D., Brown University
**WOOLSEY, NEIL F., Professor of Chemistry; Ph.D., University of Wisconsin
WRENN, WILLIAM I., Professor of Biology; Ph.D., University of Kansas
**WRIGHT, PAUL H., Professor of Psychology; Ph.D., University of Kansas

Y
**YANG, JIAQIN, Associate Professor of Management; Ph.D., Georgia State University
**YOUNG, KEVIN, D., Associate Professor of Microbiology and Immunology; Ph.D., University of Oklahoma**

YOUNG, JOIN N., Associate Professor of Surgery; M.D., Temple University

YOUNG, LINDA F., Clinical Instructor of Nursing; M.A., University of North Dakota

Z

ZAHRADKA, JOSEPH F., Associate Professor of Aviation; J.D., University of North Dakota

**ZAHRLY, JANICE E., Associate Professor of Management; Ph.D., University of Florida**

ZICUS, MICHAEL, Adjunct Assistant Professor of Biology; Ph.D., University of Minnesota

ZIDON, MARGARET, Assistant Professor of Secondary Education, Center for Teaching and Learning; Ed.D., University of North Dakota

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

AHLER, STANLEY A., Research Archaeologist, Anthropology; Ph.D., University of Missouri

ANDREW, LYNNE, Assistant Women’s Basketball Coach; M.S., University of North Dakota

ARGABRIGHT, BRIAN, Program Director, Small Business Development Center; B.S.A.A., University of North Dakota

AYERS, ELAINE, Director, Central Legal Research, School of Law; J.D., University of North Dakota

BLAIR, DEAN, Head Hockey Coach; M.Ed., University of North Dakota

BOLLINGER, ROBERT D., Assistant Football Coach; M.S., University of North Dakota

BORHO, ALAN A., Research Associate of Atmospheric Sciences; B.S., University of North Dakota

BRATTIEL, MARLYS J., Program Director of Consortium of Gerontology; Adjunct Assistant Professor of Social Work; M.S.S.W., University of Wisconsin

BRIEN, DAVID, Director, Eagle Project, College of Business and Public Administration; B.B.A. and B.S.P.A., University of North Dakota

BRODE, BARRY, Director, UND Television, School of Communication; M.S., Illinois State

CLARK, NANCY, Head Volleyball Coach; M.Ed., Western Kentucky University

CLAY, RICHARD D., Head Women’s Track Coach; M.S., St. Cloud State University

DOVAL, THOMAS, General Manager, UND Radio, School of Communication; B.A., University of Michigan

EISENBEIS, CLYDE T., University of North Dakota

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FONTAINE, CORDELL, Research Associate, Social Science Research Institute; M.A., University of North Dakota

GLAS, RICHARD, Head Basketball Coach; M.S., Western State University

GRANDALL, MICHAEL G., Men’s Track Coach; M.S., University of North Dakota

GREENWOOD, KIM, Project Director, NSF Enhancement of Math and Science (HRD); B.A., Kansas State University

GRINAGER, JON W., Program Director, Small Business Development Center; B.S., Mayville State University

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HELGAASON, CRAIG, Research Assistant of Center for Aerospace Sciences; B.S., University of North Dakota

HURLER, PATTY, Research Associate of Atmospheric Sciences; B.S., Pennsylvania State University

KEARNS, WALTER J., Director, Small Business Development Center; M.B.A., Florida Institute of Technology

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KRAFCSIN, STEVE, Assistant Men’s Basketball Coach; B.S., University of Iowa

LENNON, DALE, Assistant Football Coach; M.A., Northern State University

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MOE, BRUCE, Head Wrestling Coach; M.Ed., North Dakota State University

NESS, JONOTHAN, Research Associate, Center for Aerospace Science; B.S., University of North Dakota

OLISZCZAK, PETE, Associate Athletic Director; Ed.D., University of North Dakota

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SANDELMAN, SCOTT, Assistant Hockey Coach; B.S., University of North Dakota

SCANLAN, JAMES, Assistant Hockey Coach; M.A., Western Michigan University

SCHWEIGERT, KYLE, Assistant Football Coach; B.A., Jamestown College

SMITH, THEODORE J., Director of Attorney Services Program, School of Law; J.D., University of North Dakota

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VENDSEL, BRYAN G., Program Director, Small Business Development Center; B.A., Monet State University

WOLSEKE, JOHN, Assistant Football Coach; M.Ed., University of Wisconsin-Whitewater

ZIEGLER, KELVIN, Baseball Coach; M.Ed., University of North Dakota

FACULTY MEMBERS EMERITI

AKERS, THOMAS, Professor Emeritus, Physiology

ANDERSON, DONALD G., Professor Emeritus, Marketing

APOSTAL, ROBERT, Professor Emeritus, Counseling

AUSTIN, ALVIN E., Professor Emeritus, Journalism

AUTYONG, THEODORE, Associate Professor Emeritus, Pharmacology

BAER, MEINHARDT, Associate Professor Emeritus, Accounting

BREKKE-Bailey, BEVERLY, Professor Emeritus, Special Education

BALE, HAROLD, Professor Emeritus, Physics

BARNEY, WILLIAM G., P.E., Professor Emeritus, Mechanical Engineering

BEHRINGER, MARIORIE P., Professor Emeritus, Biology

BEHSAMAN, ERVIN, Associate Professor Emeritus, Secondary Education

BLACKMORE, MAE MARIE, Instructor Emeritus, Center for Teaching and Learning

BLOOMQUIST, ROGER J., Professor Emeritus, Business and Vocational Education

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BOGAN, LOUIS D., Associate Professor Emeritus, Health, Physical Education and Recreation

BOSTROM, JOY, Associate Professor Emeritus, Family and Consumer Sciences

BROWN, RALPH C., Professor Emeritus, Geography

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University of North Dakota

CLARK, ALICE T., Professor Emeritus, Psychology; Dean Emeritus, Graduate School; Vice President Emeritus for Academic Affairs

CLIFORD, THOMAS J., President Emeritus, Dean Emeritus, College of Business and Public Administration, and Professor Emeritus, Accounting and Business Law

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CURRY, MYRON C., Associate Professor Emeritus, Speech

CVANCARA, ALAN M., Professor Emeritus, Geology and Geophysical Engineering

DAS, GOPAL, Professor Emeritus, Internal Medicine

DE BOER, BENJAMIN, Professor Emeritus, Physiology and Pharmacology

DEL BUSTO, MODESTO R., Professor Emeritus, Languages (Spanish)

DIXON, JOHN, Professor Emeritus, Electrical Engineering

DUNNINGAN, RALPH, Professor Emeritus, Family Medicine

EICKHOFF, LUVERN R., Associate Professor Emeritus, Industrial Technology

ENGEL, DEAN, Professor Emeritus, Communication Disorders

FISCHER, ROBERT G., Professor Emeritus, Microbiology and Immunology

FLETCHER, ALAN G., Dean Emeritus and Professor Emeritus, Engineering and Mines

FOSSUM, GUILFORD O., Professor Emeritus, Civil Engineering

FOSTER, KEITH, Associate Professor Emeritus, School of Medicine

GADE, ELDON, Professor Emeritus, Counseling

GALLANT, RUTH, Professor Emeritus, Education, Elementary Education, Center for Teaching and Learning

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GEORGACAS, BARBARA, Associate Professor Emeritus, Languages (Classics)

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HISEY, PHILIP D., Associate Professor Emeritus, Music

HOLLAND, FRANK, Professor Emeritus, Geology

HOLLENBECK, ROBERT, Associate Professor Emeritus, Secondary Education

HOWELL, FRANCIS, Professor Emeritus, Physics

JACOBS, FRANCIS A., Professor Emeritus, Biochemistry and Molecular Biology

JACOBY, ARTHUR P., Professor Emeritus, Sociology

JENSEN, IVAN, Professor Emeritus, Civil Engineering

JOHNSON, A. WILLIAM, Professor Emeritus, Chemistry

JOHNSON, STANLEY O., Associate Professor Emeritus, Visual Arts

JORGENSEN, LAVERNIA, Associate Professor Emeritus, Health, Physical Education and Recreation

JOSHI, MADHUSUDAN, Professor Emeritus, Medicine

KANNOWSKI, PAUL, Professor Emeritus, Biology

KEMP, ROBERT W., Associate Professor Emeritus, Accounting and Business Law

KIELMYR, HELEN, Associate Professor Emeritus, Management

KOLSTOE, RALPH, Professor Emeritus, Psychology

KORSMO, RICHARD, Associate Professor Emeritus, Accounting and Business Law

KOTCH, ALEX, Professor Emeritus, Chemistry

KRAUS, OLEN, Professor Emeritus, Physics

KRUEGER, JACK N., P.E., Professor Emeritus, Electrical Engineering

KULAS, LUDWIG, Professor Emeritus, Accounting and Business Law

LABRO, WILSON M., Professor Emeritus, Geology, and State Geologist Emeritus

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LEEPER, ESTHER H., Professor Emeritus, Languages

LIND, AMY, Professor Emeritus, Occupational Therapy

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MANZ, OCSAR, Professor Emeritus, Civil Engineering

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McCAFFREY, DONALD, Professor Emeritus, English

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MERRILL, LOIS, Dean Emeritus, College of Nursing

MILLER, JACK L., Associate Professor Emeritus, Music

MORGAN, WILLIAM, Professor Emeritus, Languages

MULLINS, ROBERT, Professor Emeritus, Philosophy

MURASKIN, MURRAY, Professor Emeritus, Physics

MURRAY, STANLEY N., Professor Emeritus, History

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NOLL, JOHN O., Professor Emeritus, Psychology

NORMAN, ERNEST J., Professor Emeritus, Social Work

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O’REILLY, EDWARD J., Professor Emeritus, Chemistry

OCHSELLE, LOIS, Associate Professor Emeritus, Nursing

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ROWE, CLAIR, D., Dean Emeritus, College of Business and Public Administration, and Professor Emeritus, Marketing
RUE, JAMES S., Professor Emeritus, Mathematics
RUNDLE, GLENN, Professor Emeritus, Music
RUNDELL, BEULAH, Assistant Professor Emeritus, English
RUSSELL, LAVIDA, Professor Emeritus, Nursing
RYKKEN, MARJORIE B., Professor Emeritus, Nursing
SAINT CLAIR, FOSTER Y., Professor Emeritus, English
SCHUBERT, GEORGE, Professor Emeritus, Communication Disorders; Dean Emeritus, University College and Summer Sessions
SCHMIDT, SHEDDON, Associate Professor Emeritus, Elementary Education
SCHMEISS, ELMER, Associate Professor Emeritus, Physics
SCOTT, RACHEL SHIELDS, Associate Professor Emeritus, Nursing
SCOTT, THOMAS, Professor Emeritus, Counseling
SEVERSON, DONALD E., Chester Fritz Distinguished Professor and Professor Emeritus, Chemical Engineering
SEVERSON, ROLAND G., Professor Emeritus, Chemistry
SHURR, AGNES G., Professor Emeritus, Nursing
SMITH, GLENN H., Professor Emeritus, History
SNOOK, THEODORE, Professor Emeritus, Anatomy
SOONPAA, HENN, Professor Emeritus, Physics
STEINMEIER, LYLE, Professor Emeritus, Accounting and Business Law
STENBERG, VIRGIL I., Professor Emeritus, Chemistry
STEWART, JAMES A., Professor Emeritus, Chemistry
SUMMERS, LAWRENCE, Professor Emeritus, Chemistry
TABOR, LILA, Associate Professor Emeritus, Psychology
THOMFORDE, CLIFFORD, Professor Emeritus, Electrical Engineering
THOMPSON, LOWELL, Professor Emeritus, Elementary Education
THORSON, PLAYFORD V., Professor Emeritus, History
TOMASEK, HENRY J., Dean Emeritus, Human Resources Development; Professor Emeritus, Political Science
TWETON, D. JEROME, Professor Emeritus, History
URQUIAGA, JUANA, Associate Professor Emeritus, Spanish
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WARCUP, PATRICIA, Assistant Professor Emeritus, Health Physical Education and Recreation
WEISSUR, WILBUR O., Associate Professor Emeritus, Physics
WESTBY, KENNETH L., Assistant Professor Emeritus, Management
WHALEN, C. J., Professor Emeritus, Accounting and Business Law
WHITCOMB, JOHN L., Associate Professor Emeritus, Mathematics
WILKINS, ROBERT, Professor Emeritus, History
WILKINS, WYNONA, Associate Professor Emeritus, Languages
WILLETT, THELMA, Associate Professor Emeritus, Music
WINGER, MILTON E., Professor Emeritus, Mathematics
ZAZULA, FRANK, Assistant Professor Emeritus, Health Physical Education and Recreation
# Fields of Study

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<td>Biology</td>
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<td>Options in Pre-Health, Plant Science, Zoology and General</td>
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AT THE
University of North Dakota
Grand Forks, North Dakota

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Other Information

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Aerospace Center Communications 777-3592
Alumni Association & Alumni House 777-2611
Dormitories (see Residence Halls)
Events (see page 3)

Financial aid 777-3121
Housing information 777-4251
Info Center 777-4321
Internet access (see below)
Medical School Public Affairs Office 777-4305
Residence Halls 777-3565
Sports Information Office 777-2986
Ticket information (see page 3)
University Relations Office
(public information) 777-2731
Weather Informational Center 777-2479

Internet Access To Information About UND

The Campuswide Information System (CWIS) is the University’s menu system through Gopher on the Internet. It contains directories for faculty, staff and students; statistics; news; events; calendar; departmental, sports, alumni and entertainment information; academic catalogs; library holdings; course schedules; handbooks, and much more. UNDInfo is available through Gopher, a menu system on the Internet, by typing undinfo.und.nodak.edu, or through the Worldwide Web by typing http://www.und.nodak.edu, or through online computer services (for America Online, CompuServe, Prodigy, and other online services, call your Computer Service).
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

On the Internet

Through Gopher: undinfo.und.nodak.edu;
From Worldwide Web: http://www.und.nodak.edu;
Through online services: Call your Computer Service representative for information on accessing UNDInfo

(Also see the Index beginning on page 244 of this Catalog to find the location of more specific subject matter than is listed in this contents.)