UND UNIVERSITY OF NORTH DAKOTA

Engineering

Engineers create solutions to problems and challenges. . .

Their work ranges from the design of the nation's transport infrastructure to the manufacturing of supersonic aircraft to the restoration of water quality in contaminated aquifers. Engineers are involved in product and systems research and development, planning, design, production/construction, operation and maintenance, sales and service, teaching, consulting, and management.

Program. . .

Successful engineers need a sound educational foundation in a range of technical subjects built on science and mathematics; the ability to think, work accurately, and communicate effectively; and a knowledge of the principles and problems of industry, business, government, and society.

The School of Engineering and Mines (SEM) at the University of North Dakota prepares students for the responsible practice of professional engineering. The School offers programs in Chemical Engineering, Civil Engineering, Electrical Engineering, Geological Engineering, and Mechanical Engineering. All programs are accredited and are supported by dedicated faculty, small class sizes, and well-designed and well -equipped laboratories.

SEM provides a hands-on engineering education coupled with the broad liberal arts experience available at UND. Opportunities for leadership, research, and experiential activities in the School are outstanding.

Chemical Engineering. . .

The undergraduate program prepares students to practice the profession of chemical engineering in a broad spectrum of industries including biotechnology, chemicals, consumer products, electronic materials, energy production, food processing, polymers, petroleum refining, pulp and paper, and environmental processes. Students may be engaged in research, teaching, development, manufacturing, sales, technical support, marketing, or project engineering, and frequently enter engineering management later in their careers. The undergraduate curriculum emphasizes fluid flow, heat and mass transfer, thermodynamics, reactor design, and plant design. See: http://www.engineering.und.edu/che

Civil Engineering. . .

Graduates of this program work in all areas of the civil engineering profession enhancing and maintaining infrastructure relating to buildings and structures, ground transport systems, and water resources. Course work includes study in foundations, structures, hydraulics, water supply, water treatment, water resources, surveying and mapping, construction methods, traffic control, and highway design and construction. See: http://www.engineering.und.edu/ce

Electrical Engineering. . .

The undergraduate B.S.E.E. program offers the traditional area of Circuits & Systems in addition to the Aerospace Focus, Biomedical Engineering Focus, Computer Science Focus, and Engineering Entrepreneurship options. Employment opportunities are very diverse, in such industries as advanced manufacturing, aviation electronics, embedded systems, medical device design, power generation and distribution, telecommunications, and test engineering. All five options provide a common base of fundamental electrical engineering knowledge. In the Circuits & Systems option, students are able to choose the extent of their emphasis in areas such as communication and control systems, embedded systems, and power systems. In addition to the required B.S.E.E. core curriculum, students enrolled in the Aerospace Focus program take four additional aviation courses from the world-renowned John D. Odegard School of Aerospace Sciences and obtain their private pilot licenses. In the Biomedical Engineering Focus program, students combine their interests in biology and electrical engineering through additional science lecture and laboratory coursework, in order to prepare themselves for careers in the medical field. In the Computer Science Focus program, students receive minors in both Computer Science and Mathematics in addition to the B.S.E.E. degree, so that they can work at the interface between hardware and software. As an Engineering Entrepreneurship student, you will combine electrical engineering and entrepreneurship coursework with hands-on, high-tech projects that will give you insight on how to start your own technology ventures, as well as help established firms think more creatively. See: http://www.und.edu/dept/sem/ee/

Geological Engineering. . .

This engineering discipline focuses on natural earth systems. Courses in geology and basic engineering build a foundation for the program which prepares students to work in areas related to the environment, building and structure foundations, water resources, and exploration. The curriculum provides courses in environmental site planning and natural hazard investigation, design involving rock mechanics, groundwater resources and quality, and exploration for and development of mineral and fuel deposits. In response to the high demand for engineers to support the oil industry, the department is adding petroleum engineering. See: http://www.geology.und.edu/

Information continued on opposite side. . .

Office of Enrollment Services Carnegie Hall Room 100 250 Centennial Drive Stop 8135 Grand Forks, ND 58202-8135
800-Call-UND 701-777-4463 TTY 701-777-0424 go.und.edu enrollmentservices@mail.und.edu

Mechanical Engineering. . .

The undergraduate program of study prepares students to practice all aspects of mechanical engineering providing diverse employment opportunities in such areas as aircraft and automobile manufacturing, energy generation and distribution, heating and cooling systems, and aerospace research and development. The curriculum includes thermal sciences, mechanical design, and manufacturing processes. An optional Aerospace Focus enables interested students to prepare for an aerospace career and to obtain a private pilot's license. See: http://www.und.engineering.und.edu/me

Admission. . .

Freshmen planning to receive a baccalaureate degree in engineering must meet the minimum UND admission requirements to be enrolled in one of the five SEM engineering programs. Transfer students from another UND college, or from another institution, must have a minimum GPA of 2.0.

Just prior to the completion of the second year of engineering study, students apply for admission to the professional engineering program. Applications should normally be received by March 1, but may be accepted at other times if positions are available. Admission is conditional upon earning a minimum grade of C in General Chemistry, English Composition, Calculus, General Physics, an additional science course which may be prescribed by the admitting department, and at least four engineering courses or acceptable equivalents.

Combined BS/MS Program. . .

This program allows qualified students to complete both BS and MS degrees in a total of five years, and to use six credit hours of selected courses from their undergraduate program to also count in their graduate program. Admission to the program requires completion of 95 credit hours toward the engineering degree.

Work Experience. . .

The School of Engineering and Mines encourages students to seek work experience through summer internships or the UND Cooperative Education program. Such experience permits students to gain valuable insight into the engineering profession, provides significant motivation for graduation, and generates funding to meet educational expenses.

Research and Creative Activity. . .

Engineering is a creative profession and new products and technologies evolve through engineering research, development, and design. SEM students have the opportunity to participate in engineering activities as part of their education through active research programs, development and design courses, and student projects.

The School collaborates as a research partner with many industry and government agencies. Undergraduate students may participate in faculty research projects for academic credit and may also find part-time employment in such activities. Typical student projects include the AgCam program (design and manufacture of an imaging system for the International Space Station), the Concrete Canoe program (design, manufacture, and race), the SAE Formula Car (design, build, race) and remote sensing in the Unmanned Aerial Vehicle project.

Cont. Research and Creative Activity. . .

There are numerous examples of exciting activities for students in the School of Engineering and Mines and of the opportunities that can arise from participating in such activities. Students are flying unmanned aerial vehicles that have remote sensor payload designed and built by students. They are also contributing to renewable energy projects, including wind to hydrogen and biojet fuels, turbine engine research projects and Engineered Surfaces Center projects such as the design and construction of a sliding contact fatigue machine to test the impact of advanced surface technologies. A recent student group designed a biomass system based on algae to provide a backup fuel supply for a Mars settlement.

Examples of high flying School alumni and students are Karen Nyberg ('94) who flew in the Space Shuttle this year and Joe Polo who was a member of the Bronze-medal winning U.S. curling team in the 2006 Winter Olympics.

Student Organizations. . .

Student chapters and/or sections of technical, professional, and honors societies are available for engineering students. These organizations may be discipline specific or school-wide. Typical sponsored activities include seminars, presentations, field trips, social outings, and projects to fully involve students in professional activities. Tau Beta Pi, the engineering honors society, is well represented. The Society of Women Engineers has been selected four times as the best student chapter in the nation, and has earned numerous regional awards. The Engineers' Council brings together representatives from each of the engineering student societies to provide services and to plan activities for all engineering students.

Scholarships. . .

The School and the individual programs have a number of scholarships available specifically for freshmen and transfer students. See the SEM website for details.
Go to http://www.und.edu/dept/sem/

UND. . .

The University of North Dakota is a major residential university located on a 530-acre campus in Grand Forks, a classic college town on the North Dakota-Minnesota border. Greater Grand Forks, with a population of 60,000, has a quality of life ranked among the top in the nation. With more than 12,500 students (approximately 10,000 undergraduate, 2,000 graduate, and 500 professional students in law and medicine), UND offers a solid liberal arts foundation, high quality facilities, and outstanding faculty. The state's only law and medical degree programs are located at UND. The University provides more than 190 fields of study as well as a variety of academic, social, and cultural services and activities.

For more information. . .

School of Engineering and Mines
243 Centennial Drive STOP 8155
Grand Forks, ND 58202-8155
Phone (701) 777-3411 or
1-800-CALL-UND ext. 3411
http://www.engineering.und.edu