

College of Engineering

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Vision

The College of Engineering will be nationally recognized for producing creative and innovative graduates and research to meet the changing needs of a global society.

Mission

- To serve the state of North Dakota, nation, and world through quality education, providing contributions to economic growth, and development of leading technology.
- To attract students and scholars with a vibrant culture of diversity, innovation, and entrepreneurship.
- To prepare students with the technical, communication, management, and leadership skills to succeed in a changing global environment.
- To have local, national, and global impact through research and other creative activities.
- To successfully compete among the top 20 programs nationally by discipline.

Departments

The departments include Agricultural and Biosystems Engineering, Civil and Environmental Engineering, Construction Management and Engineering, Electrical and Computer Engineering, Industrial and Manufacturing Engineering, and Mechanical Engineering. The departments of Aerospace Studies (Air Force ROTC) and Military Science (Army ROTC) report through the college for academic program requirements.

Accreditation

The facilities and curricula of the college are reviewed periodically by the appropriate accreditation agency such as: ABET (Engineering Accreditation Commission) (www.abet.org) and the American Council for Construction Education (ACCE). These organizations are recognized national accrediting agencies for the engineering and construction management curricula.

Admission Requirements

Applicants for admission must satisfy the general admission requirements of the university and the special requirements of the college and department.

Recommended Preparation

Engineering programs encourage high school preparation in addition to the minimum core curriculum requirements. Prospective majors in engineering should present four units of high school mathematics including two units of algebra, one unit of geometry, and one-half unit of trigonometry. Science courses should include one unit of physics and one unit of chemistry. Students whose high school credentials or entrance examinations show deficiencies in these subjects will be required to enroll in courses designed to remove such deficiencies and cannot expect to

complete a program of study in the number of semesters indicated in the printed curricula.

Selective Admission

Several programs within the College of Engineering have selective admission. Refer to the department program descriptions below for respective selective admission criteria.

Degree Programs

Undergraduate programs of study lead to the Bachelor of Science degree in the specific fields of agricultural and bio-systems engineering, civil engineering, computer engineering, construction engineering, construction management, electrical engineering, environmental design, industrial engineering and management, manufacturing engineering, and mechanical engineering. Some programs include a number of options for specialized study.

The college has developed its programs of study to provide an educational experience in keeping with the professions of construction management and engineering. The classrooms and laboratories are well equipped and every effort is made to keep them abreast of current technology. Graduates successfully apply for registration as professional engineers after required periods of professional experience.

Examinations of the North Dakota State Board of Registration for Engineers and Land Surveyors are given near campus each year. In addition, the Level I - Associate Constructor Certification Exam for American Institute of Constructors Certification Commission is offered each semester. All seniors are encouraged to take the examinations as soon as they are eligible.

All engineering departments have programs that lead to Master of Science and Doctor of Philosophy degrees. The Department of Construction Management and Engineering offers a Master of Science in Construction Management or a professional Master of Construction Management degree. The graduate degrees are administered by The Graduate School and the College of Engineering. A number of graduate assistantships are available to students undertaking graduate study. For more complete details, see the Graduate Bulletin (<http://bulletin.ndsu.edu/past-bulletin-archive/2014-15/graduate>) online.

Degree Requirements

To earn a baccalaureate degree from any of the engineering programs or the construction management program, a student must complete at least 60 semester credits of professional-level course work in his/her program while in residence and enrolled in the college. Students transferring into the college from programs with professional accreditation are exempt from the residence requirement, but are subject to NDSU's residence policy. Other exemptions must be approved by the college.

Special Opportunities and Services

Special opportunities include the following:

- **General Program:** The general program of the College of Engineering is designed to allow students, who have not chosen the branch of engineering they wish to study, to take basic courses for one year. Students are housed in Industrial Engineering until or unless they declare a different major. Students are encouraged to select an engineering curriculum as soon as possible, but no later than the end of their first year.

- **Interdisciplinary Program:** The Natural Resources Management program (<http://bulletin.ndsu.edu/past-bulletin-archive/2014-15/undergraduate/interdisciplinary-studies/natural-resources-management>) is available through the College of Agriculture, Food Systems, and Natural Resources, the College of Engineering, and the College of Science and Mathematics. Refer to the Interdisciplinary Programs (<http://bulletin.ndsu.edu/past-bulletin-archive/2014-15/undergraduate/interdisciplinary-studies>) section of this Bulletin for further information.

Student Societies and Organizations

All students are eligible to join one or more of these organizations which are actively supported for the benefit of students in the related curricula:

- American Indian Science and Engineering Society
- American Institute of Aeronautics and Astronautics
- American Society of Agricultural Engineers
- American Society of Civil Engineers
- American Society of Mechanical Engineers
- American Water Works Association/Water Environmental Federation (AWWA/WEF) (one group)
- Associated General Contractors
- Engineers Without Borders
- Engineering Council
- Institute of Electrical and Electronic Engineers
- Institute of Industrial Engineers
- Institute of Transportation Engineers
- Materials Research Society (MRS)
- National Association of Home Builders
- National Society of Black Engineers (NSBE)
- Society for the Advancement of Material and Process Engineering (SAMPE)
- Society of Automotive Engineers
- Society of Manufacturing Engineers
- Society of Plastics Engineers, Inc. (SPE)
- Society of Women Engineers
- Surface Mount Technology Association

Air Force ROTC sponsors the Bernard S. Bennison Squadron of the Arnold Air Society (AAS). This is a non-profit student service organization dedicated to furthering the purpose, traditions and concepts of the United States Air Force. These objectives are primarily met through community service projects. The Engineering Council is composed of elected representatives from the student societies.

Several national professional honor societies have chapters on the campus for which students with high academic attainments are eligible in their junior or senior years. Eligible students are selected for Tau Beta Pi from all engineering curricula, Alpha Epsilon from agricultural and biosystems engineering, Eta Kappa Nu from electrical engineering, Alpha Pi Mu from industrial engineering, Sigma Lambda Chi from construction management and engineering, and Pi Tau Sigma from mechanical engineering. Membership in these societies is a coveted honor and highly regarded in the professions.

Research

Research and development projects are administered by college staff responsible for general policies, publications, and cooperative relations with private and governmental agencies.

The Engineering Extension provides special educational project services to groups in conferences, workshops, short courses, and publications. The laboratory facilities of the college are available for specialized instruction under the supervision of faculty. Organizations planning educational programs or special projects for their members are invited to consult the service for assistance. Extension also includes special assistance to companies to identify technology improvements and productivity enhancement.

Cooperative Education

Cooperative Education (<http://www.ndsu.edu/bulletin/offices/careercenter/coop>), a program of the Career Center (<http://www.ndsu.edu/bulletin/offices/careercenter>), offers undergraduate and graduate students an opportunity to integrate classroom study with paid, career-related work experience for academic credit. Work may be full or part time. A Cooperative Education experience may substantially improve students' employment opportunities after graduation.

The following programs are interdisciplinary and are integrated with more than one college/departments within the University.

Great Plains Institute of Food Safety (<http://bulletin.ndsu.edu/past-bulletin-archive/2014-15/undergraduate/colleges/engineering/great-plains-institute-food-safety>)

Natural Resources Management (<http://bulletin.ndsu.edu/past-bulletin-archive/2014-15/undergraduate/colleges/engineering/natural-resource-management>)