

Chemical Engineering

Chemical Engineering --- a profession in which knowledge of the physical and natural sciences is used to transform substances into useful products. . . .

Chemical Engineering is the transformation of one or more raw materials into one or more useful products. Typical examples are: developing new sources of energy, reducing energy consumption, producing new materials, reducing emissions/cleaning up the environment, producing new drugs and drug delivery systems, producing fertilizers to increase world food supplies, and finding ways to use recycled waste. The core of the program is a strong technical curriculum, whereby students learn the fundamentals of the physical sciences, mathematics, and chemical engineering. This core is complimented by a hands on Chemical Engineering Lab sequence that emphasizes critical thinking and relates course content to real world application. Students have the opportunity to design, conduct, and analyze their own experiments. General courses in other engineering disciplines provide greater exposure to the engineering profession and help prepare the students for professional registration. Four of the engineering courses are electives, which gives each student the opportunity to tailor the program to his/her individual interests such as environmental concerns, alternative energy, materials, bio-processes, etc.

What you can do with a degree in Chemical Engineering. . .

Chemical engineers do many things. Most chemical engineers design or help to operate processes used to convert raw materials into more useful products. Typical jobs include: process engineering, design, environmental engineering, projects, manufacturing, research, technical services, and process control. Our graduates work in a broad array of industries including biotechnology, chemicals, consumer products, electronic materials, energy, food, polymers, pulp and paper, and environmental engineering. Many of our alumni rise to the top of their industry. UND's strong baccalaureate program in chemical engineering provides the graduate with a versatility that is much sought after by employers in both the private and public sectors.

Program Options. . .

Many Chemical Engineering students increase their career options by taking a series of elective courses in areas such as biochemical, environmental, management, environmental health and safety, and entrepreneurship. Other students interested in pursuing graduate or professional degrees may be interested in focusing their studies in areas such as law, medicine, and chemical engineering research. A series of emphasis areas has been designed to help students tailor their education to their career goals.

Getting in. . .

Students are considered a part of our program from the time they join UND with a declared major in Chemical Engineering. There are no special admission requirements beyond those of the University. We assign a personal faculty advisor to all declared majors to help them set up their academic schedule. We continue to work with the student on a personal basis throughout their stay at UND, helping guide them through our program and the transition to their first job or graduate school. We encourage students to declare their major upon entering UND to allow this process to begin prior to or during their first semester. Undecided students can transfer to the program at any time. At the time of transfer to the Chemical Engineering program, their faculty advisors will work with them to develop their personal schedule. It is our goal to make each student feel they are a part of our team from the time they enroll at UND and to retain this team spirit throughout their lifetime.

Chemical Engineering is SMART Grant Eligible. . .

Students majoring in this field may be eligible for \$4,000 to help cover costs for the third and fourth year at UND! U.S. citizens eligible for a Pell Grant, enrolled full time as 3rd or 4th year Chemical Engineering majors, may be eligible for this new grant program. Specific eligibility rules apply. For more details about UND's administration of the federal S.M.A.R.T. grant and a UND listing of other "SMART-eligible" programs, visit www.financialaid.und.edu.

Information continued on opposite side. . .

Chemical Engineering Continued. . .

It's A Fact. . .

- Over 85 percent of Chemical Engineering graduates have participated in an experiential learning opportunity through industrial cooperative work studies, internships or undergraduate research.
- Many scholarships are available to chemical engineering students in addition to those available to all UND students. These scholarships are awarded to deserving students based on GPA and extracurricular activities.
- Chemical Engineering has kept their Engineering Professional Program Fee low: \$12.50/credit hour if the student has 60 or more credits. If the student has fewer than 60 UND credit hours, the fee is a flat rate of \$25/semester.
- Typical class size for courses in the major is 15-25.
- 6 faculty in the department.
- 100-125 students enrolled in the program.
- The first student with a B.S. in Chemical Engineering from UND graduated in 1928.
- The American Institute of Chemical Engineers Student Chapter and Society of Women Engineers are active student organizations. Other students participate in the Society for Engineering Alternatives and PowerON! Middle School Outreach Student Organization.
- The UND department is fully accredited with the Accreditation Board for Engineering and Technology for the maximum time granted by that organization.
- Many of our students conduct world-class research with a faculty advisor. This gives the student the opportunity to gain practical experience, earn credit toward the degree, and gives a better idea of what graduate studies and research are about so they can make a more informed decision about whether to continue their studies at the graduate level. Potential research topics include renewable energy production, (including hydrogen and jet fuel), environmental catalysis, air pollution modeling, and polymer and biopolymer synthesis and testing.
- Average starting salary of a B.S. in Chemical Engineering is around \$60,000.
- The Department of Chemical Engineering has been awarded the 2007 UND Departmental Award for Excellence in Teaching. In addition, two faculty have been selected for the UND Individual Excellence in Teaching Award and three as the School of Engineering and Mines Professor of the Year.
- Our department was awarded the 2005 UND Departmental Award for Outstanding Research. Plus faculty members were chosen as the UND Outstanding Faculty Researcher in 2005 and 2006.
- Chemical Engineering faculty maintain an open door policy with no limitation on when students can get help with coursework.

It's A Fact (Continued). . .

- The Chemical Engineering faculty is committed to teaching. We employ innovative, interactive teaching techniques including case studies and problem based learning.
- The University of North Dakota is offering more online courses and degree programs than ever before to provide you with additional flexibility. Please visit www.distance.und.edu for more information or call toll free at 800-342-8230 or 701-777-3044.

Unique characteristics of UND's Chemical Engineering program. . .

One of the main characteristics of this department, which distinguishes it from most other chemical engineering programs around the country, is our commitment to building a strong rapport between the students and faculty. We are able to maintain close interaction because of the relatively small class sizes (typically 15-25 students) and because all faculty members are committed to helping all students do their best and succeed. The interaction between faculty and students occurs formally in the classrooms and through the advising process, but it also frequently arises informally because all faculty maintain an open door policy. This is further encouraged through group projects and study groups in Chemical Engineering classes. It all adds up to an environment that fosters mutual respect and maximizes learning.

Our alumni report that the education they received at UND enables them to compete effectively with graduates from any other institution. The undergraduate program culminates in a senior capstone design course in which students bring together all they have learned as they work in teams on a process design and evaluation project.

New Sustainable Energy Concentration Added ...

The department continually reviews its program to keep it current. We gather information from a variety of stakeholders including our students, alumni, and employers. Program changes are reviewed with our Industrial Advisory Board prior to implementing. Beginning 2009 the *Concentration in Sustainable Energy Engineering* will prepare students for careers associated with sustainable energy technologies. Also new in 2009 is the addition of Professional Integrity in Engineering and new business/leadership electives, designed to increase the value of our graduates to their future employers.

For more information. . .

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