

# Chemical Engineering

## M.S. & M. Engr.

.....

The Department of Chemical Engineering offers graduate programs leading to the degrees of Master of Science, with thesis and non-thesis options, and the Master of Engineering. The department also participates in the multi-disciplinary Engineering Ph.D. program and Environmental Engineering master's program. The M.S. degree is the most common option and financial aid is provided to the vast majority of you working towards this degree. The M.S. or M.Engr. degree can be completed in 15-24 months of full-time study if you hold an accredited baccalaureate degree in chemical engineering. Research projects are often conducted through our interdisciplinary Sustainable Energy Research, Infrastructure and Supporting Education (SUNRISE) research program or in collaboration with the Energy and Environmental Research Center (EERC).

### Admission Requirements

1. B.S. degree in Chemical Engineering from an ABET accredited program. Students applying for the combined BSChE/MEngr degree should see the "Engineering Combined Degree Programs" section for additional details.
2. An overall undergraduate GPA of at least 2.50 or a GPA of at least 3.00 for the last two years.
3. A minimum TOEFL Score of 550 on the paper-based test or 213 on the computer-based test, or for the Internet based TOEFL, a composite score of 79, with minimum scores of 21/30 (Speaking\*); 19/30 (Listening); 19/30 (Reading); and 17/30 (Writing) for applicants whose native language is not English. Applicants may also meet language requirements by presenting IETLS scores of 6.5. \*Applicants being considered for Graduate Teaching Assistantships must achieve these minimum TOEFL scores, but have a minimum score of 26/30 on the Speaking subtest.
4. Students who have received a bachelor's degree or higher from the United States or English-speaking Canada are not required to submit the TOEFL.

### Degree Requirements \*\*

Students seeking the Master of Engineering degree at the University of North Dakota must satisfy all general requirements set forth by the Graduate School as well as particular requirements set forth by the Chemical Engineering Department. The general degree requirements for the Master of Engineering degree set forth by the Chemical Engineering Department include:

1. A minimum of 30 semester credits with at least 15 credits of chemical engineering at the 500-level.
2. At least 15 credits in engineering design, including either ChE 511 or ChE 512, ChE 595 (3 credits), and 9 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.
4. A maximum of nine semester credits may be transferred from another institution.
5. A written report documenting work on a successfully completed chemical engineering design project.
6. Comprehensive final examination.

## Faculty and Areas of Expertise

**Steve Benson (Professor). Research interests:** Renewable and fossil fuel properties, Clean and efficient gasification and combustion systems, Fireside behavior of ash and slag, Carbon products, Carbon dioxide separation, capture, and sequestration, Materials analysis – electron microscopy and x-ray microanalysis

**Yun Ji (Assistant Professor). Research interests:** renewable and sustainable energy, chemicals and bio-fuels from biomass, enzymatic hydrolysis, integrated energy and environmental projects, process simulation

**Eugenii Kozliak (Professor). Research interests:** Physical biochemistry; biocatalysis in gas phase, enzyme catalysis and its chemical models.

**Michael Mann (Professor and Chair). Research interests:** Performance issues in advanced energy systems firing coal and biomass, emission control, renewable energy systems, and the development of energy strategies based on thermodynamics and economics.

**Frank Bowman (Assistant Professor). Research interests:** Atmospheric aerosols, organic aerosol partitioning, mathematical modeling of multicomponent aerosols, air quality modeling, educational technology, assessment of student learning, educational air pollution models.

**Edward Kolodka (Assistant Professor). Research interests:** Polymer reaction engineering, synthesis, rheological, and mechanical properties of novel polymers, biopolymers, development of improved adhesives for wood laminates.

**Darrin Muggli (Associate Professor). Research interests:** Environmental heterogeneous catalysis, photocatalytic oxidation of organics, fluidized bed reactors, and transient reaction techniques in catalysis.

**Wayne Seames (Associate Professor and ChE Graduate Program Director). Research interests:** Mitigation of the environmental impact of heavy metals, trace element partitioning from combustion and incineration, alternative fuels development, new products and improved processing of agriculture, biochemical unit operations, environmental impacts from wood and concrete contamination.

**Brian Tande (Assistant Professor). Research interests:** Phase behavior and rheology of polymeric and nanodisperse systems, block copolymer morphology, neutron scattering of polymers, novel materials for hydrogen storage, biopolymers and biocomposites.

## Program Contact Information

Dr. Frank Bowman, Graduate Director  
Department of Chemical Engineering  
University of North Dakota  
241 Centennial Drive Stop 7101  
Grand Forks, ND 58202-7101  
Phone: 701-777-4244; Fax: 701-777-3773

Web page: [www.und.nodak.edu/dept/sem/html/che\\_graduate\\_info\\_.html](http://www.und.nodak.edu/dept/sem/html/che_graduate_info_.html)  
Email: [chem\\_e@mail.und.edu](mailto:chem_e@mail.und.edu)  
or [frank.bowman@und.edu](mailto:frank.bowman@und.edu)

**Apply ONLINE**  
<http://graduateschool.und.edu>

Last Updated 9/13/2009