Chemical Engineering
Master of Engineering

The Chemical Engineering graduate program, administered from the Department of Chemical Engineering, offers the Master of Science with thesis and non-thesis options, the Master of Engineering, and the Doctor of Philosophy degrees. The department also sponsors the Energy, Environmental, and Interdisciplinary Engineering tracks of the College of Engineering and Mines Ph.D. Engineering program, administers the Sustainable Energy Engineering masters program and participates in the multidisciplinary Environmental Engineering masters program. The M.S. and Ph.D. degrees are the most common options and financial aid is provided to the vast majority of students working towards these degrees. The M.S. or M.Engr. degree is typically completed in 18-24 months of full time study by students holding an accredited baccalaureate degree in chemical engineering.

The mission of the Chemical Engineering Master of Engineering program is to prepare chemical engineers for careers in industry or government. This preparation will be customized to meet specific areas of interest to the student with an emphasis on engineering design.

**Goal 1:** Graduates will have mastered selected topics in chemical engineering and related areas to achieve their specific goals and objectives.

**Goal 2:** Graduates will be proficient at engineering design, with the ability to solve complex chemical engineering problems.

**Goal 3:** Graduates will be well prepared for a career in industry or government in chemical engineering or a related field.

**Admission Requirements**

The applicant must meet the Graduate School’s current minimum general admission requirements as published in the graduate catalog.

1. B.S. degree in Chemical Engineering from an ABET accredited program. Students applying for the combined BSChE/MEngr degree should see the “Chemical Engineering Combined Degree” 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. Satisfy the School of Graduate Studies’ English Language Proficiency requirements as published in the graduate catalog.

**Degree Requirements**

Students seeking the Master of Engineering degree at the University of North Dakota must satisfy all general requirements set forth by the School of Graduate Studies 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 Advanced Chemical Engineering Kinetics or CHE 512 Transport Of Mass, CHE 595 Design Project (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.

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Faculty and Areas of Expertise

- **Steve Benson**, 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
- **Frank Bowman**, Atmospheric aerosols, organic aerosol partitioning, mathematical modeling of multicomponent aerosols, air quality modeling, educational technology, assessment of student learning, educational air pollution models
- **Yun Ji**, Renewable and sustainable energy, chemicals and biofuels from biomass, enzymatic hydrolysis, integrated energy and environmental projects, process simulation
- **Edward Kolodka**, Polymer reaction engineering, synthesis, rheological, and mechanical properties of novel polymers, biopolymers, development of improved adhesives for wood laminates.
- **Gautham Krishnamoorthy**, Computational fluid dynamics, simulations of combustion reaction flows, carbon capture technologies, radiative heat transfer.
- **Michael Mann**, 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.
- **Wayne Seames**, 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**, Phase behavior and rheology of polymeric and nanodisperse systems, block copolymer morphology, neutron scattering of polymers, novel materials for hydrogen storage, biopolymers and biocomposites.
- **Robert Wills**, Non-thermal drying of solids by chemical dehydration, vegetative oil extraction and product enhancement.

Contact Information

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* The Department of Chemical Engineering also offers a Master of Science degree, and a PhD degree.