Twin Cities Campus

Materials Science and Engineering Minor

Chemical Engineering & Materials Science

College of Science and Engineering

Link to a list of faculty for this program.

Contact Information:
Department of Chemical Engineering and Materials Science, University of Minnesota, 151 Amundson Hall, 421 Washington Avenue SE, Minneapolis, MN 55455 (612-625-0382; fax: 612-626-7246)
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- Program Type: Graduate minor related to major
- Requirements for this program are current for Spring 2022
- Length of program in credits (Masters): 6
- Length of program in credits (Doctorate): 12
- This program does not require summer semesters for timely completion.

Along with the program-specific requirements listed below, please read the General Information section of the catalog website for requirements that apply to all major fields.

Research activities in the Chemical Engineering and Materials Science (CEMS) Department focus on the development of renewable energy technologies, the solution of important medical and biological engineering challenges, the development of advanced materials and characterization methods, and the application of sophisticated mathematical and theoretical models. Graduate courses offered cover core areas of chemical engineering (fluid mechanics, applied mathematics: linear and nonlinear analysis, transport, chemical thermodynamics, statistical thermodynamics and kinetics, and analysis of chemical reactors) and core areas of materials science (structure and symmetry of materials, thermodynamics and kinetics, transport, advanced mathematics, electronic properties of materials, and mechanical properties of materials). In addition, several specialized topics are offered, including biochemical engineering, biological transport processes, colloids, principles of mass transfer in engineering and biological engineering, rheology, process control, ceramics, polymers, scattering, and electrochemical engineering.

Program Delivery

This program is available:

- via classroom (the majority of instruction is face-to-face)

Prerequisites for Admission

Special Application Requirements:
Students interested in the minor are strongly encouraged to confer with their major field advisor and director of graduate studies, and the Materials Science and Engineering director of graduate studies regarding feasibility and requirements.

For an online application or for more information about graduate education admissions, see the General Information section of the catalog website.

Program Requirements

Use of 4xxx courses towards program requirements is not permitted.

The minor must be approved by the director of graduate studies in Materials Science and Engineering.

Courses must be taken on the A-F grade basis, unless only offered S/N, with a minimum grade of B- earned for each course.

The minimum cumulative GPA for the minor is 3.00.

Minor Courses (6-12 credits)

Master's students select 6 credits from the following in consultation with the Materials Science and Engineering director of graduate studies. Doctoral students take all 12 credits.

MATS 8001 - Structure and Symmetry of Materials (3.0 cr)
MATS 8002 - Thermodynamics and Kinetics (3.0 cr)

MATS 8003 - Electronic Properties (3.0 cr)
MATS 8004 - Mechanical Properties (3.0 cr)

Program Sub-plans

Students are required to complete one of the following sub-plans.
Students may not complete the program with more than one sub-plan.

Masters

Doctoral