

## Minor in Materials Science and Engineering

The Minor in Materials Science and Engineering, which is administered by the Department of Chemical Engineering and Materials Science, provides students with a basic foundation in materials science that is applicable to many disciplines. The minor also offers opportunities for students to work in industry, research, or government, as well as to prepare for graduate study in materials science.

The minor is available as an elective to students in a bachelor's degree program in the College of Engineering, other than the Bachelor of Science Degree in Materials Science and Engineering. With the approval of the college, the courses that are used to satisfy the minor may also be used to satisfy the requirements for the bachelor's degree. At least 12 unique credits counted towards the requirements for a student's minor must not be used to fulfill the requirements for that student's major.

Students who plan to complete the requirements for the minor must apply to the Department of Chemical Engineering and Materials Science. To be accepted into the minor, the student must be admitted into the College of Engineering. Enrollment for some MSE courses may be limited. Application forms are available at [www.chems.msu.edu](http://www.chems.msu.edu).

Complete 18 credits from the following (course offerings in Fall/Spring/Summer are indicated):

1. The following courses (6 credits):	<u>Cr.</u>
F/S/S MSE 250 Materials Science and Engineering	3
S MSE 360 Fundamentals of Microstructural Design*	3
2. One of the following courses (3 credits):	
S MSE 260 Electronic, Magnetic, Thermal and Optical Properties of Materials	3
F MSE 310 Phase Equilibria in Materials	3
F MSE 320 Mechanical Properties of Materials	3
S MSE 370 Synthesis and Processing of Materials	3
3. Three of the following courses (9 credits)**:	
F MSE 310 Phase Equilibria in Materials	3
F MSE 320 Mechanical Properties of Materials	3
S MSE 370 Synthesis and Processing of Materials	3
F MSE 410 Materials Foundations for Energy Applications	3
S MSE 425 Biomaterials and Biocompatibility	3
S MSE 481 Microscopic and Diffraction Analysis of Materials	3
F MSE 474 Ceramic and Refractory Materials	3
S MSE 460 Electronic Bonding in Materials and Devices	3
S MSE 465 Design and Application of Engineering Materials	3
S MSE 466 Design and Failure Analysis (W)	3
F MSE 476 Physical Metallurgy of Ferrous and Aluminum Alloys	3

A course used to fulfill requirement 2 above may not be used to fulfill requirement 3.

\* This course has a prerequisite of MSE 310, a course covering thermodynamics. For the minor, ME 201, CHE 321, or PHY 215 is also acceptable, but students will need to do some background study of regular solutions and phase diagrams that are covered in the latter half of MSE 310.

\*\* Some other courses may also be acceptable, and will be handled on a case-by-case basis.

Application form for MSE Minor (rev. 1/2017)

Please submit this form (with your last name in the filename) electronically by email to EctrnDqgj rgtv'and Nkpf uc{ 'P c{ rqt, [dqgj rgtv@egr.msu.edu](mailto:dqgj rgtv@egr.msu.edu), [naylorli@egr.msu.edu](mailto:naylorli@egr.msu.edu),

with “MSE Minor application” in the subject line.

Date:

Name:

PID:

Major:

Date admitted into College of Engineering:

Anticipated Graduation date:

Please indicate the 6 courses and the semesters you anticipate taking them to complete your minor (you may copy/paste from the previous page into the space below). This is not binding, but it will be helpful for us to anticipate. In some courses, you will not be able to enroll without an override, and this application is necessary, but may not be sufficient, if enrollment becomes limited. IF there are courses that you anticipate double counting for your major (max of 2), please mark them with “DC” after the course.

Please state in 50 - 150 words your motivation(s) for completing a minor in Materials Science and Engineering, and list the 6 courses you wish to take and two alternates if we have limited enrollment: