

# MATERIALS SCIENCE AND ENGINEERING

The master's degree in materials science and engineering is a 30-credit-hour program designed to prepare students in an area of rapid growth and profound impact on society. The curriculum consists of courses designed to provide a comprehensive background in fundamentals of materials science and advanced engineering applications, including applications to automotive technology. The courses are 3 credit hours and most are offered in the evening from 6:00 to 8:45 p.m. and available in the remote-access mode. A thesis option is available.

The program can be completed entirely on campus, entirely online, or as a combination of on-campus, online and hybrid courses.

## Requirements

To maintain satisfactory academic standing, students will have to earn a grade B or above in each graduate course taken for credit and applied toward the degree. Additionally, students will have to have a cumulative GPA of at least 3.0 (B) in order to graduate.

Code	Title	Credit Hours
<b>Required Core Courses:</b>		
MTSE 501 or ME 566	Materials Thermodynamics and Kinetics	3
MTSE 502 or ME 569	Introduction to Materials Characterization	3
ME 518	Advanced Engineering Analysis	3
<b>Material Science and Engineering Elective Courses:</b>		
Select 15-18 credits from the following:		
ME 556	Stress and Stren Cons in Desgn	3
ME 558	Fracture and Fatig Cons in Des	3
ME 567	Reliability Consid in Design	3
ME 568	Computational Materials Design	3
ME 580	Advanced Engineering Materials	3
ME 583	Mechanical Behav of Materials	3
ME 584	Mechanical Behavior of Polymer	3
ME 585	Cast Metals in Eng Design	3
ME 586	Materials Consid in Manufactur	3
ME 589	Composite Materials	3
ME 591	Degradation of Materials	3
ME 593	Powder Materials & Processing	3
ME 595	Digital Manufacturing	3
ME 611	Modeling of Engr Matls	3
BENG 521	Biomatls and Biochem Interface	3
BENG 560	Nanobiosystems Engineering	3
BENG 575	Regenerative Engineering	3
AENG 581	Materials Sel in Auto Design	3
AENG 584	Lightweight Automotive Alloys	3
AENG 588	Design&Manufac for Environment	3
AENG 650	Anyls&Des for Veh Crshwrthnss	3
ECE 502	Electromag Theory & Simul	3
ECE 539	Production of Elec Prods	3

IMSE 504	Metal Forming Processes	3
MTSE 600	Study or Research in Selected Materials Engineering Topics	1-3
MTSE 699	Master's Thesis	1-6

### Cognate Elective Courses (3 to 6 credit hours):

- **Required:** One graduate level course from CECS (not from the list of MTSE required core or MTSE elective courses), CASL, CEHHS, or COB
- **Optional:** One graduate-level course from CECS (not from the list of MTSE required core or MTSE elective courses) or natural sciences (BIOL, CHEM, ESCI, ENST, MICR, PHYS)

The thesis option may be elected with the approval of the Materials Science and Engineering graduate program committee. It will count for six (6) credit hours of coursework, replacing two courses in the Materials Science and Engineering electives area.