

MS in Materials Engineering

Admission

Applicants to the Master of Science in materials engineering graduate degree should meet the following admission requirements:

1. A four-year minimum bachelor's degree in a related engineering, materials science, chemistry, physics or geological sciences program, or other closely related discipline, as approved by the program. Related engineering fields include: materials, metallurgical, mineral, mechanical, aerospace, manufacturing, biomedical, chemical, process, industrial, electrical and computer engineering.
2. Cumulative bachelor's grade point average (GPA) of at least 3.000 on a 4.000 scale, or international equivalent.
3. All Graduate School admission requirements.

Depending upon the applicant's undergraduate education, additional undergraduate courses may be needed to complete any deficiencies and prepare them for the materials engineering graduate program. Prerequisite coursework will be identified at the point of admission. Those prerequisite courses must be completed by the time the plan of study is to be filed and may not be counted toward degree requirements. Applicants requiring more than five prerequisite courses will not be considered for admission.

Program Requirements

The MS in materials engineering curriculum is designed to give students maximum flexibility to tailor courses to their professional goals. Specifically, students must complete at least 9 credit hours (three courses) from the set of core courses listed in the table below. In addition, students must take 24 credit hours (typically corresponding to eight additional courses) from the union of core and technical elective course sets. Core courses will typically be offered once a year, and technical elective courses will be offered every two years. As a course-only master's program, no comprehensive exit examination is required for completion of the degree.

MS in Materials Engineering Curriculum

Core Courses

Course	Title	Hours
AE 753	Mechanics of Laminated Composites	3
BME 771	Polymer Processing and Technology	3
BME 777	Biodegradable Materials	3
IME 775	Computer Integrated Manufacturing	3
IME 788	Rapid Prototyping and 3D Printing	3
ME 665	Selection of Materials for Design and Manufacturing	3
ME 670	Introduction to Nanotechnology	3
ME 672 & 672L	Manufacturing of Composites and Manufacturing of Composites Lab	3
ME 762	Polymeric Composite Materials	3

Technical Elective Courses

Course	Title	Hours
AE 733	Advanced Mechanics of Materials	3

AE 737	Mechanics of Damage Tolerance	3
AE 831	Continuum Mechanics	3
AE 853	Advanced Mechanics of Laminated Composites	3
BME 779	Tissue Engineering	3
IME 755	Design of Experiments	3
IME 758	Analysis of Manufacturing Processes	3
ME 651	Biomaterials	3
ME 660	Polymer Materials and Engineering	3
ME 667	Mechanical Properties of Materials	3
ME 728	Advanced Electronic Materials	3
ME 752	Failure Analysis Methods and Tools	3
ME 753	Advanced Materials for Energy Systems	3
ME 760	Fracture Mechanics	3
ME 859	Introduction to Molecular Simulations	3
ME 862	Synthesis and Applications of Nanomaterials	3
ME 865	Corrosion Science Engineering	3
BME 890	Independent Study ¹	1-3
ME 890	Independent Study in Mechanical Engineering ¹	1-3

¹ Upon approval of Graduate Program Coordinator.

Applied Learning

Students in the MS in materials engineering program are required to complete an applied learning (AL) or research experience to graduate from the program. The requirement can be met by one of the following options:

1. Completion of a course that has been designated as an approved applied learning course from the following list. This list will be updated at the beginning of each semester.
 - a. AE 853 Advanced Mechanics of Laminated Composites
 - b. AE 737 Mechanics of Damage Tolerance
 - c. ME 672 Manufacturing of Composites/ ME 672L Manufacturing of Composites Lab
 - d. ME 762 Polymeric Composite Materials
 - e. ME 862 Synthesis and Applications of Nanomaterials
 - f. IME 788 Rapid Prototyping and 3D Printing
 - g. ME 728 Advanced Electronic Materials
 - h. ME 859 Introduction to Molecular Simulations
2. Completion of an approved semester-long (fall, spring or summer) graduate internship or cooperative education through one of the options listed below. The program coordinator must approve the relevance of this activity, prior to registration. In addition, the students will have to submit a technical report, detailing their Co-op experiences, after the completion of internship or Co-op.
 - a. ME 781A and ME 781P – Cooperative Education (experiential): 1 credit
 - b. IME 781 and IME 781P – Cooperative Education (experiential): 1 credit

- c. AE 760AL Nonthesis Option Applied Learning Activity (experiential): 0 credit
3. Presentation of a class project or term paper from a list of approved courses taken at WSU (that meet the first five of the six applied learning components) in one of the following events/platforms. A list of these courses will be provided here and updated as necessary at the beginning of each semester.
 - a. WSU annual Graduate Research and Scholarly Projects (GRASP) symposium;
 - b. College of Engineering Open House;
 - c. An approved professional societies' local chapter meeting (e.g., SAMPE, AIAA, ASME, SME, etc.);
 - d. Departmental Open Houses, where the engineering professionals from outside WSU (e.g., from industry) are present;
 - e. Departmental or College of Engineering Colloquium/Seminar (e.g., ME 777 and IME 777);
 - f. Any approved technical symposiums, expositions or technical conferences; or
 - g. An annual technical symposium may be available each year, where students from the MS in materials engineering program can present one of their class projects or term papers.
4. Obtaining an approved professional certificate from one of the relevant professional societies, organizations, national labs, leading/major industrial entities, etc.
5. Completion of a 1-credit MS Directed Project (approved by the graduate coordinator) from one of the engineering departments (e.g., AE 878, IME 878 and ME 878) working with a faculty on materials related project.