# MATERIALS SCIENCE AND ENGINEERING, MASTER OF SCIENCE IN ENGINEERING

# Advising and Review of Student Performance

Each graduate student will normally have one or more faculty advisors. Students who are entering the Master of Science in Engineering program and plan to pursue a degree without an essay will be assigned an *academic* advisor. Students who are entering the M.S.E. program and plan to pursue a degree with an essay will be advised by their research advisor. Students with a research advisor in another department will be assigned an internal academic advisor from among the full-time faculty in the department. Student progress will be assessed regularly by the faculty advisor(s) and the Master's Program Committee. Students are expected to remain in regular communication with their faculty advisor(s).

All Master's students are required to maintain an overall grade point average (GPA) of 3.0 or higher. See advising manual for more details.

Independent research courses will not be counted toward completion of course requirements with the exception of the two research courses needed for the essay requirement. See Program Requirements.

# Full-time credit enrollment requirement for WSE Master students:

- All WSE Graduate Students must be enrolled in at least 9 credits to maintain fulltime status (in fall/spring semesters).
- Typically, fulltime WSE Masters students will be enrolled in a combination of classes and/or research for a total of 9-12 credits per semester (fall/spring).
- The Master of Science in Engineering (M.S.E.) in Materials Science and Engineering requires a minimum of two semesters of registration as a full-time resident graduate student.

## **Admission Requirements**

Admission to the M.S.E. program is through the standard graduate admissions process. To be admitted to graduate study in the Department of Materials Science and Engineering, students must submit credentials sufficient to convince the faculty that they have the potential to successfully complete the program requirements. GRE scores are not required, although applicants may choose to submit them. Under the GRE test, applicants should take the General Test package containing the Mathematical Reasoning test.

Hopkins undergraduate students who plan to pursue a M.S.E. degree in their fifth year are encouraged to submit an application in the spring of their junior year or early in their fourth year of study.

Visit the WSE Graduate Admissions website (https://engineering.jhu.edu/ admissions/graduate-admissions/full-time-programs/how-to-apply/) for more information.

### **Program Requirements** Requirements for the M.S.E. Degree with Essay

The degree of Master of Science in Engineering (M.S.E) with Essay is awarded subject to the recommendation of the student's advisor along

with departmental approval based on satisfactory completion of core courses, elective courses, research courses, and the essay. Two options are available for the core courses: a two-course series or a three-course series as shown below:

Option I: Two Core Course Series

Code	Title	Credits
EN.500.603	Graduate Academic Ethics	
AS.360.624	Responsible Conduct of Research (Online)	
Materials Science	e and Engineering	
EN.510.606	Structure and Properties of Materials	3
EN.510.612	Thermodynamics and Kinetics of Materials	3
EN.510.807	Graduate Research In Materials Science	3
EN.510.808	Graduate Research	3
EN.510.803	Materials Science Seminar	1
EN.510.804	Materials Science Seminar	1
Select six 600-level or higher electives in Materials Science and Engineering or related fields (three 400-level or higher electives may be allowed with prior program and advisor approval) <sup>1</sup>		
Total Credits		32

**Option II: Three Core Course Series** 

Code	Title	Credits
EN.500.603	Graduate Academic Ethics	
AS.360.624	Responsible Conduct of Research (Online)	
Materials Science	and Engineering	
EN.510.601	Structure Of Materials	3
EN.510.602	Thermodynamics Of Materials	3
EN.510.603	Phase Transformations of Materials	3
or EN.510.610	Fundamentals of Biomaterials	
EN.510.807	Graduate Research In Materials Science	3
EN.510.808	Graduate Research	3
EN.510.803	Materials Science Seminar	1
EN.510.804	Materials Science Seminar	1
Select five 600-level or higher electives in Materials Science and Engineering or related fields (three 400-level or higher electives may be allowed with prior program and advisor approval) <sup>1</sup>		

#### **Total Credits**

32

A master's essay or journal publication is required. A master's essay must be approved by one faculty reader who attests that it conforms to the requirements of the Graduate Board. For a journal publication, a student must submit to the Master's Degree Committee an article describing their original research that has been published (or accepted for publication) in an archival, peer-reviewed technical journal. The student must be the primary author of the article. Research for the master's essay or journal publication may be conducted with a corporate sponsor through the INBT Co-Op Program.

The student's transcript will reflect a "Master of Science in Engineering with Essay." The typical duration of the program is 21 months, but students pursuing the INBT internship/co-op with the essay option may have completion timelines that differ.

### Requirements for the M.S.E. Degree without Essay

The degree of Master of Science in Engineering (M.S.E) is awarded subject to the recommendation of the student's advisor and departmental approval, based on satisfactory completion of core and elective courses. Two options are available for the core courses: a two-course series or a three-course series as shown below:

Option I: Two Core Course Series

Code	Title	Credits
EN.500.603	Graduate Academic Ethics	
AS.360.624	Responsible Conduct of Research (Online)	
Materials Science	and Engineering	
EN.510.606	Structure and Properties of Materials	3
EN.510.612	Thermodynamics and Kinetics of Materials	3
EN.510.803	Materials Science Seminar	1
EN.510.804	Materials Science Seminar	1
Select eight 600-level or higher electives in Materials Science and Engineering or related fields (three 400-level or higher electives may be allowed with prior program and advisor approval) <sup>1</sup>		
Total Credits		32

**Option II: Three Core Course Series** 

Code	Title	Credits		
EN.500.603	Graduate Academic Ethics			
AS.360.624	Responsible Conduct of Research (Online)			
Materials Science and Engineering				
EN.510.601	Structure Of Materials	3		
EN.510.602	Thermodynamics Of Materials	3		
EN.510.603	Phase Transformations of Materials	3		
or EN.510.610	Fundamentals of Biomaterials			
EN.510.803	Materials Science Seminar	1		
EN.510.804	Materials Science Seminar	1		
Select seven 600-level or higher electives in Materials Science and Engineering or related fields (three 400-level or higher electives may be allowed with prior program and advisor approval) $1$				
Total Credits		32		

#### **Total Credits**

Subject to the following rules:

- · Each elective must be worth at least three credits. Multiple courses that add up to three credits may be used in place of one three-credit course with approval from the Master's Degree Committee.
- · Up to two of the elective courses may be taken from the Engineering for Professionals (EP) program.
- Up to six credits may be business-related courses.
- · Any elective taken from outside the department (including all EP courses) requires prior approval of the Master's Degree Committee. The Master's Degree Committee will determine the appropriate number of credits for any elective taken outside the Whiting School of Engineering.
- · With approval of the Master's Degree Committee, students may transfer up to two graduate-level courses from another institution which were completed after the undergraduate degree was conferred if evidence is provided that the course was not applied to any previous degree. Students desiring such credit must make the request in writing to the Master's Degree Committee by the end of

the first semester after matriculation. This request must include a description of the course, a course syllabus, and documentation of the grade received. Please note that transfer coursework grades do not count towards calculation of the GPA.

- Student must complete training on academic ethics in accordance with the Whiting School of Engineering policy. This requirement can be satisfied by passing EN.500.603 Graduate Academic Ethics
- · All WSE master's students enrolled in a full-time, residential program must complete the online Responsible Conduct of Research course (AS. 360.624) (https://engineering.jhu.edu/ research/resources-policies-forms/online-training-courseresponsible-conduct-of-research/) before the end of their first semester of enrollment. Individual students may have additional in-person RCR training requirements based on the funding sources of any research they do while in the master's program (https:// engineering.jhu.edu/wse-research/resources-policies-forms/ responsible-conduct-of-research/).
- A grade of C or better must be achieved in each course to obtain credit.
- · An overall grade point average of 3.0 must be maintained, and a grade point average of a 3.0 is required to earn the degree at the end of the program.

The student's transcript will reflect a "Master of Science in Engineering". The typical duration of the M.S.E. degree without essay program is 12-18 months.