

MECHANICAL ENGINEERING, MASTER OF SCIENCE IN ENGINEERING

The Master's Degree Program

The department offers a variety of options to earn the master's degree, known as the Master of Science in Engineering degree in Mechanical Engineering.

Essay Option

Students writing an essay will successfully complete a coordinated sequence of eight courses and graduate research, and submit a master's essay (sometimes known as a "thesis"). The degree typically requires three to four semesters of study.

There are two options to complete the essay:

Research Option

- Work with world-renowned engineering professors by conducting original research to produce an essay worthy of publication.
- Learn more about the Research option here! (<https://me.jhu.edu/education/graduate-studies/masters-program/>)

Internship / Co-Op - work in a co-operative educational environment

- To broaden the practical training for master's students, the Institute for Nanobiotechnology (INBT) (<https://inbt.jhu.edu/>) teams with companies to provide an immersive master's industry "co-op" experience (<https://inbt.jhu.edu/masters/>) in a professional working environment. Goals and objectives are developed for the student in conjunction with faculty and INBT academic advisors, which will be used to complete the master's essay.
- Learn more about the Co-Op program here! (<https://me.jhu.edu/education/graduate-studies/masters-program/>)

All-Course Option

Students completing an "all-course" degree will successfully complete a coordinated sequence of ten courses. A master's essay or thesis is not required for this degree, which typically requires three semesters of study.

Both options provide students with an intensive exposure to advanced topics in mechanical engineering and strengthens understanding of engineering fundamentals.

MSE Tracks

The Mechanical Engineering department at Johns Hopkins University is renowned for its excellence in both research and education across a broad spectrum of mechanical engineering-related disciplines. Our MSE Mechanical Engineering Tracks (<https://me.jhu.edu/mse-mechanical-engineering-tracks/>) harness this deep expertise to provide master's students with an exceptional opportunity to tailor their program of study to their specific technical interests.

Students can earn up to two tracks in their degree program, which will be recognized with a departmental Certificate of Track Completion upon graduation.

Alumni Success

Visit our Master's Alumni page (<https://me.jhu.edu/mse-alumni-by-year/>) to see where our graduates have made their mark around the world. You, too, can join this elite group with an admission to our master's degree program!

Admissions

To be admitted to graduate study in the Department of Mechanical Engineering, applicants must submit credentials sufficient to convince the faculty that they will thrive in a program of advanced course work and/or research. Graduate Record Examination scores must be submitted.

Program Requirements

The Master of Science in Engineering (M.S.E.) in Mechanical Engineering requires a minimum of two semesters of registration as a full-time resident graduate student.

Course Requirements:

Essay Option: For the Master of Science in Engineering degree at least eight one-semester courses totaling 24 credits plus six credits of EN.530.823 MSE Graduate Research or EN.530.822 MSE Co-Op are required. At least four of them must be selected among those listed as graduate courses in this catalogue. The remaining courses can be chosen from 600-level (400-level only by dept permission) courses in this catalogue, with the advisor's approval. At least three courses must be offered by Mechanical Engineering (EN.530.xxx). All students must follow a course of study approved by their individual advisor.

- Up to two courses taken may be offered by the Engineering for Professionals program.
- **Essay (Research)** - A completed piece of original research will be conducted under the guidance of a full-time faculty member of the department and reported as a master's essay.
- **Essay (Co-Op)** - A co-operative work arrangement will be conducted under the guidance of a full-time faculty member of the department and reported as a master's essay.

All-Course Option: The student must successfully complete a coordinated sequence of 10-12 courses totaling 30 credits or more, which requires one year of full-time resident graduate study.

- At least six of the courses, or the equivalent of 18 credits or more, must be selected among the graduate courses of this catalogue, subject to consultation and approval by the student's academic advisor. Up to 6 of these 18 credits, or the equivalent of two courses, can be achieved by a combination of 1.5-credit or 3-credit courses from the Center for Leadership Education.
- At least four courses, or the equivalent of 12 credits or more, must be offered by Mechanical Engineering (EN.530.xxx).
- Up to two courses taken may be offered by the Engineering for Professionals program.

The intent of this program is to provide the student with an intensive exposure to fundamental and advanced topics within mechanical

engineering. Students must follow a course of study approved by their individual advisor.

Additional Required Courses:

To fulfill, the University-wide requirements, students must complete:

- EN.500.603 Graduate Academic Ethics (passing grade)
- AS.360.624 (online) or AS.360.625 (in-person) Responsible Conduct of Research – see the policy page for details on which to take (<https://engineering.jhu.edu/research/resources-policies-forms/responsible-conduct-of-research-training-for-students-and-postdoctoral-fellows-revised-spring-2020/>)
- Title IX Sexual Harassment Prevention, Effort Reporting – Certifier, and Opioid Epidemic Awareness training courses.

Research Requirements

If conducting research, either by taking EN.530.823 MSE Graduate Research in the all-course option or by completing an essay, or taking a research course in another department you must also complete the eight Laboratory Safety Assessment online modules and, for some, the optional EN.500.601 Research Laboratory Safety lecture course.

Grade Requirement:

For All-Course and Essay-Research options, at least 9 of the 10 courses, or the equivalent of 27 credits or more, must have a grade of B- or higher to count toward the degree. The tenth course, or the equivalent of 3 credits or more, can be graded C- or higher. For Essay-Co-Op, at least 7 of the 8 courses, or the equivalent of 21 or more credits must have a grade of B- or higher to count toward the degree. The eighth course, or the equivalent of 3 credits or more, can be graded C- or higher. The EN.530.822 Master's Essay - Co-Op course is graded with a Pass grade and the EN.910.600 Non-Residency is not graded.

Additional details on grade requirements and other departmental academic policy for the M.S.E. degree can be found on the Mechanical Engineering Graduate Advising page (<https://me.jhu.edu/education/graduate-studies/advising/>).