



A. JAMES CLARK
SCHOOL OF ENGINEERING

Department of Mechanical Engineering

Graduate Handbook

2019-2020

Department of Mechanical Engineering
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www.enme.umd.edu
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DEGREE REQUIREMENTS

M.S. Program in Mechanical Engineering

Course Requirements

Students enrolled in the M.S. program must complete at least **30 credits** for graduation. This includes 24 credits of approved coursework and 6 credits of M.S. Thesis Research. The M.S. Plan of Study sets forth the courses required to be taken by the student in partial fulfillment of the M.S. degree requirements. The Plan of Study must be prepared in consultation with a faculty advisor in the student's technical area of interest and submitted to the **ME Graduate Office (2168 Glenn L. Martin Hall)** for approval by the Director of Graduate Studies before the end of the first semester of study. Changes to the plan are permitted but must be approved by the student's advisor and the Director of Graduate Studies prior to their implementation. A new coursework plan reflecting the changes must be filed with the ME Graduate Office every time changes are made.

The M.S. Plan of Study can include a maximum of 6 approved transfer credits for graduate work undertaken at other accredited U.S. institutions. The transfer of credits must be approved by the Graduate School; approval is sought through the submission of a [Transfer or Inclusion of Credit form](#) to the Graduate School. Transfer of credits may be accepted on the following conditions. The coursework must: (a) be no more than five (5) years old at the time of graduation; (b) have been taken for graduate credit; and (c) have resulted in a grade of B or better. If the coursework is taken at the University of Maryland College Park and meets criteria b and c above, then the period of validity may be extended from 5 years to 7 years, if the Director of Graduate Studies and the advisor certify to the Dean of the Graduate School that the coursework taken has been revalidated by the student's demonstration that the knowledge contained in the course(s) remains current. Separate justification has to be presented for each course that requires revalidation. Under no circumstances will any transfer credits be accepted that are more than seven years old at the time of graduation.

The plan must contain a minimum of 24 credits of graduate coursework (not including thesis credits). At least 18 credits must be from courses taken at the 600-level or above. **At least five (5) of the eight courses must be taken in the Mechanical Engineering Department.** The coursework must satisfy the following criteria:

Required/Core course:	a minimum of 3 credits
Mathematics course:	a minimum of 3 credits
Electives:	the minimum number of elective credits is 18 minus the total of the required courses including mathematics.

The core course requirement can be fulfilled by completing one course from the following list:

Design and Systems Reliability

- ENME 600: Engineering Design Methods
- ENME 607: Engineering Decision Making
- ENME 610: Engineering Optimization
- ENME 690: Mechanical Fundamentals of Electronic Systems
- ENME 695: Design for Reliability

Thermal, Fluids, and Energy Sciences

- ENME 632: Advanced Convection Heat Transfer
- ENME 633: Molecular Thermodynamics
- ENME 640: Fundamentals of Fluid Mechanics

Mechanics, Materials, and Manufacturing

- ENME 605: Advanced Systems Control
- ENME 662: Linear Vibrations
- ENME 664: Dynamics
- ENME 670: Continuum Mechanics

The mathematics requirement can be fulfilled by completing at least one course from the following list:

- CMSC 460: Computational Methods
- CMSC 467: Intro to Numerical Analysis II
- MATH 403: Intro to Abstract Algebra
- MATH 404: Field Theory
- MATH 405: Linear Algebra
- MATH 432: Intro to Point Set Topology
- MATH 436: Differential Geometry I
- MATH 437: Differential Geometry II
- MATH 452: Introduction to Dynamics and Chaos
- MATH 462: PDEs for Scientists and Engineers
- MATH 463: Complex Variables for Scientists and Engineers
- MATH 464: Transform Methods for Scientists and Engineers
- MATH 475: Combinatorics and Graph Theory
- STAT 410: Introduction to Probability Theory
- STAT 420: Introduction to Statistics
- STAT 440: Sampling Theory
- ENME 605: Advanced Systems Control
- ENME 610: Engineering Optimization
- ENME 625: Multidisciplinary Optimization
- ENME 700: Advanced Mechanical Engineering Analysis I
- ENME 725: Probabilistic Optimization
- ENME 745: Computational Methods in Science and Engineering
- ENRE 620: Mathematical Techniques of Reliability Engineering
- ENRE 655: Advanced Methods in Reliability Modeling
- Any MATH, STAT, or AMSC course at the 600 level or above.

For course descriptions, as well as a class schedule for the upcoming term, see <https://enme.umd.edu/course-schedule>

Advisor

As early as possible, students should identify the faculty member whom they would like to serve as their coursework and research advisor. For research assistants, the faculty providing the financial support is also the advisor. A student's advisor will also serve as chairperson of the student's Thesis Committee (see below).

Thesis Requirements

Students in the M.S. Program must complete a minimum of 6 credits of M.S. Thesis Research (**ENME 799**) while preparing the M.S. thesis. Thesis research must be carried out under the guidance of an advisor who is a member of the Mechanical Engineering Graduate Faculty. The thesis must be presented formally and defended in an oral examination open to the public, which is conducted upon completion of the thesis.

The members of the thesis examining committee must be nominated at **least six weeks prior to the thesis defense**. Graduate School has further information on deadlines for submission of the [Nomination of Thesis Committee form](#). This form must first be submitted to the ME Graduate Office for approval and then forwarded to the Graduate School in order to nominate the committee. Changes in a thesis committee can be made at any time, with the approval of the student's advisor, the Graduate Director and the Graduate School. In addition to the Graduate School's requirements for the composition of a thesis examining committee, the Department of Mechanical Engineering requires that mechanical thesis committees be comprised of **three regular or associate faculty members of the Graduate Faculty**. Additional members, beyond these three, can be appointed to the thesis committee, including the special nomination of research faculty or outside scientists. **To nominate a Special or Associate Member to serve, the nominee's curriculum vitae must be submitted to the Graduate Office, at least eight weeks prior to the date of the defense.**

The M.S. thesis must be prepared according to the guidelines in the current edition of the University of Maryland Thesis Manual, which may be obtained online from:
https://gradschool.umd.edu/sites/gradschool.umd.edu/files/uploads/DissertationThesis/etd_style_guide_201708.pdf

A copy of the thesis, after the advisor has approved it, must be provided to each member of the examining committee **at least two weeks prior to the date of the examination**.

In addition, one week prior to the examination date, a notice that includes the thesis date, location, title, abstract, and committee members must be sent to the ME Graduate Office (megrad@umd.edu) inviting faculty and students to the formal thesis presentation. The notice will be sent out via email to departmental listservs as well as posted on the megrad.umd.edu website.

A few days before the examination is scheduled to take place, the **ME Graduate Office** will send the Report of the Examining Committee Form, Electronic Publication Form, the Approved Program Form and the Middle States Accreditation Form to the student's advisor, who will bring these documents to the defense. **Upon passing the examination, the forms are signed by each member of the examining committee and submitted to the ME Graduate Office for forwarding to the Registrar's Office.** An electronic copy of the thesis must be submitted to the Graduate School (see below) and to the ME Graduate Office. Students should also fill out the Department's Exit Information form found at: <http://megrad.umd.edu/graduate-student-exit-information-form/>

Graduation Paperwork

The necessary forms will be completed by the Graduate Office with the assistance of the student and their advisor. The following forms must be completed and submitted prior to graduation:

1. Application for Graduation found online at: www.testudo.umd.edu
2. If students have transferred from another program into the Mechanical Engineering M.S. program, they must submit a [Transfer of Credit Form](#), available online in order to include previous coursework as part of the Mechanical Engineering Approved Program.
3. [Nomination of Thesis or Dissertation Committee](#) Form must be submitted to the Registrar's Office, 1113 Lee Building after approval by the ME Graduate office. Copies of the form are available online and in the ME Graduate Office.
4. Report of the Examining Committee Form is generated by the Graduate School upon the approval of the Nomination of Thesis Committee form. The Report of the Examining Committee Form must be submitted to the Registrar's Office, 1113 Mitchell Building after approval by the ME Graduate Office.
5. An electronic copy of the thesis must be submitted to the Graduate School online. The paperwork and instructions regarding how to upload the document are found here: https://gradschool.umd.edu/sites/gradschool.umd.edu/files/uploads/thesis_and_dissertation_electronic_publication_form.pdf An electronic copy of the approved thesis should also be submitted to the ME Graduate Office, megrad@umd.edu.

Deadlines for the above forms vary from semester to semester and are posted in on the Graduate School's website at: <https://gradschool.umd.edu/calendar/deadlines>

Failure to submit the forms by the established deadlines results in postponement of the student's graduation to the following semester. During the final semester, students should verify with the Registrar's Office, 1113 Mitchell Bldg, (301)314-8226, that they have met all the requirements for graduation.

Summary of Requirements and Timeline

First semester	M.S. Plan of Study approved by Advisor and Director of Graduate Studies. Students should fill out their coursework plans electronically. For instructions on how to do this, please see http://megrad.umd.edu/plan-of-study/ Request for Inclusion or Transfer of Credits submitted (if transferring any credits into the M.S. program—these credits must be approved on your <i>MS Plan of Study</i>).
Semester Before Last	Nomination of Thesis Committee Form submitted at least 6 weeks before Thesis defense.
Last semester	<ul style="list-style-type: none"> • Register for a minimum of one credit via Testudo • Application for Diploma submitted by first week of semester via Testudo • M.S. Thesis Defense • Report of Examining Committee Form ME Graduate Office (Provided to advisor) • Approved Program Form submitted to the ME Graduate Office • Electronic Thesis Publication Form submitted to the ME Graduate Office • Electronic copy of thesis submitted to the Graduate School via ETD website • Electronic copy of thesis submitted to the ME Graduate Office • Exit Information Survey submitted to the ME Graduate Office • International Students ISSS Exit Plan

M.S. students must complete all requirements for their degrees within five (5) years; this includes any credit transferred from other institutions. Students may apply for an exception for a maximum of two additional years if all classes were taken at the University of Maryland College Park. Final approvals are made by the Graduate School.

Continuation toward the Ph.D. Program

Students enrolled in the M.S. program with a GPA of 3.5 or above and at least 24 graduate credits have the option to take the Ph.D. qualifying exam during the following semester. This option must be exercised no later than the fourth semester of study, or the semester following the accumulation of 24 or more credits, whichever occurs first.

Qualified M.S. students who wish to take the Ph.D. qualifying examination must notify the ME Graduate Office of their intention prior to the start of the semester in which they plan to take the exam. Students who pass the Ph.D. qualifying examination and meet the admission requirements of the Mechanical Engineering Department will be recommended for direct admission into the Ph.D. program. Such students will qualify to earn an M.S. degree without thesis, upon their advancement to candidacy. Students who anticipate qualifying for transfer or subsequent entry into the Ph.D. program should note that M.S. thesis credits (**ENME 799**) **do not count toward the Ph.D.** coursework requirement. Students wishing to switch from the M.S. Degree program to the Ph.D. program must in all cases reapply to the Graduate School for admission into the Ph.D. program. Students who are unable to pass the Ph.D. qualifying examination will not be considered for admission into the Ph.D. program.