Boston University Mechanical Engineering

Master's Student Handbook 2024-2025 Academic Year

BUMECHE

Updated 8/13/2024

Contents

Standard Academic Policies

Academic Conduct Code
Boston University's Academic Conduct Code is designed to assist in the development of a supportive and productive learning environment. It is both a description of the University's ethical expectations of students as well as a guarantee of students' rights and responsibilities as members of a learning community. The Code provides clarity related to policy and procedure regarding academic conduct. Boston University's full Academic Conduct Code is available at **Graduate Student Academic Conduct Code.**

Notice of Nondiscrimination
Boston University prohibits discrimination and harassment on the basis of race, color, natural or protective hairstyle, religion, sex or gender, age, national origin, ethnicity, shared ancestry and ethnic characteristics, physical or mental disability, sexual orientation, gender identity and/or expression, genetic information, pregnancy or pregnancy-related condition, military service, marital, parental, veteran status, or any other legally protected status in any and all educational programs or activities operated by Boston University. Retaliation is also prohibited. Please refer questions or concerns about Title IX, discrimination based on any other status protected by law or BU policy, or retaliation to Boston University's Executive Director of Equal Opportunity/Title IX Coordinator, at titleix@bu.edu or (617) 358-1796. Boston University's full Notice of Nondiscrimination is available at https://www.bu.edu/policies/boston-university-notice-of-nondiscrimination/.

Complaint Procedures in Cases of Alleged Unlawful Discrimination or Harassment
Equal Opportunity/Affirmative Action Policy
Sexual Misconduct/Title IX Policy
Student Grievance Procedure in Cases of Alleged Disability Discrimination
Boston University Diversity Statement

Academic Standards
The academic progress of every graduate student is reviewed at the end of each semester. Failure to make satisfactory progress and remain in *Good Standing* can result in *Academic Probation*, *Suspension* for a stated time or until stated conditions are met, or *Dismissal*, as detailed below. Grades of C- or lower are not applicable to satisfying the MS degree requirements. Every student is required to adhere to Boston University's Academic Conduct Code in all aspects of their research, coursework, and teaching. This code stipulates the university's standards for academic honesty and integrity.

College of Engineering Academic Standing
Academic Probation
Academic Suspension or Dismissal
Reinstatement after Academic Suspension

GPA Requirement for Graduation
MS students must complete all degree program requirements and earn a cumulative grade point average of at least 3.00 to be awarded a degree. The cumulative grade point average includes all coursework taken after matriculation and all courses completed prior to matriculation submitted in fulfillment of degree requirements. Successful completion of a 3-credit course in either the College of Arts and Sciences or the

Questrom School of Business does not obviate the need to complete 32 credits. Students are permitted to take a single course multiple times to achieve the GPA requirement, but will only receive 4 credits if used against the degree requirements.

Credit cannot be given for two or more courses having significant overlap (including overlap with courses that had been taken to fulfill the candidate's undergraduate degree requirements).

Other Standard Policies and Resources
Withdrawal, Leave of Absence, and Reinstatement Policy
Disability Accommodation
Auditing Courses
Transfer Credit

Academic Advising And Registration

Every student in a Master's program is assigned a faculty academic advisor upon matriculation. The faculty academic advisor plays a central role in guiding student's academic program, assisting in course selection, and providing guidance and counseling in all academic matters. Note that ***final responsibility for meeting all degree deadlines and requirements rests solely with students.*** To register each semester, the process is straightforward:

1. Meet with advisor to discuss class and research schedules. An advisor will be the best source of information regarding what classes to take.
2. Register for classes using the MyBU.

Students are strongly advised to register as soon as the registration period is open, since many classes have enrollment limits. Registration dates and times can be found here on the Registrar's website.

If a student experiences difficulty in obtaining academic advising from their designated advisor, they are strongly urged to contact the MechE Academic Programs at mechems@bu.edu.

Program Requirements

Below are the requirements for each MS program in the Mechanical Engineering department.

MS in Mechanical Engineering (non-thesis option)

The 32 credits must be fulfilled as follows:

- Three courses (12 credits) must be Mechanical Engineering courses that fit within a specific focus area
- One course (4 credits) must be a Mechanical Engineering (ME) course outside the focus area (breadth requirement), where the "breath" course supplements or aids in widening the focus area
- Two courses (8 credits) must be mechanical engineering electives, meaning any course in MechE in the graduate program, with course numbers at or above 500
- Two courses (8 credits) must be engineering/science/math electives, meaning any 500 level or higher course in any of the engineering departments, or 500 level or above courses in the physical sciences, **or** from the list of math electives provided on the MechE planning sheets.

- One course from above (4 credits out of the 32 credits listed above) must be a "practicum," which is a course with a project as a key part of the course. A list of allowed courses in MechE that serve as a practicum, is provided on the MechE MS planning sheet. This requirement may be fulfilled either by taking one of these courses from the approved list on the program planning sheet, or to take an approved independent study, or internship. Students must receive prior approval for the latter, if they wish to use either option to count towards their practicum requirement.

MS in Mechanical Engineering (thesis option)

Students interested in pursuing a Master's thesis must identify a research advisor and a suitable thesis project (in consultation with the research advisor) and then defend the thesis before a committee of faculty upon completion of the thesis prior to completing the program. Students are encouraged to begin the process of identifying a research advisor and thesis topic prior to matriculating in the program, even as early as during the time of preparing the application for the MS program. However, students are not required to have secured a research advisor or thesis topic prior to matriculating.

It is recommended that any student interested in pursuing a thesis should speak with their academic adviser about the "pros and cons" about devoting part of their MS academic work to pursuing a thesis versus taking a full 32 credits of graduate courses. For some students with a keen interest in a specific thesis topic, the thesis option may be the optimal course of action; for other students, more course work in place of an MS thesis may be preferable. If a student is planning to obtain a job in industry after completing their MS degree, then they should plan on graduate courses and possible research that will be attractive to the interested industry. An academic advisor should be helpful here when planning an academic direction to fulfill these goals.

Note that in line with the above comments, most students fulfill their MS requirements entirely with graduate coursework. To pursue the coursework plus thesis direction, a thesis-interested student will need to find a professor to work with on project/research of interest.

The 32 credits must be selected as follows:

- Three courses (12 credits) must be Mechanical Engineering courses that fit within a specific focus area
- One course (4 credits) must be a Mechanical Engineering (ME) course outside the concentration area (breadth requirement), where the "breath" course supplements or aids in widening the focus area
- Two courses (8 credits) must be engineering/science/math electives, meaning any 500 level or higher course in any of the engineering departments, or 500 level or above courses in the physical sciences, **or** from the list of math electives provided on the MechE planning sheets.
- Two courses (8 credits) must be MS thesis courses guided by a research advisor (XX 954)

Thesis Procedures

Thesis Timeline

It is up to the student and academic advisors to complete the project in a reasonable amount of time for a MS thesis. Most students graduate from the MS with thesis program in 1.5 to 2 years after entering, which usually includes at least one year of full-time work on the research project. It is important to keep track of the numerous deadlines that have been established to ensure that students planning to participate in

graduation ceremonies are not disappointed be being prevented from participating due to missed deadlines. A list of deadlines for the MS Program (with thesis) is located online at

Domestic students have a maximum of five (5) years and international students have a maximum of two (2) years from the time of matriculation to complete the requirements for the MS degree. If a student has still not finished the required courses and research thesis in this time, the student must let the Director of MS Programs and the MechE Academic Programs know to determine the next steps.

Important departmental dates and deadlines for Thesis Proposal, Defense, and Submission are found here under the "Thesis & Independent Study" dropdown.

MS Thesis Proposal

A brief written proposal (3-5 pages) of the MS research project must be submitted and approved no later than *before* the first semester that the student is registered for thesis credit. The proposal should touch on the following points: (1) relevant background, (2) any work already completed, (3) a plan of research with sufficient technical details to evaluate the scope and technical depth of the work, and (4) a timeline for completion. It is the student's responsibility to schedule a formal meeting with their Thesis Committee members for discussion and approval of the proposal document. The student must present the *MS Proposal* and *Thesis Committee Approval Form* to their thesis committee during this meeting. If the proposal is approved, the members of the thesis committee must sign the form, thereby indicating their willingness to participate on the thesis committee. The student must submit the signed approval form and the proposal document to the MechE Academic Programs. It is required that the student's thesis committee meet with the student regularly throughout the remainder of their thesis research.

MS Thesis Committee Membership

After identifying a research advisor and project, each student forms a thesis committee. **The MS Thesis Committee must have a minimum of three (3) members:**

- At least two of the members must be from the primary MechE faculty
- One member may be from outside the department (MechE Affiliated faculty, Research faculty and Research Associates with a PhD and sufficient experience may count as the "outside" member)

Final Semester of Thesis

An MS thesis must be written and defended successfully for completion of the MS degree. Note that for a student to make full use of the critiques of the proposal from their committee, students are not permitted to defend the final thesis the same semester in which the proposal was submitted.

It is the student's responsibility to confirm a date and time of the presentation with their committee members and to contact MechE Academic Programs to book a room. The *MS Thesis Defense Approval Form* must be completed up to item #4 (see *Thesis Approval Form*). This form should include title, abstract, names of all committee members and their signatures. Once a date has been confirmed and room booked, the time and location, along with a copy of the abstract, must be submitted to the MechE Academic Programs at least 10 business days prior to the defense date. The abstract must have the names of the student and research advisor listed together with the project title. The MechE Academic Programs will process announcement of the MS Thesis Defense to the MechE faculty and graduate students via email and add the

event to the MechE calendar.

There are requirements for formatting of the written document and signature pages on the library's website (http://library.bu.edu/theses). The "Guide for Writers of Theses & Dissertations" can also be found at this link. Student should refer to this guide before defending their thesis document. If the thesis does not adhere to these required University guidelines, the student will need to reformat and rewrite it to be considered complete and acceptable by the library. When completed, students will submit their written thesis to the online thesis database.

The format of the actual defense is not rigid and is decided on by the chair of the MS thesis committee. The student can expect to give a 30-to-40-minute seminar presenting the results of the completed project. There may be questions during the presentation or after the student has completed the presentation, depending on the decision of the defense committee.

Following a reasonable question period, the audience is dismissed, so that the committee may ask questions of the student privately; then the student is dismissed, and the committee remains to complete its assessment of the thesis defense. The thesis committee must vote unanimously to pass the student. The results are noted on the *Thesis Defense Form* and submitted to the MechE Academic Programs, who will be responsible for obtaining the signature of the Director of Master's Programs.

Important departmental dates and deadlines for Thesis Proposal, Defense, and Submission are found here under the "Thesis & Independent Study" dropdown.

Thesis Submission
The final thesis document must be submitted to Mugar Library. The information on how to do this is listed at https://library.bu.edu/theses. Please note that the student will need to create a minimum of three signed signature pages and one blank signature page (for upload with your final document), all correctly formatted. Copy of title page and one original signature page needs to be turned into the Master's Programs Manager upon successful submission to Mugar Library.

MS in Product Design and Manufacture (non-thesis option)

Students matriculated Fall 2024 and prior

The 32 credits must be fulfilled as follows:

- Five courses (20 credits) must be the core courses listed on the program planning sheet
- Two courses (8 credits) must be Design and Manufacturing electives
- One course (4 credits) must be engineering/science/math electives, meaning any 500 level or higher course in any of the engineering departments, or 500 level or above courses in the physical sciences, **or** from the list of math electives provided on the MechE planning sheets.
- Practicum Requirement (ENG ME537: Product Realization): This course is required and will count towards PD&M student's practicum. If a student wishes to count another course towards the practicum requirement, they must submit a petition.

MBA/MS - Master of Business Administration + Master of Science in Product Design & Manufacture

Students matriculated Fall 2024 and prior

Students may enroll in this dual degree program on a full- or part-time basis. A total of 80 credits is required of students pursuing this dual degree program full time. In this format, students must take 40 credits in residency at the Questrom School of Business. If completing the MBA as part of the PEMBA program, students need a total of 71 credits; 31 of these must be taken at Questrom. In either format, the remaining credits must include 32 credits taken at the College of Engineering and 8 credits taken at either school or, by permission, elsewhere in the University.

MBA/MS students should follow the Product Design and Manufacture program planning sheet for the MS portion of their degree.

Practicum

For all non-thesis programs, one of the courses taken by the student to satisfy the 32 credits must also satisfy the Practicum Requirement. Please see the relevant program planning sheet for a listing of courses that satisfy this requirement. The approved courses require a substantive project, which provides the opportunity for each student, whether working individually or in teams, to obtain practical experience in the following areas:

1) Defining a problem;
2) Researching, formulating, and realizing a solution (such as the design of a process or product); and
3) Presenting the solution in written and oral formats.

In the Mechanical Engineering department, the project in a "practicum course" typically equals about 25% or more of the course grade.

Independent Study

Requirements

1. Students must register for ENG ME 951. ME951 is a graded course (not pass/fail)
2. The students should write a research-like proposal for what they will accomplish in the class that includes:
    - Background: what problem are they trying to solve and why? What has been done previously?
    - Approach: how will you solve the problem?
    - Deliverables: clearly state what the end result/product/knowledge gained will be. This is important as it will provide a "grading template" for faculty and set expectations for what will be accomplished.

Note: Due to the often nonlinear nature of research, the grading does not need to strictly follow the deliverables. It should, however, account for how changes in the research plan were handled.

3. At the end of the semester, the student should submit a written research document, which includes formulating the topic/problem to be studied, hypothesis, approach to take and expected milestones, etc. of the independent study. The written document should be a minimum of 5 pages and should be submitted no later than the date provided by the MechE Academic Programs at the beginning of the semester.

"Engineering With Practice" Designation

The College of Engineering offers an Engineering Practice degree option to students in all its Master's programs. Engineering Practice is a valuable opportunity for a student at the master's level to complete an approved internship integral to their program of study, thereby allowing them to develop additional technical and professional skills. Students interested in the Engineering Practice degree option must apply and meet the requirements outlined below. Students successfully completing the Engineering Practice degree option of their program will earn the accompanying degree designation (e.g., Master of Science in Mechanical Engineering with Engineering Practice).

Internships that are used to complete the degree requirements must be relevant to the student's program of study and must go through a program level approval process. Satisfactory completion of the requirement is determined by the program and then formally recorded by the Graduate Programs Office.

Requirements and Grading

- An internship site and project must be approved by the student's faculty advisor
- A mid-point review between the student and the internship supervisor must be conducted and submitted.
- Before the end of the semester in which the internship takes place, a final report must be submitted and reviewed by the academic advisor.
- Students receive a grade of Pass or Fail. The final grade is based on satisfactory completion of all requirements and is determined by the academic advisor in consultation with the internship supervisor.

For International Students

International students must have completed two semesters in full-time status to be eligible to begin an internship in the United States, and they must complete additional paperwork with the BU International Students and Scholars Office (ISSO) after registration.

- International students with an off-campus internship must complete the Curricular Practical Training (CPT) form, and bring the approved Engineering Practice Approval form and the CPT form to the College of Engineering's Graduate Programs Office for review and approval for off-campus curricular practical training.

Program Communication

Email

The program administrator also utilizes electronic mail as a medium for official communication**. Please be sure to check your BU email account on a daily basis** for important information, and make sure that your account is not filled up. All communication is through your BU email account, not private accounts.

Graduation

To graduate, students must submit a graduation application. **Graduation does not occur automatically**.

Application for Graduation

In addition to the application, prospective graduates must also:

- Be registered for either a course or at least 2 credits of ME 954 in the semester or summer session in which they complete degree requirements and the semester prior.
- Submit a complete and signed Program Planning Sheet to be uploaded with the graduation application.

Students should consult with the MechE Academic Programs for any further requirements, procedures, and deadlines which may affect their graduation eligibility.

Commencement

There is one College of Engineering Commencement ceremony per academic year; it takes place in May. All graduating students are invited and encouraged to participate in our commencement ceremony as a way to celebrate your hard work and achievements. If students wish to "walk" in the May commencement ceremony (meaning to physically take part in the ceremony), they should contact the College of Engineering's Graduate Programs Office at enggrad@bu.edu.

Graduate Student Resources

Graduate Programs Office (GPO)
This office provides resources and support to help you succeed as a student. If you are dealing with a complex issue, considering taking a leave of absence or just don't know your options, please visit the GPO.

The GPO is located in room 114 in the Engineering Research Building (ERB), 44 Cummington Mall. The office is open from 9:00am-5:00pm, Monday through Friday.
Phone: (617) 353-9760
Email: enggrad@bu.edu
Contact Information: https://www.bu.edu/eng/current-students/grad/contact-eng-graduate-programs/

Career Development Office
The Career Development Office (CDO) connects College of Engineering undergraduate and graduate students with employers for internships and full-time employment.

They work with students to help them identify career options and develop the resources they need to move forward along their career paths, whether that's with industry or with graduate studies. Their services range from one-on-one counseling to career fairs and professional development workshops. They encourage students to get to know us as soon as they arrive on campus, rely on them throughout their BU education and

continue using our services as alumni—as both job seekers and employers.

They help employers gain access to the top talent they seek. They welcome employer participation in our Fall and Spring Career Fairs and through resume books and on-campus interviews. They can also help you engage with our undergraduate and graduate engineering students through a range of design projects, including junior and senior design projects and the graduate-level practicum. Employers can also explore broader engagement opportunities through access to their Corporate Leaders Circle.

The Career Development Office is located in room 112 at 44 Cummington Mall. The office is open from 9:00am-5:00pm Monday through Friday.
Phone: 617-353-5731
Email: engcareers@bu.edu
http://www.bu.edu/eng/careers/

Student Association of Graduate Engineers (SAGE)
SAGE addresses the issues and concerns of graduate students in the College of Engineering, including hosting biweekly socials and other activities throughout the year. For more information, please visit www.bu.edu/sage. To contact SAGE directly, email *sage@bu.edu*.

EPIC
EPIC is a 15,000 square foot living classroom dedicated to teaching students the fundamentals of product development from invention through manufacture. The center is used by students in all of our engineering programs, from undergraduate through PhD. The center also serves as a "maker space" for the BU community. To use EPIC, merely take the on-line safety test and then visit the center with a drawing of your proposed project. The staff will help you with your design and then train you to use the appropriate tools in the shop. There is no charge to BU students unless unusual material costs arise.

Singh Imagineering Lab
The Binoy K. Singh Imagineering Laboratory gives students the resources to take on extracurricular engineering initiatives and think about new ways to address society's challenges. The Singh Imagineering Lab provides easy access to entrepreneurially minded College of Engineering students, and other BU students working with them, without limiting the topic or timeframe of use. Using the lab's tools and machinery—and guidance from faculty, graduate students and undergraduate peers—students are encouraged to pursue their ideas and designs. Where applicable, they can take projects to the prototype stage and enter them in design competitions—here are examples of some projects students have worked on in the Imagineering Lab. And where feasible, they will be encouraged to take on partners from BU's Questrom School of Business, work on plans to potentially commercialize their products and enter them in business competitions.

Eligible Students
- BU College of Engineering students
- BU students working with at least one BU College of Engineering student
- Note: Completion of a 30-minute safety course is required.

Many Master's classes also use the facility for class projects and related work.

Innovate@BU

Innovate@BU is a University-wide initiative to give all students and alumni opportunities to learn innovation and entrepreneurial skills, and use those skills to transform ideas into meaningful impact. Its mission is built on three pillars: build (programs, resources, workshops), study (curriculum development and enhancement), and research. The BUild Lab IDG Capital Student Innovation Center, the home of Innovate@BU, offers a co-working space for any BU community member working on a new venture (business, tech, arts and culture, social). The space includes a large open work-space, kitchen, private meeting rooms, and event space. Programs and workshops range from mentoring sessions, innovation skill-building workshops, pitch competitions, venture development workshops, and community collaboration events.

RASTIC

RASTIC is a robotics hub, providing an innovation space, a thriving community, and a forum for intimate tech talks, industry days, career fairs, research exchange, and networking, among companies, students, faculty, investors, and other industry stakeholders.

In RASTIC, students can design, build, and test all kinds of robots, from simple consumer 'bots to GPU-fueled, AI-powered cutting-edge marvels. Aerial and ground-based robots can navigate dynamic landscapes, assisted by Hollywood-grade motion-capture technology. Students can custom-mold silicon to create the flexible robots that are rapidly emerging in medicine, Industry 4.0, and beyond.

Whether applying knowledge gained in a course or pursuing a passion project outside the curriculum, RASTIC resources are open to all College of Engineering students, and staff are available to provide guidance and mentoring.

BUILD Lab

The IDG Capital Student Innovation Center is home to people, programs, and collaboration space that helps all BU students and recent alumni transform their ideas into something real and develop innovation skills, an entrepreneurial mindset, and a strong community along the way.
We welcome BU undergraduate and graduate students from all disciplines and offer a wide range of programs to support students who:

- have a start-up or project idea
- are seeking inspiration for an innovative idea
- are not working on a new idea, but are eager to build innovation skills that can be used to create impact in any career and in their communities

Seminar Series and Distinguished Lectures

The MechE department hosts a variety of seminars and invited lectures throughout the year. In addition, the Divisions and other departments also hold regular seminars that might be of interest to students. Students are encouraged to seek out the relevant seminar schedule and lists to take advantage of these events.

Directory

Mechanical Engineering Department

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