GRADUATE HANDBOOK

M.S. and Ph.D. Programs

In

Mechanical Engineering
and
Engineering Mechanics

Graduate Program
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1 Introduction and Program Overview

Masters (M.S.) and Doctoral (Ph.D.) degrees in Mechanical Engineering and in Engineering Mechanics are awarded by the Michigan State University Department of Mechanical Engineering. The M.S. programs can be completed in four semesters. Students with an M.S. degree in Mechanical Engineering, Engineering Mechanics, or a related area may be admitted directly into the Ph.D. program. Outstanding students with a B.S. degree (GPA $\geq$ 3.5) can apply for direct admission to the Ph.D. program. The Ph.D. Degree is a research-based degree with flexible course requirements.

Almost all of our Ph.D. graduate students receive financial aid, the majority in the form of research or teaching assistantships and fellowships. Graduate students appointed as Research Assistants (RAs) work on funded research projects sponsored by federal agencies and industrial entities. This work is typically the basis for the student's M.S. or Ph.D. thesis. In addition to RAs, some students have appointments as Teaching Assistants (TAs). Teaching Assistantships enable many of our students to obtain both laboratory and classroom teaching experience. Many of our graduate students start in their program as TAs and move to RA positions as they matriculate through the program.

Nearly all of our graduate students are involved in a research project. Most research activity in the department is organized around one of many research laboratories which support a variety of experimental, computational, and analytical activities. Research interests in Mechanical Engineering are very broad. Focal areas of research in the department include but are not limited to:

1. Fluid-Thermal Science and Engineering: Computational Fluid Dynamics, Experimental Fluid Mechanics, Combustion, Heat Transfer, Turbomachinery, Cryogenics, Energy Sciences and Engineering
2. Solid Mechanics, Design, and Manufacturing: Computational Mechanics, Experimental Mechanics, Modeling, Advanced Manufacturing, Optimization
3. Biomechanics: Microfluidics, Cardiovascular Mechanics, Bio-Heat Transfer, Tissue Mechanics
4. Dynamic Systems and Controls: Nonlinear Dynamics, Vibration, Control Systems, Acoustics, System Modeling

1.1 Welcome!

This handbook is intended to make your graduate student life easier. If you have questions, consult first this handbook, then come to the department office: if you find errors or believe additional topics should be discussed, please inform the ME Graduate Program Office.

1.2 Mechanical Engineering (ME) Graduate Program

The Department of ME offers graduate programs leading to the M.S. and Ph.D. degrees. There are four education and research groups within Mechanical Engineering:

- Fluid-Thermal Science and Engineering
- Solid Mechanics, Design, and Manufacturing
- Biomechanics
- Dynamic Systems and Controls

Within these groups are subgroups; within the subgroups are individual faculty members; each faculty member has several research projects spanning numerous subjects. Interdepartmental and cross-college collaborations are common. Intellectual diversity is promoted, fostered, encouraged, and applauded.

1.3 ME Students and Student Participation

All of our graduate students shall participate actively in the ME department. Participation consists of the following:

- Taking the required number of courses and maintaining a satisfactory performance level
- Carrying out research with your research advisor/mentor
- Assist instructors with course delivery (when given a Teaching Assistantship)
- Attending departmental seminars

There are other forms of participation, which are encouraged but are not mandatory:

- Membership on standing ME department committees
- Membership on college-level committees
- Membership on university-level
- Assisting with on-going ME department projects

1.3.1 Two Primary Responsibilities

Your first responsibility is to meet with your major professor (advisor) assigned to you by the department (i.e., by the graduate advisor). This temporary advisor will act as your advisor until you find a research project with a professor in ME who is willing to act as your advisor.
Your second and most important responsibility derives from the first: Preferably in your first semester but no later than the end of your second semester you should find your permanent advisor, who will mentor you through your M.S. degree or Ph.D. dissertation research at MSU. Your permanent advisor is your career mentor.

1.3.2 Maintain Good Standing

In order to be considered full-time, you must carry the following minimum number of credits per semester

- M.S. Level: 9 credits (without assistantship) or 6 credits (with assistantship)
- Ph.D. Level: 6 credits (without assistantship) or 3 credits (with assistantship)

Exceptions:

- M.S. or Ph.D. level in the semester in which the student graduates: the minimum number of credits is 1 credit per semester. International students on F-1 or J-1 must verify their visa compliance requirements with the Office for International Students and Scholars, OISS, prior to using this option.

- Ph.D. candidates who have passed the comprehensive exam: the minimum number of credits is 1 credit per semester.

Graduate Student Academic standards:

- Grades: You must earn a 2.0 or higher in each course in the approved program of study (which is assembled with your advisor).
- Cumulative Grade-Point Average (GPA): You must maintain a GPA > 3.00 in the courses in the approved program of study.
- Seminars: All ME graduate students shall participate in the departmental seminars.
- Probational Status: This occurs when GPA < 3.00. You are then prevented from carrying more than 7 credits per semester or to enroll in Independent Study courses until GPA > 3.00.

Retention/Dismissal from ME:

1. Academic Progress: Your academic progress is evaluated each year on March 15. Satisfactory progress, as assessed by your advisor, enables you to continue in the graduate program. Not making satisfactory progress will be cause for dismissal from the program.
2. Cumulative GPA: If your GPA < 3.00 after completing 16 credits in the approved program of study, you will be put on probation. If your GPA > 3.00 at the end of the following semester you may continue in the program. If not, you shall be dismissed.

1.3.3 Typical Student Progress through the ME Program

Although each student is different and graduate education is individualized, the pattern for graduate students is generally the following:

- M.S. Students (thesis): Typical M.S. students register for 9 credits per term; this ensures good progress toward the M.S. degree. Some credits will be for thesis research. In the first summer, M.S. research is begun in earnest and by the second Fall term the student is making progress on thesis research and in the classroom. In this term the student typically registers for only one course while fully engaging in research and writing (conference) papers. A similar pattern is seen for the second Spring term. The student may attend a professional meeting or two. By the end of the second summer (before the beginning of the third Fall term), the typical M.S. thesis student has completed the degree.
- Ph.D. Students: The first hurdle for a Ph.D. student is to find a research advisor. The second formal hurdle in the Ph.D. program is passing the qualifying exams. Ph.D. students must complete the qualifying exam requirements before the beginning of their fourth semester (not counting summer) to remain in the Ph.D. program. Ph.D. programs require a minimum of 39 credits of coursework beyond a B.S. in Engineering and a minimum of 18 credits beyond an M.S. in Engineering. The Ph.D. degree requires completion of research that provides a significant, original, contribution to the state-of-the-art in Mechanical Engineering or Engineering

Mechanics. The Ph.D. is normally completed in ~ 4 years after the M.S. degree. In some cases, the Ph.D. is completed sooner.

1.4 Additional Information

In addition to this handbook, the following web sites and addresses provide potentially useful information:

- Michigan State University Academic Programs
  http://www.reg.msu.edu/ucc/ucc.asp
- Michigan State University Description of Courses Catalog
  http://ntweb1.ais.msu.edu/j4100/scripts/CatalogSearch.asp
- Graduate School (http://www.msu.edu/user/gradschl/)
- Academic Programs (http://www.reg.msu.edu/ucc/ucc.asp)
- Vice President for Research (http://www.msu.edu/unit/vprgs/)
- College of Engineering (http://www.egr.msu.edu/egr/programs/doctoral/)
- Guidelines for Integrity in Research and Creative Activities
  (http://grad.msu.edu/staff/mentoreport.pdf)
- Commencement information: (http://www.commencement.msu.edu)
- Dissertation Formatting (http://grad.msu.edu/current/formatting.htm)
- Guide to Preparation of Master's Theses and Doctoral Dissertations
  (http://grad.msu.edu/format.htm)
- Theses/Dissertation Submission Packet forms
  (http://grad.msu.edu/current/packet.htm)
- Application for Graduation
  (https://www.reg.msu.edu/StuForms/GradApp/GradApp.asp)
- Quick Guide to Enrollment and Registration Booklet
  (http://www.reg.msu.edu/readPDF/Enrollment_QuickGuide.pdf)
- • Spartan Life: Student Handbook and Resource Guide,
  (http://www.vps.msu.edu/SpLife/default.pdf)
- Ombudsman's Office (http://www.msu.edu/unit/ombud/)

- Academic Freedom for Students at Michigan State University (http://www.vps.msu.edu/SPLife/acfree.htm)
- Council of Graduate Students = COGS (http://www.msu.edu/user/cogs)
- Office for International Students and Scholars (http://www.isp.msu.edu/oiss)

2 General Admission Information

In this chapter, general information for the M.S. and Ph.D. degree admission requirements are described. The specific information for each degree, including conditions and requirements for coursework in the degree programs, the structure of the M.S. and Ph.D. committees, and the organization and order of the qualifying exam, the comprehensive exam and the final dissertation defense are further described in the M.S. Chapter (Chapter 3) and the Ph.D. Chapter (Chapter 4).

2.1 Application Deadline

Deadlines: For full consideration for admission and financial aid:

- December 15 for Fall enrollment. Most common semester to start a graduate program. Most of our financial aid offers are made for Fall semester.
- September 15 for Spring enrollment. A smaller number of financial aid offers are available to Spring applicants.

2.2 Required Application Materials to be Uploaded

- **A complete on-line application form**, available on-line from MSU Graduate Admissions (http://www.msu.edu/user/gradschl/) along with an application fee of $50.00 US. See also http://grad.msu.edu/apply.htm. On-line applications are required unless impossible (non-existing internet access, etc.), in which case a mail-in application is accepted. The on-line application goes directly to the MSU Graduate School and is subsequently forwarded to the ME department.
- **Three letters of recommendation**, completed by instructors or supervisors familiar with the applicant's work. Letters of recommendation must be submitted on official stationery.
- **A written Statement of Purpose** explaining your reasons for seeking a graduate program degree. This statement of purpose is contained in the on-line application. The following statement must be included: "My intended area of specialization in the graduate program in Mechanical Engineering at Michigan State University will be in ___." The Mechanical Engineering Department offers research experiences in four broad areas: Fluid Thermal Science & Engineering, Biomechanics Engineering, Dynamic Systems & Controls, and Solid Mechanics, Design, & Manufacturing.
- **Digital copy of GRE & TOFEL Score.** Some applicants whose first language is not English may be eligible to receive a waiver for the TOFEL test, please check the MSU Grad School website at the link below and determine if you are eligible to apply (https://grad.msu.edu/procedure-request-waiver-english-language-competency)
- **Digital copy of transcript**

2.3 Required Application Materials to be Mailed-in

IN ADDITION TO THE ON-LINE SUBMISSIONS DESCRIBED ABOVE, YOU MUST SUBMIT THE FOLLOWING ITEMS

- One official copy of transcripts from all previous universities attended.
- An official copy of your Graduate Record Examination (GRE) scores.
- An official copy of TOEFL scores is required from all applicants from countries where the official language is not English.
- For students who are not seeking financial aid, a Statement of Financial Proof is required. This statement must originate from your source of support and must be a certified statement with an original signature. We cannot accept digital copies unless notarized, signed and sealed.
  http://www.grad.msu.edu/prospect/gradappintl.pdf

ALL MATERIALS MUST BE MAILED TO THE ADDRESS BELOW:

Department of Mechanical Engineering
Attn: ME Graduate Application Processing
Michigan State University
428 S. Shaw Lane
2555 Engineering Building
East Lansing, MI 48824-1226

2.4 Admission Requirements: M.S. Programs

2.4.1 Admission with regular status

Admission is granted subject to

- Domestic Students: Undergraduate GPA ≥ 3.0 or highly ranked in their B.S. class in Engineering or other related fields (e.g. Physics, Chemistry, etc.)
- International Students: Upper 10% of class. Demonstrated technical competency through an excellent academic record and Graduate Record Exam scores; demonstrated excellent English language through TOEFL and; if available, MSU SPEAK examination scores.

Regular admission to the M.S. program requires a 4-year bachelor's degree in Mechanical Engineering, Engineering Mechanics or a closely related field (e.g., Physics, Chemistry, etc.).

2.4.2 Admission with provisional status Collateral work is required from the student to conform their level of education with the departmental requirements. These requirements indicate the skills needed to satisfactorily complete ME graduate courses and conduct research. When collateral work is required the minimum acceptable grades received by the student will be stated in the admission letter. Provisional status is removed when these conditions of admission have been met. Approval of the Mechanical Engineering Department and the Engineering Dean's Office is required.

Proficiency requirement: Students whose undergraduate degree is not in Mechanical Engineering or Engineering Mechanics must, during their course of study, demonstrate proficiency in three (3) out of the five (5) undergraduate courses below:

- ME 332: Fluid Mechanics
- ME 451: Controls
- ME 410: Heat Transfer
- ME 461: Vibrations
- ME 423: Intermediate Mechanics of Deformable Solids

2.4.3 Transfer to ME from another MSU program

The transfer qualifications are similar to those for applicants in general. Proficiency requirements, support requirements, application deadlines also apply. The application process is slightly different because the student is already at MSU.

Get the "Application for Admission to Graduate Study" form, write "Transfer" on top, and include items outlined below (do not need the application fee):

1. MSU application (paper);
2. All official non-MSU transcripts;
3. GRE and TOEFL scores for international students;
4. The letters of recommendation with email address of recommender;
5. Statement of purpose;

Completed on-line "Graduate Admissions, Recruitment, and Financial Aid Information Sheet" at the web site: https://www.egr.msu.edu/apps/gts/apply/

Make an appointment with the ME Associate Chair of Graduate Studies and provide all of these items. Your application will then be evaluated by the ME Graduate Studies Committee and the Associate Chair of Graduate Studies.

Degree Requirements for Transfer Students:

At least 12 of the ME credits must include courses for which a grade has NOT been received prior to admission to ME.

For thesis and project option students, an ME advisor must be assigned, and an M.S. program must be filed BEFORE 12 credits of ME course materials are completed.

Proficiency requirement: Students whose undergraduate degree is not in Mechanical Engineering or Engineering Mechanics must, during their course of study, demonstrate proficiency in three (3) out of the five (5) undergraduate courses below:

- ME 332: Fluid Mechanics
- ME 451: Controls
- ME 410: Heat Transfer
- ME 461: Vibrations
- ME 423: Intermediate Mechanics of Deformable Solids

2.4.4 Applying for a second, joint, or dual master's degree from MSU

The dual degree request form is available from the Mechanical Engineering Graduate Program office. It requires approval from your current advisor along with the department advisor, chairperson and the Dean's office.

2.4.5 Transfer to ME from another university

Students who are transferring to the ME graduate program from another university must apply through the regular admission process. These students may be eligible to transfer up to 9 graduate credits (which have not been used for obtaining a degree) from a previous institution to ME at MSU. Please consult with the ME Associate Chair of Graduate Studies to discuss eligibility for credit transfer.

2.4.6 Credit Sharing Policy

The University Committee for Graduate Studies revised the credit sharing policy for M.S. program: if the program includes more than 30 credits, then you may share up to 30% of the total with another M.S. program.

2.5 Admission Requirements: Ph.D. Programs

2.5.1 Regular Status

Admission to a doctoral degree program with regular status may be granted by the department, subject to the availability of resources and to the approval of the dean, upon consideration of the likelihood that the applicant will be able to pursue a doctoral program successfully without taking collateral courses. As evidence of eligibility for admission, the student may offer any of the following:

a. The possession of an M.S. degree in engineering or a related field.
b. The completion of the equivalent of an M.S. degree program in the major field.
c. Evidence of ability and resolution to complete a doctoral program, as attested by the department upon review of the applicant's academic record, test scores, experience, reference statements, professional qualifications, proposed studies, and other relevant information.

Admission to the doctoral program without an M.S. degree, or the equivalent thereof, will require special consideration by the department and the dean.

2.5.2 Direct Ph.D. program

Applicants can enter directly into a Ph.D. program after earning their BS in Mechanical Engineering, Engineering Mechanics, or a closely related field prior to the term for which they are applying - this is called the Direct Admit Ph.D. program.

Admission to direct Ph.D. program is subject to:

- Domestic Students: Undergraduate GPA ≥ 3.0 or highly ranked in the BS Engineering or other related fields (e.g. Physics, Chemistry, etc.)
- International Students: Upper 10% of class. Demonstrated technical competency through an excellent academic record and Graduate Record Exam scores. Demonstrated excellent English language through TOEFL and, if available, MSU SPEAK examination scores.

Regular admission to the direct Ph.D. program requires a 4-year bachelor's degree in Mechanical Engineering, Engineering Mechanics or a closely related field (e.g., Physics, Chemistry, etc.).

2.5.3 Accelerated Ph.D. Program Entry

M.S. ME and M.S. EM students in the Department of Mechanical Engineering at Michigan State University may apply for provisional admission to the Ph.D. program before they complete their M.S. degree program. Provisional admission through this program requires completion of:

a. eighteen (18) credits of M.S. program coursework* at a GPA of 3.5 or above
b. passing the Mechanical Engineering Department Qualifying Exam requirements and
c. an application submitted to the Mechanical Engineering Graduate Program

To advance to regular Ph.D. student status, provisionally admitted students must complete either option 1 or option 2 below.

1. Complete all requirements of an M.S. Thesis program in the Department of Mechanical Engineering at Michigan State University.
2. i) Complete a minimum of 22 credits of coursework* at a GPA of 3.5 or above and ii) Provide evidence that the student has an externally reviewed paper** accepted that is based on work done in the Department of Mechanical Engineering at Michigan State University.

To remain a student making satisfactory progress towards completion of a degree, the student has one year from date of admission into the accelerated Ph.D. program to complete one of the two options above. While both options will allow regular admission into the Ph.D. program, option 1) will generate an M.S. degree from Michigan State University. When following option 2) students can obtain an M.S. degree by completion of the required 30 credit hours for a non-thesis M.S. degree and filing a request for the M.S. degree.

* M.S. degree program coursework includes courses at the 400 level or above with a maximum of 9 credits at the 400 level, and a maximum of nine (9) credits outside Mechanical Engineering. (Sect 3.1.1, ME Graduate Handbook) Coursework in this context does not include ME898, ME899, ME891, ME990 and ME999 (Project, Independent study and Research credits)

** An externally reviewed full paper in this context must be accepted for publication in
   i) an ISI abstracted journal or
   ii) a conference proceedings/technical transactions for a national or international engineering professional society (ISBN, ISSN numbered publications).

2.5.4 Provisional Status

Admission to a doctoral degree program with provisional status may be granted by the department, subject to the approval of the Department Chair to an applicant qualified for regular admission except that collateral courses are deemed necessary, or the following.

If collateral courses or other work are required, the minimum acceptable grades and the semesters by which those courses must be completed will be specified on the admission form. The provisional status will be changed to regular status when the conditions specified on the admission form have been met, as determined by the department and approved by the Department Chair.

2.5.5 Dual Degree

All dual major doctoral degrees must be approved by the Dean of the Graduate School. A request for the dual major degree must be submitted within one semester following its development and within the first two years of the student's enrollment at Michigan State University. A copy of the guidance committee report must be attached. See Academic Programs (https://www.reg.msu.edu/academicprograms/Text.aspx?Section=111#s407) for details.

2.6 Department admission selection process

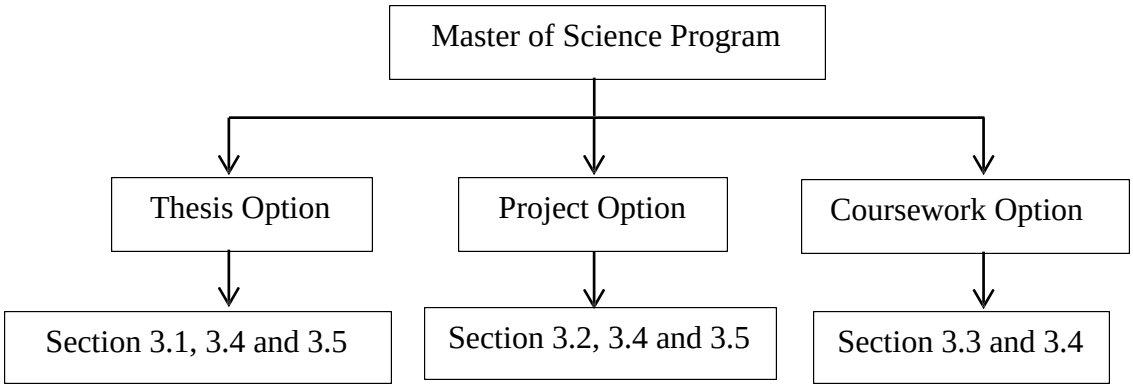
Step 1: Review of applicant file. Answer the question: Is the applicant a viable candidate for graduate study at MSU?

Step 2: Make offer of admission: Examine availability of TAs, RAs and fellowships that will support the applicant at the time of admission or evaluate whether the student has resources to be self-funded.

NOTE: Not all qualified students can gain admission because of Step 2. We cannot always offer support to all deserving applicants.

3 Master of Science (M.S.) Program

There are three categories of M.S. program offered by Department of Mechanical Engineering at MSU: Thesis Option, Project Option and Coursework Option. A quick index for the requirements of each category is as follows:



3.1 Thesis Option Degree Requirements

The thesis option M.S. degree consists of coursework, research, thesis, and the final thesis defense. The thesis option M.S. degree is a research intensive degree and the expectation is that the results of this research will lead to publishing in the open literature. The Thesis Advisor has responsibility for ensuring that this standard is met.

3.1.1 Thesis M.S. Program Component The Engineering Mechanics or Mechanical Engineering M.S. thesis option includes the following components:

1. Select Faculty Advisor and form thesis committee
2. Credit requirements
3. Research and an M.S. thesis
4. Oral defense and certifying examination of the thesis

3.1.2 Credit Requirements

The Thesis M.S. Degree from the Department of Mechanical Engineering at Michigan State University requires a minimum of 30 credits, which includes:

- A minimum of 6 and a maximum of 8 thesis credits (ME 899)
- At least 22-24 credits of coursework which
    - have to be at the 400 level or above with a maximum of 9 credits at the 400 level
    - a maximum of four (4) independent study credits (total from ME 490 and\or ME 990)
    - and a maximum of nine (9) credits at 400 level or above outside Mechanical Engineering

3.1.3 Breadth Requirements:

The M.S. breadth requirements provide breadth at the graduate level in the student's coursework program across a majority of the technical disciplines in the major. Area requirement courses increase the technical breadth of M.S. students by requiring all students to complete a limited number of credits outside their primary technical discipline area. The area courses required for each degree program are distributed across Fall and Spring semesters to allow students to complete the area requirement within 1 year of enrollment

For an M.S. in Mechanical Engineering, a student must complete at least one graduate-level course from each of the following Graduate Education and Research Groups:

1. Fluid-Thermal Science and Engineering
2. Dynamic Systems and Controls
3. Solid Mechanics, Design, & Manufacturing and Biomechanics

For an M.S. in Engineering Mechanics, a student must complete the courses in all four of the following subjects:

1. ME 820 (Continuum Mechanics);
2. ME 821 (Linear Elasticity);
3. At least one of ME 861 (Advanced Dynamics) or ME 825 (Experimental Mechanics);
4. ME 800 or at least one course (approved by the student's academic advisor) at the 400 level or above in mathematics or statistics.

3.1.4 Seminar Requirement:

All first-year graduate students are required to register in ME 892 during the Fall or Spring semester. However, this one (1) credit course does not count towards the 30 credit minimum requirement.

3.1.5 M.S. Program Form:

Before the end of the first semester in the graduate program the student must file a M.S. Degree Program form approved by the Department and College. These forms are available on the Department website and from the Mechanical Engineering program Office

3.1.6 Thesis Requirements

Faculty Advisor (Thesis Advisor):

Before the end of the second semester of study the student must identify a faculty advisor to serve as research supervisor/thesis advisor and notify the Mechanical Engineering Graduate Program Office.

M.S. Thesis:

The student's M.S. Thesis must be submitted to the graduate school according to Michigan State University regulations upon approval of the student's major professor.

Thesis Proposal Requirement

Early in the program the student is required to submit to the faculty advisor a short written

proposal on the thesis research.

Thesis Committee
The thesis committee consists of at least three Michigan State University regular faculty members including the committee chairperson. At least one member must have a 50% or more appointment with the ME Department at MSU. Outside members may be from another department within the College of Engineering or from a department outside the College. If the student wishes to have external personnel who are not affiliated with MSU to serve on the thesis committee, please check follow the procedures on the MSU Graduate School (https://grad.msu.edu/non-regular-faculty-committees) and submit the necessary forms. The faculty advisor (thesis) and the student will nominate the two other faculty members of the thesis committee to the Department Chairperson or a designated individual, for approval.

Oral Defense
Michigan State University requires a Certifying Examination of all M.S. thesis program students. If the thesis defense is not successful, the candidate will have one additional opportunity to defend the thesis. The timing and specific requirements to be met before the second attempt will be specified in writing by the committee.

3.2 Project Option Degree Requirements

3.2.1 Project M.S. Program Component The Engineering Mechanics or Mechanical Engineering M.S. project option includes the following components :

1. Select Faculty Advisor and form project committee
2. Credit requirements
3. An M.S. project and oral presentation of the M.S. project

3.2.2 Credit Requirements:

The Project M.S. Degree from the Department of Mechanical Engineering at Michigan State University requires a minimum of 30 credits which includes

- 3-6 project credits from ME 898 (M.S. Project Research).
- The remaining coursework credits can consist of
    - a maximum of nine (9) credits at the 400 level,
    - a maximum of four (4) independent study credits (total from ME 490 and\or ME 990),
    - and a maximum of nine (9) credits at 400 level or above outside Mechanical Engineering.

3.2.3 Breadth Requirements:

The M.S. breadth requirements provide breadth at the graduate level in the student's coursework program across a majority of the technical disciplines in the major. Area requirement courses increase the technical breadth of M.S. students by requiring all students to complete a limited number of credits outside their primary technical discipline area. The area courses required for each degree program are distributed across Fall and Spring semesters to allow students to complete the area requirement within 1 year of enrollment.

For an M.S. in Mechanical Engineering, a student must complete at least one graduate-level course from each of the following Graduate Education and Research Groups:

1. Fluid-Thermal Science and Engineering
2. Dynamic Systems and Controls
3. Solid Mechanics, Design, & Manufacturing and Biomechanics

For an M.S. in Engineering Mechanics, a student must complete the courses in all four of the following subjects:

1. ME 820 (Continuum Mechanics);
2. ME 821 (Linear Elasticity);
3. At least one of ME 861 (Advanced Dynamics) or ME 825 (Experimental Mechanics);
4. ME 800 or at least one course (approved by the student's academic advisor) at the 400 level or above in mathematics or statistics.

3.2.4 Seminar Requirement:

All first-year graduate students are required to register in ME 892 during the Fall or Spring semester. However, this one (1) credit course does not count towards the 30 credit minimum requirement.

3.2.5 M.S. Program Form:

Before the end of the first semester in the graduate program the student must file a M.S. Degree Program form approved by the Department and College. These forms are available on the Department website and from the Mechanical Engineering program Office

3.2.6 Project Requirement:

The student's M.S. Project Report must be submitted to the graduate school according to Michigan State University regulations upon approval of the student's major professor.

Faculty Advisor (Project Advisor)

Before the end of the second semester of study the student must identify a major professor to serve as a research supervisor/advisor and notify the Mechanical Engineering Graduate Program Office.

Project Proposal Requirement

Early in the program the student is required to submit to the advisor and Department Chairperson a short written proposal on the project research.

Project Committee
The project committee consists of the faculty advisor and two other faculty members.

Oral Presentation
Michigan State University requires a Certifying Examination of all M.S. project program students. The students are required to give a presentation of the project to the faculty advisor and the project committee. The timing and specific requirements to be met for a successful project presentation will be specified in writing by the committee.

3.3 Coursework Option Degree Requirements

The coursework only M.S. degree consists of 30 credits of coursework only.

3.3.1 Coursework M.S. Program Component

The coursework only M.S. program in either Engineering Mechanics or Mechanical Engineering has two components:

1. Graduate advisor is the associate chair for graduate study
2. Credit requirements

3.3.2 Credit Requirements:

The coursework only M.S. Degree from the Department of Mechanical Engineering at Michigan State University requires a minimum of 30 credits including:

- a maximum of 9 credits at the 400 level,
- a minimum of 21 credits at the 800 level or above,
- a maximum of four (4) independent credits (total from ME 490 and\or ME 990),
- and a maximum of nine (9) credits outside Mechanical Engineering.

3.3.3 Breadth Requirements:

The M.S. breadth requirements provide breadth at the graduate level in the student's coursework program across a majority of the technical disciplines in the major. Area requirement courses increase the technical breadth of M.S. students by requiring all students to complete a limited number of credits outside their primary technical discipline area. The area courses required for each degree program are distributed across Fall and Spring semesters to allow students to complete the area requirement within 1 year of enrollment.

For an M.S. in Mechanical Engineering, a student must complete at least one graduate-level course from each of the following Graduate Education and Research Groups:

1. Fluid-Thermal Science and Engineering
2. Dynamic Systems and Controls
3. Solid Mechanics, Design, & Manufacturing and Biomechanics

For an M.S. in Engineering Mechanics, a student must complete the courses in all four following subject:

1. ME 820 (Continuum Mechanics)
2. ME 821 (Linear Elasticity)

3. At least one of ME 861 (Advanced Dynamics) or ME 825 (Experimental Mechanics)
4. ME 800 or at least one course (approved by the student's academic advisor) at the 400 level or above in mathematics or statistics

3.3.4 Seminar Requirement:

All first-year graduate students are required to register in ME 892 during the Fall or Spring semester. However, this one (1) credit course does not count towards the 30 credit minimum course requirement.

3.3.5 M.S. Program Form:

Before the end of the first semester in the graduate program the student must file a M.S. Degree Program form approved by the Department and College. These forms are available on the Department website and from the Mechanical Engineering program Office

3.3.6 Program Advisor: During the first semester in the graduate program the student must identify an academic advisor and file a M.S. degree program plan. By default, the academic advisor is the Associate Chair of Graduate Studies in ME.

3.4 M.S. Program Coursework Performance Requirements

To successfully execute and complete the M.S. program, all students are required to meet the coursework performance requirements and follow the rules and regulations.

3.4.1 Coursework Performance Requirements

- Grade: Student must earn a 2.0 or higher in each course in the approved M.S. program
- Cumulative Grade-Point Average (GPA): Students must maintain a GPA>3.0 in the courses in the approved M.S. program
- Probation Status: Students who have a GPA<3.0 will be prevented from carrying more than seven (7) credits per semester or to enroll in Independent Study courses until GPA>3.0
- Retention/Dismissal from ME:
  - Academic Progress: The student's academic progress is evaluated each year on March 15. Satisfactory progress, as assessed by the faculty advisor, will allow the student to continue enrolling in the program. Not making satisfactory progress will cause the dismissal from the program.
  - Cumulative GPA: If the GPA < 3.00 after completing 16 credits in the approved program of study, the student will be put on probation. If at the end of the following semester GPA > 3.00, the student may continue. If not, the student shall be dismissed.

3.5 Execution of M.S. Program

3.5.1 Selection of Faculty Advisor Initiation and successful completion of independent research requires early and continued advice and oversight by a faculty advisor. Faculty advisors must be members of the Mechanical
Engineering regular faculty. For students in the M.S. program, the faculty advisor is the thesis/project/academic advisor. Advisor selection is a joint decision by every graduate student and member of the faculty. Normally students meet and discuss program objectives with all the faculty members in their area of technical interest. Based on that interaction, a faculty member agrees to advise each student. The student and faculty member propose and form a research committee.

3.5.2 Timeline for Selection of a Faculty Advisor

All students in the graduate program must have a faculty advisor. Students in the M.S. program must select an advisor prior to the completion of their first semester.

3.5.3 Faculty Advisor Selection Process Students who are admitted to the graduate program with a research assistantship that is provided by a particular faculty member will have that faculty member as their thesis/project/academic advisor. Other students may be admitted with a graduate assistantship or fellowship that is from general funds or third-party funds and not explicitly tied to a particular faculty member. In those cases, the selection of an advisor is based on mutual research interests. When more than one faculty member has expressed interest in serving as academic advisor to a student who was admitted with an assistantship or fellowship from general funds or third parties, the student should select an advisor within the time frame described in the previous section.

3.5.4 Roles and Responsibilities of the Faculty Advisor

The role of the advisor includes the following:

1. Ensuring that graduate students receive information about requirements and policies of the graduate program.
2. Advising graduate students on developing a program plan, including appropriate coursework, research or project activity, and on available resources.
3. Advising graduate students on the selection of a thesis or project topic and on the formation of a thesis/project committee.
4. Providing training and oversight in creative activities, research rigor, theoretical and technical aspects of the thesis or dissertation research, and in professional integrity.
5. Encouraging graduate students to stay abreast of the literature and cutting-edge ideas in the field.

6. Helping graduate students to develop professional skills in writing reports, papers, and grant proposals, making professional presentations, establishing professional networks, interviewing, and evaluating manuscripts and papers.
7. Providing regular feedback on the progress of graduate students toward degree completion, including feedback on research or creative activities, coursework, and teaching, and constructive criticism if the progress does not meet expectations.
8. Helping graduate students develop into successful professionals and colleagues, including encouraging students to participate and disseminate results of research or creative activities in the appropriate scholarly or public forums.
9. Facilitating career development, including advising graduate students on appropriate job and career options, as well as on the preparation of application materials for appropriate fellowship, scholarship, and other relevant opportunities.
10. Writing letters of reference for appropriate fellowship, scholarship, award, and job opportunities.
11. Providing for supervision and advising of graduate students when the faculty advisor is on leave or extended absence.

3.5.5 Roles and responsibilities of the student

The student has responsibilities in the advisor/student relationship. These include the following:

1. Learning and adhering to university and academic unit rules, procedures, and policies applicable to graduate study and research or creative activities, including those outlined in the publications Academic Programs, Graduate Student Rights and Responsibilities, and Academic Freedom for Students at MSU.
2. Meeting university and academic unit requirements for degree completion.
3. Forming a guidance committee that meets university requirements as well as requirements that are outlined in the Graduate Handbook of the academic unit.
4. Following disciplinary and scholarly codes of ethics in coursework, thesis or project research, and in creative activities.
5. Practicing uncompromising honesty and integrity according to university and federal guidelines in collecting and maintaining data.
6. Seeking regulatory approval for research in the early stages of thesis or project work where applicable.
7. Keeping the faculty advisor and the thesis/project committee apprised on a regular basis of the progress toward completion of the thesis/project and coursework.

3.5.6 Change of Faculty Advisors

Once a faculty advisor is selected, it is unusual to change advisors. However, if a situation arises where a change seems imperative, the student should consult with the Associate Chair for Graduate Studies who will facilitate changes of faculty advisor. If the Associate Chair of Graduate Studies is the faculty advisor, please consult with the ME Department Chair.

3.5.7 Final Defense/Presentation Examination Regulations and Format

A final defense/presentation examination is only required for M.S. students doing the thesis project option.

The graduate student will present the results of the thesis/project in a seminar open to the community. The student should arrange a suitable examination date after consulting with the thesis advisor and members of the thesis/project committee. The student should also arrange for a suitable room in which to hold the seminar by consulting with the office staff of the Mechanical Engineering Department. This should be done in communication with the Department graduate secretary, who will arrange for an announcement of the upcoming defense.

For the M.S. degree candidate, the following regulations apply:

1. The final oral examination must be scheduled for a date not earlier than two weeks after the thesis/project and abstract have been submitted to the Chairperson of the thesis/project committee, other thesis/project committee members, and any appointed examiner.
2. The student must be registered during the semester in which the final oral examination is taken.
3. The thesis/project and the student's performance on the final oral examinations must be approved by a positive vote of a majority of the voting examiners and with not more than one dissenting vote from among the Michigan State University regular faculty members of the thesis/project committee.

For the M.S. degree candidate, the following format is typical. The thesis/project committee members may or may not choose to meet before the exam to discuss the procedure. The candidate presents the results in seminar fashion and responds to questions and comments from those in attendance. After the general audience has had opportunity to raise questions and comments, they are excused from the room and the defense continues with only the examining committee. At the end of the examination, the student is asked to step out of the room, and the examining committee members each indicate in writing a pass or fail grade. The student is then asked to enter the room to receive the result of the final examination. A summary report of the examination result is submitted to the Dean of Engineering and the Chairperson of the Department.

3.5.8 Academic Performance Policies

Each student's academic progress and professional potential are evaluated by submitting a graduate student annual report due on January 31st every year (https://www.egr.msu.edu/academics/graduate/graduate-student-annual-reporting-requirements).

A student who in the judgment of the faculty is making satisfactory academic progress and has professional potential may continue to enroll in the M.S. degree program, provided the grade point average is within the acceptable range as previously described. A student who in the

judgment of the faculty is not making satisfactory academic progress or lacks professional potential will be dismissed from the program.

4 Doctor of Philosophy (Ph.D.) Program

4.1 Degree Requirements

The Department of Mechanical Engineering offers two (2) Ph.D. programs: Mechanical Engineering and Engineering Mechanics. The recipients for both degrees must satisfy university, college,and department requirements. The requirements for the two degrees differ primarily in the coursework plan and qualifying examinations. The requirements of the Ph.D. Program and their deadlines are given below. The details of these requirements along with strategies to meet them are discussed in the "Graduate Degree Components" section of this handbook.

4.1.1 Doctoral Program Component

The components of the doctoral programs in Engineering Mechanics and Mechanical Engineering are very similar. In each case, the student first finds an advisor and forms a committee. Subsequently, the components of the doctoral degree programs consist of a qualifying exam, a comprehensive exam, prescribed coursework, research, the dissertation, and a final oral defense and examination, each of which is discussed in detail in this section. Differences in the degree components for Engineering Mechanics and Mechanical Engineering will be specified as they arise below. Key components in a doctoral program are listed as follows:

1. Select Faculty Advisor and form Dissertation Committee
2. Credit requirements
3. Ph.D. Qualifying Exam
4. Ph.D. Comprehensive Exam
5. Ph.D. research and dissertation
6. Oral defense of dissertation

4.1.2 Credit Requirements

The Ph.D. program requires 39 credits of coursework beyond the B.S. degree and 18 credits of coursework beyond the M.S. Coursework, not including ME898, ME899, ME990 and ME999 (Project, Independent study and Research credits). Additionally, a minimum of 24 research credits (ME 999) are required for all students.

ME 999 Credits: 24 credits are required for graduation; students can enroll for a maximum of 36. Requests for overrides to exceed the maximum of 36 credits of 999 must be directed to the Office of the Registrar. To do so, access the "Request for RNR Override" at the Registrar's Online Forms Menu at: https://www.reg.msu.edu/Forms/FormsMenu.aspx. Select the RN override and fill in the requested information. Should the total number of credits go above 45, the RO will confer with the Graduate School before considering the request for an override.

All first-year Ph.D. students are required to register in ME 892 during the Fall or Spring semester if they have not taken this course previously. Students are not allowed to transfer credits from another institution for equivalency with ME 892. This one (1) credit course does not count towards the minimum coursework credit requirement.

Specifically, for students already with an M.S. degree, the 18 coursework credits include:

- a maximum of nine (9) post M.S. credits can be from the 400 level.

- a maximum of nine (9) credits that are at 400 level or above can be from outside Mechanical Engineering

For students with only a B.S. degree, the 39 coursework credits must satisfy the following:

- the breadth requirement (see Section 4.1.3)
- a maximum of nine (9) credits at the 400 level within Mechanical Engineering,
- and a maximum of nine (9) credits that are at the 400 level or above from outside Mechanical Engineering

4.1.3 Coursework Breadth Requirements

The Ph.D. breadth requirements provide breadth at the graduate level in the student's coursework program across a majority of the technical disciplines in the major. Area requirement courses increase the technical breadth of Ph.D. students by requiring all students to complete a limited number of credits outside their primary technical discipline area. The area courses required for each degree program are distributed across Fall and Spring semesters to allow students to complete the area requirement within 1 year of enrollment.

For a Ph.D. in Mechanical Engineering, a student must complete at least one graduate-level course from each of the following Graduate Education and Research Groups:

1. Fluid-Thermal Science and Engineering
2. Dynamic Systems and Controls
3. Solid Mechanics, Design, & Manufacturing and Biomechanics

For the Ph.D. in Engineering Mechanics, a student must complete courses in all four of the following subject areas:

1. ME 820 (Continuum Mechanics);
2. ME 821 (Linear Elasticity);
3. At least one of ME 861 (Advanced Dynamics) or ME 825 (Experimental Mechanics);
4. ME 800 or at least one course (approved by the student's academic advisor) at the 400 level or above in mathematics or statistics.

4.1.4 GPA for Graduation

The Engineering College requires a minimum GPA of 3.00 for courses on the approved doctoral degree program. MSU also requires a minimum total GPA of 3.00.

4.1.5 Ph.D. Qualifying Examinations

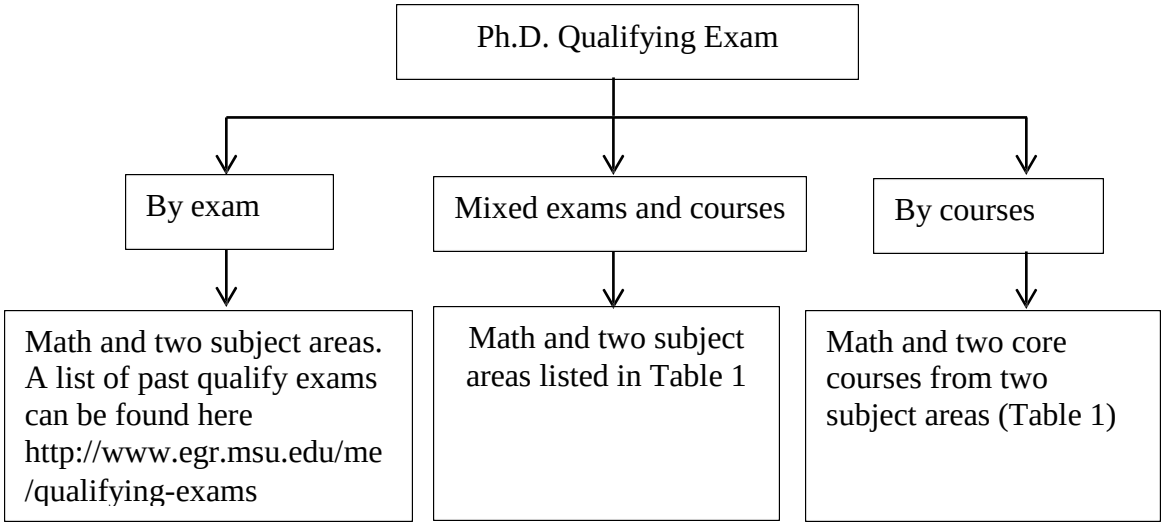
The Qualifying Examination tests the breadth of a graduate student's knowledge across the technical disciplines in the Department of Mechanical Engineering. The examination covers course material required for the B.S. degree in mechanical engineering at Michigan State University. Each part of the examination is written at the level of mastery of that material required for all mechanical engineering graduate students.

The qualifying exam is administrated the week prior to the beginning of the Fall and Spring semester.

All Ph.D. students are required to sit for the written qualify exam, which covers Mathematics and TWO other subject areas at the advanced undergraduate level. Subject areas are listed in Table 1. Students sitting for the qualifying exam will only have TWO attempts for each subject area.

Students (B.S., M.S., and Ph.D.) taking core courses will be excused from taking the qualifying exam in a specific subject area if they earn a grade of 3.5 OR BETTER in an associated core graduate course listed in Table 1. Only the first FOUR core graduate courses attempted with a grade of 3.5 or better will be considered for being excused from a qualifying exam subject area.

Therefore, there are three paths available for students to meet the qualifying exam requirements.



Students must pass all qualifying exam requirements before the beginning of the FOURTH semester (not counting summer) after starting the Ph.D. program.

Table 1 Mechanical Engineering Core Courses and Subject Areas

Subject Areas	Graduate Core Courses
Mathematics	**ME800F Engineering Analysis**
Solids	**ME820F Continuum Mechanics** **or** **ME821S Linear Elasticity**
Dynamics	**ME860F Theory of Vibrations** **or** **ME861S Advanced Dynamics**
Fluids	**ME830F Fluid Mechanics I**
Controls	**ME851F Linear Systems and Control** **or** **ME859S Nonlinear Systems and Control**
Thermal	**ME810S Advanced Classical Thermodynamics** **or** **ME812F Conduction Heat Transfer**

4.1.6 Faculty Advisor (Dissertation) and Dissertation Committee

A Faculty advisor must be selected and a dissertation committee formed within 1 year of beginning Ph.D. study at Michigan State University. The dissertation committee shall be formed no later than the second semester of doctoral study, or within two semesters beyond the master's degree or its equivalent. The formation of a Ph.D. dissertation committee can be found in Section 4.2.1. Within one semester after the committee has met, the student must complete the online forms for committee selection, complete a grad plan that lists all degree requirements (https://gradplan.msu.edu/) and submit the plan online for approval.

4.1.7 Doctoral Program of Study

A Ph.D. Program form, approved online by each student's dissertation committee, must be submitted to the Mechanical Engineering Graduate Program office and the College of Engineering Research and Graduate Program Office. An approved program must be filed within 1 year of beginning Ph.D. study at Michigan State University.

The dissertation committee shall meet collectively with the student to develop the Doctoral Program of Study. This program shall be submitted for approval to the ME department (Associate Chair) and to the Dean. Registration will not be permitted for the second semester until this requirement has been met. Courses (in addition to those numbered ME 999) will be agreed to by the dissertation committee to insure that the student will have a comprehensive knowledge of a major field and related subjects. The courses that a student is required to complete will depend upon prior academic background in relation to the selected graduate program. Any changes in the program must be approved by dissertation committee and shall likewise be submitted for approval to the department (Associate Chair, Department Chair) and to the Dean. The program is filed online at https://grad.msu.edu/gradplan

4.1.8 Ph.D. Research

Successful Ph.D. research must be conducted that is a significant, original contribution to the state-of-the-art in Mechanical Engineering so as to advance the scholar's chosen field of study. Publications in archival journals with broad dissemination are expected. The Ph.D. faculty advisor and the dissertation Committee are charged with ensuring that this standard is met. Discussion of this issue is to be one of the aspects of the Comprehensive Exam.
The research must be documented in a Ph.D. dissertation approved by the student's Ph.D. faculty advisor. It is typical that a Ph.D. student will produce at least three archival publications by the completion of the Ph.D. degree.

4.1.9 Comprehensive Exam

The Comprehensive Examination tests the depth of a graduate student's knowledge in the student's individual technical discipline within the Department of Mechanical Engineering and the student's technical preparation to conduct Ph.D. level research. The examination includes course material specified on the student's Doctoral Program of Study as well as other areas the student's Faculty advisor and Dissertation Committee may specify. Each part of the examination is conducted at the level of mastery required for Ph.D. graduate students in their technical discipline.

The comprehensive exam is also an assessment of the student's ability to communicate ideas in a clear, coherent and organized manner. For the written part of the comprehensive examination, each student shall present a well-organized written document outlining in detail, relative to the student's progress, the research pursued to date and the research envisioned. In addition, each student shall present to the committee a list of works published to date and a list of the planned publications. The list shall include oral presentations, conference proceedings, and archival journal publications.

Upon passing the Ph.D. Comprehensive Examination, a Ph.D. student achieves the rank of Ph.D. Candidate.

4.1.10 Ph.D. Dissertation Defense

The Ph.D. Dissertation Defense tests the Ph.D. Candidate's ability to present and defend the significance and originality of the Ph.D. Candidate's research results. Each Ph.D. student must successfully pass an oral Dissertation Defense to complete the requirements for the Ph.D. degree. To schedule this examination, the Notice of Final Oral Exam forms must be completed and turned in to the Mechanical Engineering Graduate Program Office at least two (2) weeks prior to the final oral examination. The Graduate Program Office must be notified and a copy of the abstract must be provided.

4.1.11 Dissertation Copies

Ph.D. dissertation preparation and submission shall be made in accordance with the requirements set forth by the Graduate School. A hard bound copy of the Ph.D. dissertation shall be provided to the faculty advisor.

4.1.12 Doctoral Degree Time Limits

Michigan State University requires passing the Comprehensive Examination within five years of the student's first enrollment as a Ph.D. student. The Comprehensive Examination may be

repeated no more than twice. The Comprehensive Examination must be successfully completed no later than six months prior to the final oral examination in defense of the thesis. All remaining requirements for the degree must be completed within eight years of the student's first enrollment as a Ph.D. student. Applications for extension of these time limits may be submitted by a Ph.D. student to the ME Graduate Program for approval by the Dean of Engineering and the Dean of the Graduate School.

4.1.13 Ph.D. Residency Status

All Ph.D, recipients must satisfy the university one-year residency requirement. A year of residence will be made up of two consecutive semesters, involving the completion of credits at the level of full-time status of graduate work each semester. The residency requirement follows from university guidelines:
https://reg.msu.edu/AcademicPrograms/Text.aspx?Section=111#s393

4.2 Execution of Ph.D. Program

4.2.1 Formation of the Ph.D. Dissertation Committee

Ph.D. students must form a dissertation committee no later than the end of their second semester of attendance. The dissertation committee will consist of at least four Michigan State University regular faculty members, including the committee chairperson. At least three members of the dissertation committee shall be from the Mechanical Engineering Department and at least one member shall be from a different academic department at Michigan State University. The ME Department Ph.D. Committees must have at least one member with 50% or more appointment in the Department. The outside member may be from another department within the College of Engineering or from a department outside the College. If you wish to have external personnel who are not affiliated with MSU on the thesis committee, please follow the procedures from MSU Graduate School (https://grad.msu.edu/non-regular-faculty-committees) and submit the necessary forms. You must complete the necessary forms (see the Graduate Program Office) and have them approved and signed by your faculty advisor and your committee. These forms must be on file by the 2nd semester. Further registration will not be permitted until an approved program is filed.

The responsibilities of the dissertation committee include the following.

1. Advising graduate students on coursework, research, or creative activities
2. Providing at least feedback and guidance concerning progress toward the degree
3. Administering the comprehensive exams and the final oral defense
4. Reviewing the dissertation

4.2.2 Roles and responsibilities of the student

The student has responsibilities in the advisor/student relationship. These include the following:

1. Learning and adhering to university and academic unit rules, procedures, and policies applicable to graduate study and research or creative activities, including those outlined in the publications Academic Programs, Graduate Student Rights and Responsibilities, and Academic Freedom for Students at MSU
2. Meeting university and academic unit requirements for degree completion

3. Forming a dissertation committee that meets university requirements as well as requirements that are outlined in the Graduate Handbook of the academic unit
4. Following disciplinary and scholarly codes of ethics in coursework, thesis or dissertation research, and in creative activities
5. Practicing uncompromising honesty and integrity according to university and federal guidelines in collecting and maintaining data
6. Seeking regulatory approval for research in the early stages of dissertation work where applicable
7. Keeping the faculty advisor and dissertation committee apprised on a regular basis of the progress toward completion of the dissertation

4.2.3 Change of advisors

Once a dissertation advisor is selected, it is unusual to change advisors. However, if a situation arises where a change seems imperative, the student should consult with the Associate Chair for Graduate Studies who will facilitate a change of the faculty advisor. If the advisor is the Associate Chair for Graduate Studies, please consult with ME Department Chair.

4.2.4 Final Defense Examination regulations and format

The graduate student will present the results of the dissertation in a seminar open to the community. The student should arrange a suitable examination date after consulting with the faculty advisor and members of the dissertation committee. The student should also arrange for a suitable room in which to hold the seminar by consulting with the office staff of the Mechanical Engineering Department. This should be done in communication with the department graduate secretary, who will arrange for announcement of the upcoming defense.

For doctoral candidate, the following regulations apply:

1. The final oral examination must be scheduled for a date not earlier than two weeks after the dissertation and abstract have been submitted to the chairperson of the dissertation committee (Faculty Advisor) and other dissertation committee members.
2. The student must be registered during the semester in which the final oral examination is taken.
3. The dissertation and the student's performance on the final oral examinations must be approved by a positive vote of at least three-fourths of the voting examiners and with not more than one dissenting vote from among the Michigan State University regular faculty members of the dissertation committee.

For the doctoral candidate, the following format is typical. The dissertation committee members may or may not choose to meet before the exam to discuss the procedure. The candidate presents the results in seminar fashion and responds to questions and comments from those in attendance. After the general audience has had an opportunity to raise questions and comments, they are excused from the room and the defense continues with only the dissertation committee. At the end of the examination, the student is asked to step out of the room, and the dissertation committee members each indicate in writing a pass or fail grade. The student is then asked to enter the room to receive the result of the final examination. A summary report of the

examination result is submitted to the Dean of Engineering and the Chair of the Department.

Doctor of Philosophy Defense Examining Committee:
The doctoral final oral examination committee consists of the student's dissertation committee. According to University policy, at the discretion of the Dean of Engineering, the dissertation committee may be augmented by one appointed faculty member (aka, the appointed examiner). Other interested faculty members may attend the examination without vote.