

# Mechanical Engineering Graduate Student Handbook



**2023-2024**  
Academic School Year

**Brigham Young University**

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## Introduction

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This student handbook is a summary of policies and procedures that MS and PhD candidates are expected to know and follow while pursuing a graduate degree in the Department of Mechanical Engineering at Brigham Young University.

However, it does not cover every conceivable situation. Students are encouraged to be proactive and discuss any potential problems, concerns, or special circumstances with their Graduate Committee Chair (Advisor), the Graduate Program Manager, or the Graduate Coordinator.

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## Learning Outcomes for Master's Program

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Graduates from the MS Program in Mechanical Engineering will develop themselves both spiritually and intellectually and demonstrate:

1. Subject Mastery: Develop an understanding of a sub-discipline of mechanical engineering sufficient to practice as an influential mechanical engineer.
2. Independent Research: The ability to perform and assess research which creates new knowledge or advances the state-of-the-art.
3. Communication: Persuasive technical writing and oral presentation skills.
4. Perspective: An understanding of how their work technically and ethically affects their sponsor, sub-discipline, and society.
5. Impact: The desire, faith, and persistence to seek out and solve meaningful technical and societal challenges.

## **Learning Outcomes for Doctoral Program**

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Graduates from the PhD Program in Mechanical Engineering will develop themselves both spiritually and intellectually and demonstrate:

1. **Subject Mastery:** In depth understanding of a sub-discipline of mechanical engineering, combined with understanding of related subjects sufficient to practice as an influential mechanical engineer.
2. **Independent Learning:** The ability to independently study and learn new information that increases depth and breadth of technical knowledge.
3. **Independent Research:** The ability to plan, perform and assess research which creates new knowledge or advances the state-of-the art.
4. **Communication:** Persuasive technical writing and oral presentation skills evidenced by presentation and publication in peer-reviewed venues.
5. **Perspective:** An understanding of how their work technically and ethically affects their sponsor, sub-discipline, and society.
6. **Influence:** The ability to clearly guide, advise, teach and work with others in technical endeavors.
7. **Impact:** The desire, faith and persistence to seek out and solve meaningful technical and societal challenges.

## **Official ME Graduate Association (OMEGA)**

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OMEGA is the official graduate student organization in the Department of Mechanical Engineering. Students enrolled in BYU's Mechanical Engineering Graduate Programs and their spouses are automatic members of OMEGA; however, participation is not mandatory. Other eligible members include Mechanical Engineering Faculty, Staff, and their spouses.

As the graduate student voice in the Department of Mechanical Engineering, OMEGA's mission is to promote, develop, and support the professional, social, and emotional well-being of its students by:

- Offering opportunities for professional development,
- Creating an environment for social interaction, and
- Advocating graduate student interests to the Department of Mechanical Engineering.



## First-Year Student Requirements

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In addition to completing the following requirements, ***first year students must also meet minimum registration requirements, receive biannual evaluations, and begin researching and writing their thesis*** as described in the “Continuing Student” section of this handbook.

### ■ NEW STUDENT ORIENTATION

At the beginning of fall and winter semesters, the Department of Mechanical Engineering offers an orientation to help new students familiarize themselves with graduate program requirements. Students are required to attend. If a student cannot attend, he/she should contact the graduate program manager. New Student Orientation is always held the first Monday of fall and winter semesters at 4pm in 256 Clyde Building.

### ■ ATTEND SEMINAR

The ME Department Graduate Seminar Series is intended to help graduate students succeed during their time at BYU, prepare for future careers, and introduce them to leading experts in scientific fields. It accomplishes this through varied seminar formats including (A) soft skills and career advice, (B) workshops on common research techniques, (C) presentations by visiting scholars, (D) advice by successful graduates in industry, and (E) showcases of student achievement (3MT and OMEGA).

Seminar is held during fall and winter semesters only. All graduate students are required to attend 8 seminars from this series each semester for two semesters, ideally during the first year of their graduate program. A maximum of 2 seminars each semester may be substituted from:

- The Weidman Center Leadership Seminar Series
- The College Lecture Series
- Graduate Seminars within the Colleges of Engineering and Technology, Physical and Mathematical Science, and Life Sciences
- Mechanical Engineering MS or PhD candidate’s thesis or dissertation defense.

Students do not need to register for seminar; however, they should record their attendance in the Seminar Learning Suite Community. All ME graduate students are automatically part of this community. Seminar is held on Mondays at 4pm in 256 Clyde Building.

Please note, New Student Orientation and PhD Qualifying Exam Kickoff **DO NOT** count toward the seminar requirement.

## ■ SELECT A COMMITTEE

Failure to select a committee by the program deadline will result in an unfavorable biannual evaluation.

- MS Program: Committee selection and approval is due the student's first semester
- PhD Program: Committee selection and approval is due the student's first semester

The graduate committee chair (advisor) will be selected from the Department of Mechanical Engineering with the exception of students enrolled in Interdisciplinary Graduate Studies.

Students should work with their graduate committee chair (advisor) in selecting other members of their graduate committee. All graduate committee members should have Graduate Faculty Status.

In addition, graduate committee members should have a background that will be helpful in contributing to or evaluating the student's research. All graduate committee members will assist in advising the student concerning course work, degree requirements, and research.

MS Program: 2 additional committee members must be identified. The majority should be from the Mechanical Engineering Department.

PhD Program: 3 additional committee members must be identified. Of the 4 committee members 2 must be from the Mechanical Engineering Department.

Students will create their graduate committee online. However, the online approval process should not replace student interaction with desired committee members. Students should meet with potential graduate committee members before submitting the online invitation for faculty to serve on his/her committee. Faculty members will decline an invitation to serve on a committee if he/she has not discussed it with the student.

It is the student's responsibility to follow up with unaccepted invitations and to be proactive in making sure their committee selection is completed by the program deadline. If there is a problem, the student should discuss it with the graduate program manager before the program deadline.

For step-by-step instructions on how to create a graduate committee online, [click here](#).

Please note, after your graduate committee approves committee membership, the graduate program manager must give final approval for this requirement to be completed.



## External Non-BYU Committee Members

On occasion, it may be desirable to include a professional who may not be on faculty at BYU, i.e., someone who has documented substantial and consequential research effort in a specific area. Such graduate committee members are approved through petition or are unofficial members of the committee in addition to the required committee members.

Including a non-BYU Committee Member should be discussed with the student's advisor. If it is determined that a non-BYU Committee Member should be included, the advisor and student should submit a petition to Graduate Studies. To do this, please provide the following information to the graduate program manager who will initiate the petition process:

1. Statement justifying why the individual should be included as a member on the student's committee.
2. A statement listing any potential conflicts of interest that might arise and how they will be mitigated.
3. The individual's CV and email address.

## Graduate Committee Changes

Students may change their committee members at anytime during their graduate program. However, all changes must be approved by the student's graduate committee and the graduate program manager.

Students will make graduate committee changes online. For step-by-step instructions on how to change a Graduate Committee, [click here](#).

Please note, students can add a new graduate committee member but they cannot remove a member. To remove a graduate committee member, please contact the graduate program manager.

## ■ PROGRAM OF STUDY

### Submit Program of Study

It is important for students to submit a Program of Study. In consultation with their graduate committee chair (advisor), students will identify a proper course of study that supports their research, interests, and will lead to a timely graduation.

Failure to submit a Program of Study by the program deadline will result in an unfavorable student evaluation at the end of fall and winter semesters.

- MS Program: Program of Study is due the student's first semester
- PhD Program: Program of Study is due the student's first semester

## **Program of Study Requirements**

### MS Program Coursework

A total of 30 hours is required to complete the degree.

- 24 credit hours of coursework, 12 credit hours must be Mechanical Engineering coursework (*See Policies and Procedures 5: Approved Courses for Program of Study*).
- 6 credit hours of thesis research (ME EN 699R).

Students must have a 3.0 GPA on their program of study courses. In no instance is D credit accepted.

### PhD Program Coursework

*For students with an approved MS degree:*

A minimum of 36 credit hours is required to complete the degree.

- 18 credit hours of graduate-level coursework (500-level or above), 9 credit hours must be Mechanical Engineering coursework (*See Policies and Procedures 5: Approved Courses for Program of Study*).
- 18 credit hours of dissertation research (ME EN 699R).

*For students with an approved BS degree:*

A minimum of 54 credit hours is required to complete the degree.

- 36 credit hours of graduate-level coursework (500-level or above), 12 credits must be Mechanical Engineering coursework (*See Policies and Procedures 5: Approved Courses for Program of Study*).
- 18 credit hours of dissertation research (ME EN 699R).

Students must have a 3.0 GPA on their program of study courses. In no instance is D credit accepted.

### MS Program Transfer Credits

Courses may be transferred from another university under the following circumstances:

- It must be acceptable to the graduate committee during the first semester in the program;
- It must be a graduate level number;
- It may be no more than 25% of the graduate program;
- It cannot be conferences, workshops, correspondence, home study, etc.
- It must be a B grade or better.

### PhD Program Transfer Credits

Courses may be transferred from another university under the following circumstances:

- Must be acceptable to the graduate committee during the second semester in the program.
- Must be a graduate level number;
- Cannot exceed 6 credits;
- Cannot be conferences, workshops, correspondence, home study, etc.
- Must be a B grade or above.

### Graduate Committee Program of Study Online Approval

The Program of Study must be approved online by the student's graduate committee. Final approval will be given by the ME Graduate Program Manager in consultation with the Graduate Coordinator. All coursework will be approved on the basis of how to best fulfill research needs, career goals, and to best maintain the integrity of the mechanical engineering program.

Students will create their program of study online. It is the student's responsibility to follow up with committee member approvals and to be proactive in making sure their program of study is completed by the program deadline. If there is a problem, the student should discuss it with the Graduate Program Manager before the program deadline.

For step-by-step instructions on how to create a program of study online, [click here](#).

Please note, when adding coursework, courses will be listed as "electives." After the student's committee approves the program of study, the ME Graduate Program Manager will give final approval and change all courses from "elective" to "major."

## Program of Study Changes

Students may change their Program of Study courses online at any time during their graduate program. However, all coursework must be approved online by the student's graduate committee and the graduate program manager **BEFORE** the student takes a course.

For step-by-step instructions on how to create a program of study online, [click here](#).

Please note, after a program of study is approved, a student cannot remove courses from it. To remove courses, contact the ME Graduate Program Manager. Students may always add courses to their program of study and request approval from their graduate committee.

## ■ **SUBMIT THESIS PROSPECTUS-MS PROGRAM ONLY**

The prospectus must be submitted by the end of the second semester. For a prospectus outline, see [Graduate Student Resources](#). Upon completing the prospectus, students will be granted post-prospectus status and receive an accompanying pay-raise, if applicable.

The purpose of the prospectus is the following:

- To define the scope of the thesis project.
- Establish the minimum requirements for completion of the thesis and helps prevent the student from undertaking an unrealistic project.
- When written early in the program, the prospectus provides focus that will help expedite completion of the thesis.

A student's prospectus must be reviewed by the student's committee. For review, the student can either upload their prospectus online via the "Inline Option" on the Graduate Progress website or the review can be external using Adobe Reader, Box, or email. The student should discuss with his/her advisor about what option is preferable. Regardless of how the prospectus is reviewed, the prospectus must receive online approval by the student's committee.

It is the student's responsibility to follow up with his/her committee about reviewing and approving their prospectus. The student should be proactive in making sure their prospectus is completed by the program deadline. If there is a problem, the student should discuss it with the Graduate Program Manager before the program deadline.

Failure to submit a prospectus by the end of the second semester will result in an unfavorable biannual evaluation. In addition, if the prospectus is not submitted on a timely basis funding may be temporarily withheld. A prospectus defense may be held at the request of the graduate committee.

For step-by-step instructions on how to use the online review system and how to get online prospectus committee approval, [click here](#).

## Continuing Students

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### ■ MEET REGISTRATION REQUIREMENTS

International students have different registration requirements than domestic students. Please refer to the International Student section of this handbook.

#### Domestic Students

To maintain graduate student status, domestic students should meet the following **minimum** requirements. Please note, these are only minimum requirements. If you have deferred student loans, current student loans, grant funding, etc., please check with these entities to determine whether or not they require enrollment in more than the University's minimum requirement.

1. Register for a *minimum* of 2 credit hours in the semester of admission (fall or winter).
  - If a student is admitted fall semester and receives approval to begin spring or summer term, they must take 2 credits in the term they begin.
2. Following the semester of admission, students must continue to register for a *minimum* of 2 credits per semester. Spring/summer terms are considered one semester. It is recommended that credit hours be split up: 1 credit for spring term and 1 credit for summer term.
3. Register for a *minimum* of six credit hours in an academic year. If a student fails to register for a minimum of six credit hours in an academic year, he/she will be dropped from their graduate program. **NOTE:** Credit hours will not count towards the six credit hour minimum if a student receives a D grade or withdraws.
4. Distribute research credit hours (ME EN 699R) reasonably throughout the graduate program, concurrent with the research being conducted.

5. Students graduating must register for 2 credits in the semester that they are defending their thesis/dissertation **and** graduating.
  - If a student defends a thesis/dissertation in a semester different than the one in which he/she is graduating, the student must register for 2 credits in both semesters. For example, the student defends in fall semester, but isn't planning on graduating until winter semester, he/she needs to register for 2 credits in fall **AND** winter semesters.
  - Spring and summer terms count as 1 semester. So, a student has the following registration options: (1) If the student is graduating in spring term, he/she should register for 1 credit. (2) If the student is graduating in summer term, the student should register for 2 credits between spring and summer terms.
6. Fulfill residency requirement. The student must be registered for a minimum of 6 credit hours for two consecutive semesters while living and conducting research in the general vicinity of the university, where the student has access to research facilities.
  - So, a student has the following options to fulfill this requirement: (1) Minimum of 6 credits in Fall and 6 credits in Winter. (2) Minimum of 6 credits in Winter and 6 credits in Spring/summer (considered 1 semester). (3) Minimum of 6 credits in Spring/summer and 6 credits in Fall.
7. Complete all requirements within the graduate program's time limit.
  - MS Program: 5 years
  - PhD Program: 8 years

## **BIANNUAL EVALUATIONS**

The University requires that all graduate students be evaluated twice a year. A student may receive the following evaluation: (1) Satisfactory (the highest possible evaluation); (2) Marginal; (3) Unsatisfactory.

The biannual evaluation is used by the department to satisfy criteria for continuing funding. It is also used by the BYU Financial Aid Department to determine eligibility for financial aid.

At the end of fall and winter semesters, graduate committee chairs (faculty advisors) will evaluate each of their students based on the criteria outlined in this handbook. When determining student evaluations, the committee chair may choose to consult with other members of a student's graduate committee.



If a student receives a marginal or unsatisfactory rating and has not improved his or her performance in accordance with the actions outlined on a previous evaluation, by the time of the next evaluation, the University will terminate the student from his/her graduate program.

The graduate committee chair reports the student's progress to the graduate program manager. Students whose progress is rated as marginal or unsatisfactory will receive email notification of the evaluation from the Graduate Program Manager and will be required to acknowledge the evaluation.

In addition, students whose progress is rated as marginal or unsatisfactory should meet with his/her graduate committee chair to discuss the evaluation. The marginal or unsatisfactory evaluation given to a student will include:

- Specific tasks the student must complete in order to maintain or regain a satisfactory rating
- Clear deadlines established for each of the specified tasks
- A recommendation of faculty member(s) they can contact for more information or support

Marginal progress may include the following:

- Failure to submit a Program of Study and establish a graduate committee by the end of first semester
- Failure to submit a prospectus by the end of second semester (MS students)
- Failure to submit a prospectus by the end of first semester of the third year (PhD students)
- Failure of initial round of qualifying exams.
- Inadequate performance in research or registering for thesis/dissertation hours when little or no work has been performed
- Minimal contact with the graduate committee chair
- Program of Study GPA below 3.0 or program of study course below a C.
- Unacceptable ethical or professional behavior.
- Other marginal actions outlined by the graduate committee chair.

Unsatisfactory progress may include the following:

- Failure to submit a Program of Study since prior evaluation
- Failure to submit a prospectus since prior evaluation
- Failure to resolve any problems or fulfill any requirements indicated in a previous marginal or unsatisfactory evaluation
- Continued poor performance in research or registering for thesis/dissertation credit when little or no work has been performed.
- Minimal or no contact with the graduate committee chair

- Continued program of study GPA below 3.0 or program of study course below C.
- Unacceptable ethical or professional behavior.
- Other unsatisfactory actions outlined by the graduate committee chair

*Students who feel their rating is in error may file an academic grievance, see Policies and Procedures: Graduate Student Academic Grievance Policy.*

## ■ **RESEARCH DESIGN REVIEW-PHD PROGRAM ONLY**

- PhD students who began their program spring/summer term 2022 or later are required to complete this requirement.
- PhD students must complete a research design review with their dissertation committee by the end of the 1st semester of the 2nd year.
- At least 1 week prior to the design review, the student must submit a 1–3-page document to the committee addressing the following questions:
  - What is the main research question I am trying to address?
  - What methods, techniques, equipment, etc. do I plan to use to answer the research question?
  - What challenges or problems may slow my progress?
  - The advisor can add to this list or substitute similar questions to be addressed.
- The design review should be led by the student and last approximately, but not exceeding, one hour. The discussion in the review should focus on the questions listed above but can be adapted as necessary to give the student appropriate guidance with their research.

## ■ **DEFEND AND SUBMIT PROSPECTUS-PHD PROGRAM ONLY**

The prospectus must be defended and submitted by the end of the student's first semester of their third year. PhD students must have an oral defense of their prospectus with their assembled graduate committee. It is the student's responsibility to schedule the defense with his/her committee.

For a prospectus outline and prospectus approval form, see [Graduate Student Resources](#). Upon completing the prospectus, students will be granted post-prospectus status and receive an accompanying pay-raise, if applicable.

The purpose of the prospectus is the following:

- To define the scope of the thesis project.
- Establish the minimum requirements for completion of the dissertation and helps prevent the student from undertaking an unrealistic project.
- When written early in the program, the prospectus provides focus that will help expedite completion of the thesis.

A student's prospectus must be reviewed by the student's committee. For review, the student can either upload their prospectus online via the "Inline Option" on the Graduate Progress website or the review can be external using Adobe Reader, Box, or email. The student should discuss with his/her advisor about what option is preferable.

Regardless of how the prospectus is reviewed, the prospectus must receive online approval by the student's committee.

It is the student's responsibility to follow up with his/her committee about reviewing and approving their prospectus. The student should be proactive in making sure their prospectus is completed by the program deadline. If there is a problem, the student should discuss it with the Graduate Program Manager before the program deadline.

Failure to submit a prospectus will result in an unfavorable biannual evaluation. In addition, if the prospectus is not submitted on a timely basis funding may be temporarily withheld.

For step-by-step instructions on how to use the online review system and how to get online prospectus committee approval, [click here](#).

## ■ PhD Qualifying Examinations

All PhD candidates are required to take qualifying examinations. The PhD qualifying examination consists of three written exams. Study Guides and Exam Instructions can be found online in [Graduate Student Resources](#). Each exam is two hours and may be selected from any of the following subjects:

- Classical Dynamics
- Design
- Fluids
- Heat Transfer
- Material Science
- Mathematics
- Solid Mechanics
- System Dynamics and Controls
- Thermodynamics

For students entering the PhD program, exams must be taken no later than the third examination offering during their PhD program. In consultation with their committee chair (advisor), students may choose to take exams earlier than the third offering. However, if a student fails an exam, the sitting will count as the first attempt.

Each year, qualifying examinations are offered during the last week of March and the last week of October. One month before the exams, students are notified of the exam

dates, times, and location. In addition, there will be a qualifying exam “kickoff” meeting the semester prior to the exams. This meeting will be an orientation outlining qualifying exams.

The following schedule illustrates the minimum amount of time you should spend studying for exams (\*MS to PhD and \*\*BS to PhD); however, please consult with your advisor as s/he may suggest a different schedule.

- 4\*-6\*\* months before the exam: 10 hours a week (2 hours a day for 5 days).
- 2\*-3\*\* months before the exam: 20 hours a week (4 hours a day for 5 days).
- 1 month before the exam: 2 weeks at 30 hours and 2 weeks at 40 hours.

Exams may only be taken twice. There are three possible scores: pass, marginal fail, and fail. To remain in the PhD program, students must pass all exams and fulfill any requirements as determined by the exam committee.

Possible paths after first sitting:

- Pass all exams: Student continues in program
- Failure of any exam: Student retakes failed exam(s) during a second sitting.

Possible paths after second sitting:

- Pass all retakes: Student continues in program
- Failure of any retake: Student is terminated from the PhD program. Student may move to the MS program.
- Marginal fail of any retake: Student takes an oral exam.

Possible paths after oral exam:

- Pass: Student continues in program
- Fail: Student is terminated from program. Student may move to the MS program.

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## **Complete Research and Write Thesis**

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While researching and writing their thesis, students should distribute research credit hours (ME EN 699R) reasonably throughout the graduate program, concurrent with the research being conducted.

Students must follow university/college thesis guidelines when formatting their document. It is the student's responsibility to make sure the proper formatting guidelines have been followed. Templates and format guidelines can be found online at [Graduate Student Resources](#).

***Students should plan on submitting the best draft of their thesis to their graduate committee advisor prior to submitting it to the remainder of their graduate committee.***

All work toward the thesis should be open for public review and publication. Any exceptions must have written approval from the department and college in advance of any work performed. It is possible to delay release of a thesis for up to one year for publication purposes. For patent purposes students may request the thesis be secured, when completing final graduation requirements.

## Graduation

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For specific university graduation deadlines, visit [Graduation Deadlines \(byu.edu\)](https://byu.edu/graduation-deadlines). In addition, please take note of the [Department Timeline for Deadlines](#). Department deadlines are designed to help the graduate meet University Graduation Deadlines. Department deadlines should be followed.

### ■ APPLY FOR GRADUATION

Students cannot schedule a thesis/dissertation defense until he/she has applied for graduation. Students must apply before the graduation application deadline. The application for graduation can be accessed online through MyBYU > School > Apply for Graduation.

In order to apply students must have:

- a. A current ecclesiastical endorsement. Endorsements must be renewed every academic year (Fall semester).
- b. Completed all course work or are currently taking remaining courses.
- c. Completed the Program of Study, Prospectus, and Seminar requirements.
- d. Received verbal permission from the graduate committee chair.

***After applying for graduation, students are required meet with the graduate program manager to discuss next steps toward graduation. The Graduate Program Manager will review with the student his/her progress report, graduation requirements, and graduation deadlines.***

### ■ SCHEDULE THESIS/DISSERTATION DEFENSE

#### “Ready for Defense” Committee Review and Certification

***Students should plan on submitting their best draft of the dissertation to their Graduate committee at least one month prior to their desired defense date.***

A student's thesis/dissertation must be reviewed by the student's committee. For review, the student can either upload their thesis/dissertation online via the "Inline Option" on the Graduate Progress website or the review can be external using Adobe Reader, Box, or email. The student should discuss with his/her advisor what option is preferable. Regardless of how the thesis/dissertation is reviewed, it must receive online approval by the student's committee.

It is the student's responsibility to follow up with his/her committee about reviewing and approving their thesis/dissertation. The student should be proactive in making sure their thesis/dissertation receives the "Ready for Defense" certification. The student will not be able to schedule a defense without this approval. If there is a problem, the student should discuss it with the graduate program manager before the defense/graduation deadlines.

For step-by-step instructions on how to use the online review system and how to get online prospectus committee approval, [click here](#).

## Schedule Defense

**Defenses should be scheduled no later than 2 weeks before the exam date.**

Students should consult with their graduate committees to determine the time and date. Deadlines: [University Deadlines](#) and [Department/College Deadlines](#).

To schedule a defense,

1. Receive "Ready for Defense" certification.
2. Coordinate a time, date, and location with their graduate committee. Reserve the location and verify that all needed equipment will be available at the location. If needed, make arrangements for needed equipment.
3. Fill out the following online defense scheduling form: [click here](#). Do not submit this form until after being certified for defense. **This form MUST be submitted to officially schedule a defense. The student will receive a confirmation email from the Graduate Program Manager that the defense has been scheduled. If the student does not receive a confirmation within 24 business hours of submitting the scheduling form, he/she should contact the Graduate Program Manager.**
4. Once the defense is scheduled, you will receive a confirmation email from the Graduate Program Manager with further instructions.

It is the student's responsibility to follow up with his/her graduate committee and the Graduate Program Manager to schedule a defense before defense and graduation deadlines. Once scheduled, the time and date cannot be changed.

Defending between semesters/terms and on holidays is not permitted. In addition, virtual defenses are not permitted. If a committee member cannot be present at a



defense, please contact the graduate program manager to discuss alternative options.

PhD students cannot schedule a defense any earlier than one year from their prospectus defense.

## Thesis/Dissertation Format Review

At the time of scheduling their defense, students need to provide the graduate program manager with an electronic pdf of the thesis/dissertation for a preliminary format review.

## ■ DEFEND THESIS/DISSERTATION

At the defense, members of the graduate committee will serve as the examining graduate committee. Spouses, parents, and friends are welcome to attend the oral examination; small children should not attend. Refreshments are neither required nor expected.

The examination always follows a set format:

- The student's research is presented.
- The general audience is excused.
- Questions are asked by graduate committee members.
- The decision (pass, pass with qualifications, recess or fail) is announced.

The presentation should cover main points. For **MS students** the presentation should last about 30 minutes and for **PhD students** the presentation should last about 40 minutes. Consideration should be given to the following expectations:

1. A well thought-out, well-organized, cogent summary of the student's work including:
  - a. An explanation of how the current work relates to the student's discipline
  - b. The rationale behind the project in the context of available literature
  - c. If the student has been part of a research team or lab, an explanation of the student's intellectual contribution to the project and a description of how the student's work fits into the broader research conducted in this lab
  - d. The questions or issues the current work was designed to address
  - e. The way the design, method, and/or approach addressed those questions
  - f. The analysis of data gathered
  - g. The results, outcomes, final products, or performance
2. An interpretation of results, findings, contributions, insights, and conclusions and their significance. What does this work add to existing knowledge?
3. A discussion of implications the work suggests for future research or

creative endeavor

4. A discussion of any applied or clinical implications suggested by the work
5. Thoughtful, well-founded responses to all questions the graduate committee members might ask

After the defense, the student will receive a checklist outlining his or her next steps. It is likely that the graduate committee will request revisions of the thesis/dissertation. Students should discuss the revisions with graduate committee members and comply with the requests before graduation deadlines.

***Students should allow at least one full week following their defense to finish all remaining requirements before leaving campus.***

## ■ FINALIZE THESIS/DISSERTATION

### Submit ETD

After the Graduate Program Manager has done an initial formatting review and all revisions requested by the graduate committee have been made and approved, the student should submit their ETD.

If the thesis/dissertation's publication needs to be delayed for publication purposes, patents, or exports, the student will indicate this under "publication details" when uploading their paper to submit their ETD.

Once the ETD is submitted, it will go through a series of approvals (university, department, and college). Changes may be requested at any level of approval and the student is expected to make the changes to complete the ETD process.

If the student doesn't have the option to upload an ETD, he/she needs to contact the Graduate Program Manager. It is the student's responsibility to meet all defense and graduation deadlines and follow up with the Graduate Program Manager, if there are any problems.

For step-by-step instructions on how to use the online review system and how to get online prospectus committee approval, [click here](#).

### Upload Thesis/Dissertation for Binding

After receiving ETD approval, students are required to order 1 bound copy of their thesis/dissertation for their graduate committee chair. Students are responsible for the cost of this bound copy.

The designated colors are blue cover with gold lettering. Students may also order additional copies for their own use. All copies may be ordered through [BYU Print and Mail Services](#). Students are responsible for payment of all copies. After their defense, students will receive a final checklist for graduation which includes information regarding how to prepare for and order bound copies of their theses/dissertations.

### **Submit Survey of Earned Doctorates-PhD Student Only**

The Survey of Earned Doctorates is completed online. Doctoral students will register directly via the Web and instantaneously receive a PIN and password as well as the URL to the survey. With this information, the student can access and complete the entire survey online. For instructions, see [ADV Form 14](#).

## **■ SUBMIT EXIT SURVEY**

After the student's defense, students will receive an email with a department survey to complete. Comments are used to further strengthen the graduate program. These comments are kept confidential.

## **■ WALK FOR COMMENCEMENT AND CONVOCATION**

Students wishing to walk during Commencement and Convocation can order their cap and gown through BYU Alumni. Commencement and Convocation are held in April. Students may walk in commencement and convocation if they are graduating within the academic year.

## **International Students**

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## **■ MINIMUM REGISTRATION REQUIREMENTS**

To maintain Visa status in the United States, International students must register for 9 credit hours in the semester of their admission (fall or winter). Beginning spring/summer term is not recommended as graduate level coursework is not offered during these terms. However, if a student desires to begin spring/summer, he/she should discuss the option with their graduate committee chair (advisor) and the graduate program manager.

International students should continue to register for 9 credit hours fall and winter semesters and 4.5 credits hours spring and summer terms (except for approved University breaks). All credit hours must count towards the student's Program of Study.

## ■ REDUCED CREDIT LOAD

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International Students may apply for reduced credit load through the International Student and Scholar Services Office. Reduced credit load will qualify you to maintain your F-1 status without being registered in a full course of study. The following are reasons why a student might [apply for reduced credit load](#). For more information about reduced credit load, please contact the International Student and Scholar Services Office.

- **Academic:** Initial difficulty with the English language or reading requirements, unfamiliarity with American teaching methods or improper course level placement.
- **Graduate Teaching or Research Assistantship:** Participation in a graduate assistantship which would limit your ability to appropriately attend to a full course of study. The Department of Mechanical Engineering has arranged with International Student and Scholar Services Office to allow Mechanical Engineering Graduate Students to take a minimum of 6 credits a semester as long as the student is fulfilling a Research Assistantship.
- **Medical:** An illness or other medical condition that interrupts your ability to maintain a full course of study.
- **Program Completion:** The student completed all course work and is preparing for comprehensive examinations or is engaged in research on his/her thesis or dissertation.
- **Vacation:** The student is not required to register for classes during his/her annual vacation period (typically spring and summer terms) if he/she is eligible and intends to register for the next semester or term. However, students may not graduate during his/her vacation period.

Please note, if you are granted reduced credit load, the Office of Graduate Studies still requires international students register for 6 credits each academic year (fall through summer) to maintain graduate student status at the university. Students who do not maintain the 6 credit minimum registration requirement will be dropped from their graduate program.

If you have been granted reduced credit load due to it being your last semester, the Office of Graduate Studies requires that you be registered for 2 credit hours during the semester that you defend your thesis/dissertation and/or graduate.

## ■ ON-CAMPUS HOUSING

International Students may choose to live in on-campus housing. Please be aware that the BYU Residence Life Office requires that you register for a minimum of 2 credit hours each semester or term to continue living in on-campus housing.

## ■ EMPLOYMENT

International Students should be aware of and follow all employment policies as outlined by the International Student and Scholar Services Office ([Employment \(byu.edu\)](https://byu.edu/employment)).

Please note the following:

1. Work is limited to 20 hours per week while school is in session.
2. Students can work full-time on campus (more than 20 hours per week) during approved annual vacation, between enrollment periods (e.g. Christmas and New Year Break), and during required enrollment periods when school is not in session (e.g. Thanksgiving). To work full-time, students must receive permission from the International Student and Scholar Services Office.

## Policies and Procedures

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## ■ APPROVED COURSES FOR PROGRAM OF STUDY

Students may view all graduate courses in the [University Graduate Catalog](#).

### Approved Courses

<b>ME EN</b> <b>CE EN</b> <b>CH EN</b> <b>CHEM</b> <b>CS</b> <b>EC EN</b> <b>MATH</b> <b>MFG</b> <b>PHSCS</b> <b>STAT</b>	Any 500-level course and above  *STAT 511 may be taken; however the student should discuss with their advisor whether or not it will be an appropriate fit.
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<b>ACC 555</b> <b>OR</b> <b>ACC 556</b> <b>BIO 580</b> <b>ECON 588</b> <b>EXSC 664</b> <b>IS 555</b> <b>IS 566</b>	Data Communications and Security  Database Analysis and Design Scanning Electron Microscopy Advanced Econometrics Biomechanical Modeling Advanced Data Analytics for Organizations Advanced Database Management
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<b>IT 548</b>	Mechatronics
<b>MBA 634</b>	Quality Management
<b>MPA 634</b>	Data Science for Managers
<b>MPA 635</b>	Data Visualization

## Special Topics Course Guidelines

### ME EN 595R – Special Topics in Mechanical Engineering

This is for courses that are taught at a graduate level and that may or may not receive a permanent number. Graduate and undergraduate students may enroll.

### ME EN 695R – Special Problems for Master's Students

This is for the rare case when MS students seek credit for approved mentored projects unrelated to their thesis research. This should be seldom used and should be carefully scrutinized by the graduate committee.

### ME EN 795R – Selected Topics in Mechanical Engineering

This is for graduate courses not having a permanent number. Only graduate students may enroll.

### IT 515R- Special Topics in Information Technology

This is for courses that are taught at a graduate level and that may or may not receive a permanent number. Graduate and undergraduate students may enroll.

### Special Topics from CE EN, CH EN, MFG, CHEM, CS, EC EN, MATH, PHSCS, STATS

This is for courses that are taught at a graduate level and that may or may not receive a permanent number. Graduate and undergraduate students may enroll.

## 400-Level Courses

Students seeking a master's degree may not include more than 9 credits of 400-level courses on a Program of Study. PhD students *may not* include courses lower than 500 level on the Program of Study, unless the credits were hours earned while earning a master's degree.

## Prerequisite Courses

Courses outlined as part of a provisional admission should be listed on the Program of Study and should be taken during the first year. However, these courses will not count towards credit hours needed for graduation.



## Senior Credit Courses

Students seeking a master's degree may apply credit taken during the senior year at BYU toward the degree, but in no instance can this credit apply to both a baccalaureate and a graduate degree. Senior credit combined cannot exceed 9 credits in a graduate program. Thoroughly qualified undergraduates who are willing and able to meet graduate level standards may enroll in graduate 500-level courses.

## Unapproved Courses

Audit courses, online courses, and/or independent study courses are not accepted. If a course is not on the approved list, the student may take the course without it counting towards a Program of Study. However, the student may request course approval from his/her graduate committee and then submit a petition to the graduate program manager for review by the department graduate committee. The petition should include:

- Program of Study: List what courses you intend to include on your program of study.
- A clear explanation of how the contents of the course are directly related to the student's graduate thesis/dissertation topic.
- A clear explanation of the syllabus of the course, and why the student feels that the content is sufficiently rigorous to qualify for inclusion in a mechanical engineering program of study.

A short (2-3 paragraph) endorsement from the student's graduate committee chair confirming his/her opinion of the items above.

## ■ COPY MACHINE POLICY

The ME department copy machine is not to be used for personal use nor should it be used to copy theses/dissertations. The copy machine may be used for RA and TA duties; however, students should not use the copy machine themselves. The secretaries will handle students' requests.

## ■ DISCRIMINATION AND/OR HARASSMENT

Brigham Young University does not allow unlawful discrimination based on race, gender, color, national origin, religion, age, veteran status, or disability in the academic or employment setting. This includes unlawful sexual harassment, which is a violation of university standards as well as state and federal laws and may be considered grounds for discipline. Persons who believe they have been unlawfully discriminated against or unlawfully sexually harassed should contact:

Equal Opportunity Office

D-282 ASB  
Provo, UT 84602-1220  
801/422-5895

## ■ **FINANCIAL SUPPORT**

The Department of Mechanical Engineering offers several opportunities to help qualified students with the cost of their graduate education. The majority of full-time graduate students receive financial support during their studies. Most financial support is in the form of employment such as research assistants and teaching assistants. Fellowships based on academic potential and performance, are also available. Satisfactory progress in the program is required to maintain eligibility for funding support. Support is also contingent on availability of funds. With the exception of some teaching assistantships, most financial support is generally determined prior to beginning the graduate program.

## **Fellowships**

### *College Fulton Fellowship-1<sup>st</sup> Year*

A limited number of fellowships are awarded to highly qualified first-year PhD students. These fellowships are intended to supplement other support. They are awarded based on academic potential as part of the admission process and no further action is required by the student to be considered for the College Fulton Fellowship.

### *ME Department PhD Teaching Assistant Fellowship-1<sup>st</sup> Year*

The Department of Mechanical Engineering offers PhD Teaching Assistant Fellowships. Students who are recipients of this fellowship will be a teaching assistant their first year in the program. The fellowship includes an \$18k stipend and \$7k towards tuition.

## **Graduate Assistantships**

### *Research Assistantship*

Graduate research assistantships are offered by individual faculty to students they advise. Assistantships are based on student research ability, student research performance, and availability of funds. Research assistantships are supported by external research contracts or grants, administered by faculty. Students may check with individual faculty to determine availability of these opportunities.

### *Teaching Assistantship*

Graduate teaching assistantships are offered by professors who have teaching assistant needs. The department gives first priority to graduate students for teaching assistantships; however, the professor teaching the class has final authority to hire the teaching assistant for the class. Assistantships are based on student teaching ability and teaching performance. Students may check with individual faculty to determine availability of these opportunities.

## **Tuition Scholarships**

Tuition scholarships are available to qualified graduate students based on student performance and availability of funds. The scholarships are awarded by individual faculty and students may check with their graduate committee chair to determine availability.

## ■ **FORMATTING GUIDELINES FOR THESIS/ DISSERTATION**

Thesis/dissertation formatting guidelines are found online in [Graduate Student Resources](#).

## ■ **GRADUATE ACADEMIC GRIEVANCE POLICY**

Despite the well-meaning efforts of students and faculty, there may be occasions when a graduate student feels his/her work has been unfairly or inadequately evaluated. Usually such differences can be amicably resolved on an informal basis between the student and the faculty member involved. If, for any reason, the faculty member is not available or the student believes that the grievance will not be dealt with fairly or will create the possibility of retribution, the student may direct the grievance to the department chair.

Please contact the graduate program manager for the complete Grievance Policy.

## ■ **HONOR CODE**

Complete information concerning the Honor Code at Brigham Young University can be found at: <http://honorcode.byu.edu>. All who represent BYU are to maintain the highest standards of honor, integrity, morality, and consideration of others in personal behavior. As a matter of personal commitment, faculty, administration, staff, and students of BYU seek to demonstrate in daily living on and off campus, those moral virtues encompassed in the gospel of Jesus Christ. BYU students should seek to be totally honest in their dealings with others. They should complete their own work and be evaluated based upon that work. They should avoid academic dishonesty and misconduct in all its forms, including but not limited to plagiarism, fabrication or falsification, cheating or other academic misconduct.

### **Plagiarism**

Intentional plagiarism is a form of intellectual theft that violates widely recognized principles of academic integrity as well as the Honor Code. Such plagiarism may subject the student to disciplinary action administered through the university Honor Code Office. Intentional plagiarism is the deliberate act of representing the words, ideas, or data of another without providing proper attribution to the author through quotation, reference, or footnote.

Inadvertent plagiarism usually results from an ignorant failure to follow established rules for documenting sources or from simply being insufficiently careful in research and writing. Although not a violation of the Honor Code, inadvertent plagiarism can result in academic sanctions being imposed by an instructor. Students who are in doubt as to whether they are providing proper attribution have the responsibility to consult with their instructor and obtain guidance.

*Examples of plagiarism include:*

*Direct Plagiarism*—verbatim copying of an original source without acknowledging the source.

*Paraphrased Plagiarism*—paraphrasing, without acknowledgment, of ideas from a source that the reader might mistake for your own.

*Plagiarism Mosaic*—borrowing of words, ideas, or data from an original source and blending this original material with one's own without acknowledging the source.

*Insufficient Acknowledgment*—partial or incomplete attribution of words, ideas, or data from an original source

Plagiarism may occur with respect to unpublished as well as published material. Acts of copying another student's work and submitting it as one's own individual work without proper attribution is a serious form of plagiarism.

## **Fabrication or Falsification**

Fabrication or falsification is a form of dishonesty where a student invents or distorts the origin or content of information used as authority. Examples include:

1. Citing a source that does not exist.
2. Attributing to a source ideas and information that are not included in the source.
3. Citing a source for a proposition that it does not support.
4. Citing a source in a bibliography when the source was neither consulted nor cited in the body of the paper.
5. Intentionally distorting the meaning or applicability of data.
6. Inventing data or statistical results to support conclusions.

## **Cheating**

Cheating is a form of dishonesty wherein a student attempts to give the appearance of knowledge or skill that the student has not obtained. Examples include:

1. Copying from another person's work during an examination or while completing an assignment.
2. Allowing someone to copy from you during an examination or while completing an assignment.

3. Using unauthorized materials during an examination or while completing an assignment.
4. Collaborating on an examination or assignment without authorization.
5. Taking an examination or completing an assignment for another person or permitting another person to take an examination or to complete an assignment for you.

### **Other Academic Misconduct**

Academic misconduct includes other academically dishonest, deceitful, or inappropriate acts that are intentionally committed.

Examples of such acts include but are not limited to:

1. Inappropriately providing or receiving information or academic work so as to gain unfair advantage over others.
2. Planning with another to commit any act of academic dishonesty.
3. Attempting to gain an unfair academic advantage for oneself or another by bribery or by any act of offering, giving, receiving, or soliciting anything of value to another for such purpose.
4. Changing or altering grades or other official educational records.
5. Obtaining or providing an un-administered test or answers to an un-administered test.
6. Breaking and entering into a building or office for the purpose of obtaining an unauthorized test.
7. Continuing work on an examination or assignment after the allocated time has elapsed.
8. Submitting the same work for more than one class without disclosure and approval.

## **■ INTERDISCIPLINARY GRADUATE STUDIES**

Recognizing that there are exciting and emerging areas of research that cross traditional disciplinary boundaries, ME Department Faculty are interested in providing a pathway for interdisciplinary graduate study that may not coincide with the specific primary research interests of existing ME department faculty members, but yet still falls within the discipline of mechanical engineering.

The following guidelines are in place to enable interdisciplinary graduate study while helping students successfully meet ME degree requirements and facilitating program administration.

- Application for Interdisciplinary Graduate Study ideally occurs at the time of application to the ME Graduate Program, but *must* occur prior to completion of the student's first semester of their graduate degree.
- All graduate committee chairs of Mechanical Engineering students must meet the requirements for graduate faculty status in the Mechanical Engineering Department.
- Graduate committees with a chair whose faculty appointment is outside the ME Department must have a majority of the graduate committee who are ME Department faculty.
- Graduate committees with a chair whose faculty appointment is outside the ME Department must have a host department advisor who is an ME Department faculty member.
- ME Department-allocated funds are designated to support graduate students who have graduate committee chairs with faculty appointments in the ME Department.
- Interdisciplinary graduate study students will be limited to an approximate upper limit composition not exceeding 5% of the MS students and 5% of the PhD students in the ME Department.
- Graduate committee chairs whose appointments are outside the ME Department can only advise up to one ME graduate student at any given time.
- An ME Department host advisor can only serve as host department advisor to one ME graduate student at any given time.
- The student must provide evidence that full funding support is available for the anticipated duration of the proposed graduate degree (minimum of 18 months for an MS student, minimum of 3 years for a PhD student).
- Interdisciplinary students must abide by all policies and procedures described in the ME Graduate Studies Student Handbooks (except as noted and approved on ADV Form 1).

## Approval Procedures

- 2 Required Forms:
  - [ADV Form 1](#): Request for Interdisciplinary Graduate Study
  - ME Department Checklist for Interdisciplinary Graduate Study (See [Graduate Student Resources: Form 1-Checklist for Interdisciplinary Graduate Study](#))
- Host Department Advisor reviews both forms with the student
- ME Department Graduate Advisor Review
- ME Graduate Coordinator Review
- ME Department Chair Approval
- The following approvals needed for ADV Form 1 can only be obtained *after*

ME Department Chair approval:

- Dean, College of Engineering and Technology
- Chair, Department of Graduate committee chair
- Dean, College of Graduate committee chair

## ■ **JOINT MS/MBA PROGRAM**

The Mechanical Engineering Department and the Marriott School of Management offer a joint program leading to a master of science (MS) degree in mechanical engineering and a master of business administration (MBA) degree. The program provides advanced training in Mechanical Engineering along with management skills of the MBA program. The degrees are received simultaneously, and conferred separately by the two departments. Students must apply to both the mechanical engineering MS program and the MBA program, meeting the requirements of each department and specifying their intention to participate in the joint program in each statement of intent.

The program generally takes about three years to complete; however, some students prefer a four-year program (2 years for each degree) to provide adequate time for the MS thesis research and to increase possibilities of research funding.

Students wanting to finish in three years find it beneficial to start the MS program during spring term. Starting during spring or summer term allows time to begin their thesis research early. To begin research spring or summer term, students should apply for fall semester. Students may also apply for winter semester, if graduated.

Specific requirements are the same as those listed for the Mechanical Engineering MS degree, with the following guidelines:

- Of the 30 credits required for the MS, 6 credits are for the thesis, and 24 credits are for approved coursework. Half the coursework must be in ME.
- Please see the approved coursework to identify which MBA courses can be counted on a ME Program of Study.
- It is strongly recommended that the thesis be completed and defended before beginning the MBA Core classes. It is difficult to stop research and start it again later. In addition, it may prevent the student from taking advantage of opportunities within the MBA program.

Some credits from the ME Program of Study must be taken concurrently with the MBA program in order to meet university requirements.



## ■ PROSPECTUS PROCEDURES FOR THESIS/DISSERTATION

For MS students there is a five-page limit for the body of the prospectus (problem statement through the anticipated contributions sections). For PhD students there is a fifteen-page limit for the body of the prospectus (problem statement through the anticipated contributions section). For an example outline, see [Graduate Student Resources](#).

## ■ PROVISIONAL ADMISSION TO MS/PHD PROGRAM

Students with a BS in programs other than Mechanical Engineering or from a non-ABET accredited program may be admitted provisionally and may need to take some of the following undergraduate courses during their first year. The applicant should work with the potential graduate committee chair (advisor) to determine exactly which courses will be required. Please note that these courses are prerequisites and will NOT count toward the MS or PhD degrees.

Math 302, 303, and Stat 201	11 hours
CE EN 204	3 hours
ME EN 321 and 372	6 hours
ME EN 335	3 hours
ME EN 312 or 340	3 hours
ME EN 273	3 hours
ME EN 362	3 hours

## ■ UNIVERSITY POLICY REGARDING TEACHING AND RESEARCH ASSISTANTS

1. A teaching assistant is a representative of the department and university and is expected to be professional in appearance and in executing his or her duties.
2. When employed as a research assistant or a teaching assistant, continuing students must be registered for two or more hours during fall and winter semesters, and one or more hours during spring and summer terms. Newly admitted students must be registered for two credits in the first semester or term of admission.
3. Full-time graduate students who are U.S. citizens may work up to 28 hours a week during fall and winter semesters if the work is related to their Program of Study. They may work only 20 hours a week if the work is not related to their Program of Study. During spring and summer terms and holidays, graduate students who are U.S. citizens may work up to 40 hours per week provided

the average hours per week during the ACA measurement period does not exceed 28 hours.

For new part-time employees, the ACA measurement period is the first 12 months of employment. For continuing part-time employees, the measurement period will begin with the first pay period on or after October 15<sup>th</sup> of the current year, through the last pay period before October 14<sup>th</sup> of the following year. Breaks in employment between 4 and 26 weeks will be credited with the average hours worked during the measurement period.

4. Federal regulations will not allow international students to work more than 20 hours per week during full-time school; however, they may work up to 40 hours during their breaks provided the average hours per week during the ACA measurement period does not exceed 28 hours. The first break does not occur until after two semesters of fulltime enrollment.

**Note:** In all cases the number of hours worked should be authorized by the graduate committee chair. Because of budget and time constraints the number of hours authorized is often significantly less than the maximum hours outlined above.