

MASTER'S THESIS POLICY FOR MECHANICAL ENGINEERING

Approved 9/29/21

Overview. This document describes the thesis policy for the Master of Science (M.S.) program in Mechanical Engineering (ME) at Boise State University. The central goal of the ME master's thesis is for students to demonstrate their ability to skillfully conduct research that contributes to scientific advancements relevant to the mechanical engineering field. The main steps included in this thesis policy and discussed in detail below include forming a thesis committee, completing a thesis proposal, passing a thesis defense, and completing final steps.

Important: To earn an M.S. in ME, there must be a tangible **academic product** that results from the master's thesis. For most students, this academic product would be a first-authored peer-reviewed publication that has been submitted or is ready for submission at the time of the thesis defense.

Thesis Committee. A thesis committee is formed by the student in consultation with the student's research advisor. The thesis committee will consist of the committee chair (i.e. student's research advisor) and at least two additional members, for a total of 3-5 committee members. At least 50% of the committee must be Mechanical and Biomedical Engineering (MBE) faculty. For example, in a 3-person committee, two members must be from MBE. To formalize the committee selection, the student will submit an "Appointment of Supervisory Committee" form. Individuals qualified to serve on the committee must have no conflicts of interest and meet Graduate College requirements. Note: the committee chair can be from a department outside of MBE.

Thesis Proposal. The thesis proposal should be prepared and scheduled (time and date; schedule for 2 hours) by the student in consultation with the student's research advisor. The proposal has a written component (≤ 12 pages) and an oral component. Both proposal components must incorporate the following elements:

- Background and motivation for the research. Describe the knowledge gap that this research will fill.
- Hypotheses to be tested and/or the study objective.
- Proposed methods to address the hypothesis/objective. Include statistical rationale for sample size / number of tests.
- Intended outcomes and the significance of these outcomes.
- Relationship of the proposed work to existing work in the field. Include big-picture impact.
- Timeline of the remaining research activities and milestones.
- Statement about the academic product(s) that will be created from this proposed research.

Eligibility: In order to propose, you must 1) have an approved thesis committee, and 2) have all nine-credits of core ME master's classes either completed or in progress. Any exceptions to these eligibility requirements must be approved by the ME graduate program coordinator.

Procedure: The thesis proposal is open to faculty, staff, and students. Barring unforeseen circumstances, all committee members must be present at the oral proposal, preferably in-person. The oral proposal presentation should be 30-45 minutes, followed by questions from the general audience. The general audience is normally dismissed prior to committee questions. After committee questions, the student is excused while the committee votes.

Evaluation: If a majority of the committee is satisfied with the proposal, the student passes; however, the committee may suggest or request specific changes to the research plan. If a majority of the committee is not satisfied with the proposal, the student will be asked to re-propose within an agreed upon timeframe. **Important: *An approved proposal functions as a roadmap*** for the student. If the student carries out the project as described in the proposal, the committee cannot find the thesis defense unacceptable based solely upon the research plan.

Deadlines: The thesis proposal should be completed *at least* one semester prior to the semester in which the thesis defense will be held. The written proposal should be submitted to all thesis members at least one week prior to the oral proposal. A one-page abstract about the proposed research should also be submitted to the graduate program administrator in order to advertise the event (send one-week in advance).

Thesis Defense (Final Oral Examination). The thesis defense should be prepared and scheduled (time and place; schedule for 2 hours) by the student in consultation with the student's research advisor. The defense will have a written component (the M.S. thesis) and an oral component (the thesis defense). Both of these components must incorporate the following elements:

- Background and motivation for the research. Describe the knowledge gap that this research will fill.
- Hypotheses tested and/or the study objective.
- Methods used to address the hypothesis/objective. Include a description of statistical analysis.
- Key results. Effective use of figures and/or tables.
- Significance of the results. Link to hypothesis and/or objective.
- Interpretation of the results with existing work in the field. Include big-picture impact and future work.
- Statement about the academic product(s) that will be delivered from this thesis work.
- Acknowledgement of who contributed to the thesis work, and specify their contribution.

Eligibility: In order to defend, a student must have 1) passed their thesis proposal, 2) have at least 6 thesis credits either completed or in progress, and 3) *be registered* for at least 1 thesis credit in the semester of their defense.

Procedure: The thesis defense is open to the public. Barring unforeseen circumstances, all committee members must be present, preferably in-person. The thesis defense will begin with a short introduction by the thesis advisor. The student will then give a 30-45 minute presentation that incorporates the previously listed elements. After the presentation, the floor will be opened for questions from the general audience. The general audience will then be dismissed and the student will receive questions and comments from the thesis committee. Finally, the student will be dismissed as the thesis committee reaches a final decision.

Evaluation: At the conclusion of the defense, the committee holds a closed-door vote after the student is dismissed. There are two options for voting: pass or fail. If a *majority* of the committee members vote "Pass", the student passes the defense, otherwise the student fails. Here is a description of each outcome:

1. *Pass* – The committee agrees that the student has met or exceeded expectations for the completion and presentation of the thesis study (as outlined in the thesis proposal). All committee members will sign the 'final oral examination' approval sheet. If the committee members are satisfied with the thesis, they can also sign the 'final reading approval' sheet. However, the committee may instead request non-substantive changes to the thesis. Once the final version of the thesis is completed, the student will send a digital copy to all committee members, highlighting any significant changes made after the defense. If a committee member has no further objections, they will then sign the 'final reading approval' sheet.
2. *Fail* – The committee agrees that the thesis is not acceptable in its current form. Neither the 'final oral examination' nor the 'final reading approval' sheets are signed. The committee must provide a written explanation for this decision to the student and the graduate program coordinator. If this is the first defense attempt, the student can address the committee comments and retake the defense within an agreed upon timeframe. If the student fails on the second attempt, the student is dismissed from the program.

Deadlines: The written thesis should be submitted to all thesis members at least one week prior to the oral defense. The student must also send a one-page abstract about their thesis research to the ME graduate program administrator in order to advertise the event (send one-week in advance). Please be aware that the graduate college has deadlines for the defense date if a student is attempting to graduate in a specific semester.

Final Steps to an M.S. Degree. After the student has received approval from the committee (i.e. the ‘final oral examination’ sheet and ‘final reading approval’ sheet have been signed), the student will work with the [Graduate College](#) to complete the final steps.

- *Format Review:* The student must electronically submit their thesis to the Graduate College Coordinator of Theses and Dissertations for a format review, and then respond to any corrections that may be required. Prior to submitting, the student should consult the Graduate College for the [style and format requirements](#) specific to Boise State University. Please be aware that the editing process can take weeks depending on the workload of the editors.
- *Final version:* After the thesis passes format review, the student submits the final version as an electronic file to the Graduate College for review by the Graduate Dean. In order to graduate in a specific semester, this should be done before the deadline published in the academic calendar. When submitting this final version:
 - Include a page in the thesis that contains the research protocol number and a statement that the protocol has been approved by the appropriate Office of Research Compliance committee (e.g. the Institutional Biosafety Committee).
 - Submit an Access Agreement form. The student should discuss with their advisor what conditions to select when making the thesis publicly available.
- *MBE Department Requirements:* The student must email an electronic version (PDF) of the final thesis to the committee chair and the graduate program administrator. The student must also provide a hardcopy of the thesis to the MBE department. The student should ask if the committee chair (research advisor) would also like a hardcopy. The student covers the costs of publishing these hardcopies.

Time Limits. The minimum duration of study for the master’s degree is one academic year after admission to the program. All requirements for a master’s degree (including transfer courses) must be started and completed within a single continuous interval of no more than seven years. This single continuous interval includes summers and any semesters in which the student is not enrolled. In addition, it must encompass all courses applied to the degree, including transfer courses.