GRADUATE STUDENT HANDBOOK*

University of Idaho

Department of
Mechanical Engineering

Degrees Offered

Master of Engineering in Mechanical Engineering (M.Engr.)
Master of Science in Mechanical Engineering (M.S.)
Doctorate in Mechanical Engineering (Ph.D.)

This information supplements general information in the current University of Idaho Catalog.
A summary of university requirements for graduate degrees can be found at www.uidaho.edu/catalog/.
Updated 8/16/2024.

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For more information contact the Mechanical Engineering Department
Phone: (208) 885-6579
email: medept@uidaho.edu website: www.uidaho.edu/engr/ME

Undergraduate Preparation for Graduate Students in Mechanical Engineering

With a B.S. degree in Mechanical Engineering from an accredited U.S. program

Admission to the College of Graduate Studies is open to any student who holds a baccalaureate degree and has a scholastic record indicating probable success in graduate work. The General Catalog lists the University's GPA admission requirements. Admission to the Mechanical Engineering Graduate Program is open to any student with the above qualifications if his or her baccalaureate degree is with a major in mechanical engineering from an A.B.E.T. accredited U.S. program.

With a B.S. degree in a major other than Mechanical Engineering from an accredited U.S. program

Students with a B.S. degree from an accredited U.S. engineering program with a major other than mechanical engineering may also be admitted. However, such students must demonstrate a basic proficiency in the core areas of mechanical engineering, including thermal/fluids, solid mechanics, and system dynamics. This generally requires the student to include courses on the study plan that are assigned as undergraduate deficiencies, in addition to the 30 credits of graduate courses required for the master's degree. The subjects included in the following list define the areas for which proficiency is expected:

a. Mechanical Systems: Statics (ENGR 210), Dynamics (ENGR 220), Dynamic Modeling of Engineering Systems (ME 313), and Mechanics of Materials (ENGR 350)
b. Thermo-fluids: Thermodynamics (ENGR 320), Fluid Dynamics (ENGR 335), and Heat Transfer (ME 345)

Each applicant to the program is evaluated individually which may lead to exceptions and/or substitutions to the above requirements.

With a B.S. degree from a non-accredited U.S. program

Students who do not have a B.S. degree from an accredited U.S. engineering program may also be admitted to the Mechanical Engineering Graduate Program. However, such students must demonstrate a proficiency in the core subjects included in an accredited B.S.M.E. program. This requires the student to include courses, in addition to the 30 credits of graduate courses required for the master's degree, which are assigned as a part of the student's study plan as undergraduate deficiencies. The subjects included in the following list define the areas for which proficiency is expected as an entrance requirement.

a. An appropriate combination of mathematics and basic science including multivariable calculus (MATH 275), ordinary differential equations (MATH 310), probability and statistics (STAT 301), chemistry (CHEM 111), and calculus-based physics (PHYS 211, 212, 213).
b. Sixteen credits of humanities and social sciences including both breadth and depth.
c. Forty-eight credits of engineering topics which include engineering science and engineering design. Engineering science will include mechanics (ENGR 210, ENGR 220, ENGR 350), thermodynamics (ENGR 320), electrical circuits (ENGR 240), materials science (ENGR 215), and transport phenomena (ENGR 335, ME 345). Engineering design must include a meaningful, major engineering design experience built upon fundamental concepts of mathematics, basic science, humanities and social science, engineering topics, and communication skills. A capstone design experience like ME 424/426 is required.
d. Appropriate laboratory experience such that the student is competent to conduct experimental work. Laboratory classes are required which include an instrumentation class like ME 330.
e. Appropriate computer-based experience, including computational techniques, needed to solve specific engineering problems.
f. Competence in written and oral English communication. This requires both English composition (e.g., ENGL 102) and English technical writing (e.g., ENGL 317).
g. An understanding of the ethical, social, economic, and safety considerations in engineering practice. (See engineering design under item c above.)

h. Appropriate classes in the energy stem and the mechanical systems stem of mechanical engineering, included under engineering science in c above.

The evaluation of equivalent classes will be done on an individual basis. If a student does not have the equivalent of one of the above classes (except capstone design), the student may take the class or challenge it after appropriate self-study. (See procedures for challenge in UI General Catalog.)

Graduate Record Examination and GPA

Graduate Record Examination (GRE®) test results are required for all Ph.D. applicants. GRE scores are not required for M.S. and M.Engr. applicants who hold an undergraduate degree from an ABET-accredited program. GRE scores and the applicant's grade point average (GPA) aid our faculty in estimating the applicant's scholastic abilities, which are suggestive of probable success in graduate work and are helpful in counseling students in their courses of graduate study. The GRE requirement may be waived at the request of a faculty member who submits a justification, which must be approved by the department chair and the department graduate administrator (DGA). Applicants may not request a waiver.

GRE recommended minimum scores by area are as follows:

GRE® Area	**Recommended Minimum Score**	**Percentile Rank**
Verbal (reading comprehension, scale of 130-170, one-point increments)	151	50th
Quantitative (basic Math and problem-solving skills, scale of 130-170, one-point increments)	153	65th
Analytical Writing (critical thinking & writing, scale 0-6, half-point increments)	4.0	50th

For more information on the GRE®, see https://www.ets.org/gre.

International Students

English Requirements for Students Whose Primary Language is NOT English

The following are acceptable as proof of English competency for students for whom English is not their primary language. The substitutions are considered to be equivalent to a TOEFL® (Test of English as a Foreign Language) score of 550.

- □ TOEFL® (Test of English as a Foreign Language) minimum score of 550 on the paper test or 79 on the internet test. (See below.)
- □ IELTS (International English Language Testing System) minimum score of 6.5.
- □ MELAB (Michigan English Language Assessment Battery) score of 77.
- □ UI American Language & Culture Program (ALCP) with a Level 6 Pass.
- □ U.S. Education earned degree at an accredited institution OR successfully completed English composition courses at the discretion of the Graduate Admissions Office.

TOEFL®

Area	Internet Based	Minimum Score
Listening	Score of 0 - 30	20
Structure/Writing	Score of 0 - 30	19
Reading	Score of 0 - 30	20
Speaking	Score of 0 - 30	20
Total	0 - 120	79

Test of Written English (TWE®)

A part of the TOEFL® paper-based test also reports an essay rating, the Test of Written English (TWE). This writing test provides information about an examinee's ability to generate and organize ideas on paper, support those ideas with evidence or examples, and use the conventions of standard written English. A minimum 70th percentile score of 4.2 is recommended.

For more information on the TOEFL®, see https://www.ets.org/toefl.

International Student Credit Requirement

International students must carry nine (9) credit hours per semester to be in compliance with the rules and regulations of the U.S. Immigration Service. Exceptions to this requirement permitted by the Immigration Service are:

- when a student is in his/her final semester and does not need full credit to graduate;
- for medical reasons, which requires verification from a doctor; and
- for graduate students who have completed all course work and have only thesis or dissertation work remaining.

Graduate Student Code of Research and Scholarly Conduct

The University of Idaho expects that students will engage in academic activity with high standards of honesty and integrity. The academic enterprise is dependent upon such behavior. These values are central to the educational process and are also cornerstone values for citizenship and professional conduct after students leave the University. Graduate students are responsible for learning about appropriate standards for ethical research and scholarly conduct and for following all university policies related to ethical research and scholarly conduct.

The University of Idaho has specific academic honesty expectations described in the Student Code of Conduct. These are minimum standards that are generally applied across the University. However, professors may more specifically define standards for their courses through information described in the course syllabus or other documents. Students must learn the expectations of each instructor since learning environments do vary both in content and teaching style. Sometimes the issues of academic integrity are obvious but other times a student may struggle with issues that appear to be less clear. Students should talk with the instructor if there are concerns about what is expected.

Student Code of Conduct: https://www.uidaho.edu/student-affairs/dean-of-students/student-conduct/student-code-of-conduct. See detailed graduate student regulations in the U of I Graduate Catalog: https://catalog.uidaho.edu/colleges-related-units/graduate-studies/

Master of Engineering (M.Engr.) Requirements

30 credits are required for the M.Engr. degree. Study Plans exceeding this credit requirement and developed in consultation with the major professor are eligible for approval.

Off-campus Student # Credits	On campus Student # Credits	Requirement
3	**3**	Mathematics/Statistics/Numerical Methods □ ME 541 Mechanical Engineering Analysis □ ME 544 Conduction Heat Transfer, or □ ME 580 Linear System Theory □ 400 or higher-level course in mathematics, numerical methods or statistics approved by the Major Professor and Department Chair.
3	**3**	Continuum Mechanics (ME 540 Continuum Mechanics)
15-17	**12-15**	Mechanical Engineering Technical Electives
6	**6**	Other Technical Electives
n/a	**1**	ME 501 Graduate Seminar; taken during the final semester (spring semester for expected summer graduates.)
1-3	**2-5**	ME 599 Project (Note: ME 599 requires faculty approval in advance to allow an ME 599 section to be added to the schedule.)
		Final Technical Report and Presentation
30	**30**	**TOTAL CREDITS**

- □ A grade of C or better is required in all courses used to meet degree requirements.
- □ Cumulative GPA of 3.00 in all courses, whether or not they are used toward the degree.
- □ Combined total of up to 12 non-degree credits, reserved credits (see below), transfer credits, correspondence credits, and approved credits more than eight years old at the time the degree is awarded can be accepted for master's programs requiring 36 or fewer credits.
- □ Credits earned at an institution that does not grant graduate degrees cannot be transferred to the UI for graduate credit.

Additional Mechanical Engineering Information:

- □ At least 3 classes consisting of subject material focused on mechanical engineering at the 500 level.
- □ At least 18 credits must be at the 500 level.
- □ No credits may be at the 300 level or lower.
- □ ME 500 research credits will not count toward the M.Engr. Degree.
- □ A student with over the minimum number of credits required for the UI UG degree can reserve up to 12 relevant credits (400 or 500 level – B or better) for the graduate transcript as long as the **credit reservation request form** is submitted and approved by COGS before the end of the term in which the UG degree is awarded. No other classes required in our B.S.M.E. curriculum can be used as part of the graduate program.

4+1 Option for Continuing University of Idaho Mechanical Engineering Undergraduates

- □ Up to six 400 or 500-level technical elective credits, with grades of B or better, may be applied towards both UG and graduate degrees. These courses should be listed on the same **credit reservation request form** as discussed above and count towards the 12-credit limit. Option only available to continuing UI UG students.
- □ Students must apply to the M.Engr. degree 4+1 program during their final semester of UG studies.
- □ Students who enter the accelerated 4+1 program will be eligible for regular UG tuition rate through the first year of their graduate program.

Master of Science (M.S.) Requirements

30 credits are required for the M.S. degree. Study Plans exceeding this credit requirement and developed in consultation with the major professor are eligible for approval.

Off campus Student # Credits	On campus Student # Credits	Requirement
3	**3**	Mathematics/Statistics/Numerical Methods □ ME 541 Mechanical Engineering Analysis □ ME 544 Conduction Heat Transfer, or □ ME 580 Linear System Theory □ 400 or higher-level course in mathematics, numerical methods or statistics approved by the Major Professor and Department Chair.
3	**3**	Continuum Mechanics (ME 540 Continuum Mechanics)
9-12	**9**	Mechanical Engineering Technical Electives
6	**6**	Other Technical Electives
6-9	**7**	ME 500 Research Credits (Note: Off-campus students can replace 3 credits of research with 3 credits of approved coursework.)
n/a	**2**	ME 501 Graduate Seminar; taken once during the 1st year of study, then once during the final semester (spring semester for expected summer graduates.)
		Thesis and Thesis Defense
30	**30**	**TOTAL CREDITS**

- □ Grade of C or better is required in all courses used to meet degree requirements.
- □ Cumulative GPA of 3.00 in all courses, whether or not they are used toward the degree.
- □ Combined total of up to 12 non-degree credits, transfer credits, correspondence credits, and approved credits more than eight years old at the time the degree is awarded can be accepted for master's programs requiring 36 or fewer credits.
- □ Credits earned at an institution that does not grant graduate degrees cannot be transferred to the UI for graduate credit.

Additional Mechanical Engineering Information:

- □ At least 3 classes consisting of subject material focused on mechanical engineering at the 500 level.
- □ At least 18 credits (including research credits) must be at the 500 level.
- □ No credits may be at the 300 level or lower.
- □ A student with over the minimum number of required credits for the UI UG degree can reserve up to 12 relevant credits (400 or 500 level – B or better) for the graduate transcript as long as the credit reservation form is submitted and approved by COGS before the end of the term in which the UG degree is awarded. No other classes required in our B.S.M.E. curriculum can be used as part of the graduate program.

Ph.D. in Mechanical Engineering Requirements

Students must satisfy the U of I course requirements for the M.S. or M.Engr. degree. Additional details of the individual program for the doctoral degree are established by the student and the supervisory committee.

General university guidelines require:

- □ Minimum of 78 credits beyond the B.S. degree. Study Plans exceeding this credit requirement and developed in consultation with the major professor are eligible for approval.
- □ At least 33 of the 78 credits must be in courses other than Doctoral Research / Dissertation.
- □ At least 39 of the 78 credits at UI while matriculated in the College of Graduate Studies.
- □ At least 52 credits in courses numbered 500 and above, including research and dissertation.
- □ Graduate GPA above 3.0.

Mechanical Engineering Department requires:

- □ Satisfy the U of I course requirements for the M.S. or M.Engr. degree.
- □ **On-campus students** must accumulate 3 credits of the one-credit Graduate Seminar (ME 501)**.** Ph.D. students should take ME 501 once during the 1st year of study, once concurrently with the preliminary exam, and once concurrently with the dissertation defense. **Off-campus students** take 3 additional course or research credits.
- □ At least one-third of credits beyond the bachelor's degree must be in research (26 cr.).
- □ At least one-half of the credits beyond the bachelor's degree must be in M.E. courses.
- □ Maximum of 30 credits may be more than eight (8) years old when the degree is conferred **if approved** by the major professor and committee.
- □ All other degree requirements must be completed no later than five (5) years after the date on which the candidate passes his/her preliminary examination.

Examination requirements are:

- □ Preliminary Exam

See detailed information in the Preliminary Exam and Advancement to Candidacy sections in this handbook.

Other Requirements and Steps for Mechanical Engineering Graduate Degrees

The *Steps to a Graduate Degree* document provides answers to many common graduate student questions: https://www.uidaho.edu/-/media/UIdaho-Responsive/Files/cogs/BrochuresHandbooksGuides/Steps-How-To.pdf. Additional information can be found here: https://www.uidaho.edu/cogs/degree-steps.

Grade-Point Average (GPA)

University of Idaho policy requires that graduate students maintain a 3.0 or higher GPA. If a student's GPA is less than 3.0 in any semester, the student is placed on probation; if it occurs for two semesters, the student is disqualified. (See the U of I Graduate Catalog: catalog.uidaho.edu/colleges-related-units/graduate-studies/.)

Annual Report of Progress and Performance

Each year in the spring semester all graduate students (M.Engr., M.S., & Ph.D.) are required to meet with their Major Professor and complete the Annual Report of Progress and Performance form, which is available on the COGS website: www.uidaho.edu/cogs/forms. Students are responsible for completing the form and submitting it to the department. The deadline for the form is the second Friday in April.

Appointment of Major Professor

All degree-seeking graduate students are required by the department and the College of Graduate Studies to select or be assigned a major professor by the second semester of enrollment in the graduate program. Non-thesis students are strongly encouraged to do this even earlier; preferably by the end of the first semester. A student's major professor must be a member of the U of I Graduate Faculty. Complete the Major Professor, Committee Member Appointment or Committee Changes form (www.uidaho.edu/cogs/forms) and submit it to the Mechanical Engineering Office for the department chair's approval. ***Students must appoint a major professor before submitting the Study Plan.***

Graduate Committee

Choose a committee in consultation with the major professor, who must serve as chair. Review faculty profiles, including research areas, on the Mechanical Engineering website: https://www.uidaho.edu/engr/departments/me/our-people/faculty

M.Engr. Committee

A master of engineering committee consists of at least two members, including the major professor who must be a Mechanical Engineering Faculty member.

M.S. Committee

A master of science committee consists of at least three members, including the major professor who must be a Mechanical Engineering Faculty member. The remainder of the committee should be members who provide unique value and insight to a student's program.

Ph.D. Committee

A doctoral committee consists of at least four members, including the major professor who must be a Mechanical Engineering Faculty member. The remainder of the committee must consist of individuals who provide breadth and depth to a Ph.D. candidate's program.

At least one-half of the members of the committee must be members of the U of I graduate faculty. A committee member may only serve on a committee for a degree level in which they have attained. A non-UI qualified expert may serve on a student's committee with approval of the Department Chair in advance of the individual's participation. Use the Major Professor, Committee Member Appointment or Committee Changes form (www.uidaho.edu/cogs/forms) to add or remove a major professor or committee member.

Study Plan

Completing a graduate degree requires submission of a Study Plan in Degree Audit on MyUI. Graduate students should complete the study plans in consultation with the major professor. The study plan must be completed and submitted in MyUI before the end of the second semester in the graduate program. For M.Engr. and M.S. degrees, 30 credits are required. For Ph.D. degrees, 78 credits are required. Study Plans exceeding these credit requirements and developed in consultation with the major professor are eligible for approval. Corrections to the study plan are also submitted in MyUI. The best time to correct the plan is early in the semester of graduation. Study Plan help can be found at http://www.uidaho.edu/registrar/graduation/audit.

Preliminary Examination and Advancement to Candidacy (Ph.D. Only)

The purpose of the preliminary exam is to ensure that the PhD candidate has achieved adequate technical knowledge, sufficient research progress, and adequate planning for the remainder of the research in order to successfully complete and defend the research dissertation.

The major professor, along with the committee, will administer the preliminary examination when the majority of the course requirements on the student's study plan have been completed, and sufficient research progress has been achieved by the PhD candidate. The Preliminary Examination must be completed **at least one year before anticipated graduation**.

The Preliminary Examination consists of the research proposal presentation (approximately 30 min. to 60 min.) to the graduate committee, followed by a session of questions by the committee members. During the Preliminary Examination, the graduate committee will also review the courses taken up to that point by the Ph.D. candidate, the grades obtained in each course, and the current GPA. The graduate committee will evaluate the research progress, and any publications resulted or planned from the dissertation research.

The possible outcomes of the Preliminary Examination are the following:

- □ Pass - advance to candidacy.
- □ Fail - do not advance to candidacy.
- □ Deferral - additional examination will be specified by the committee, such as a revised presentation of the proposed research.

At the conclusion of the examination, the *Report of Preliminary Examination and Advancement to Candidacy* form (www.uidaho.edu/cogs/forms) must be filled out and submitted to the College of Graduate Studies.

Application to Graduate

The best time to apply for graduation is within one semester of completing degree requirements. The application is on MyUI under "Apply to Graduate".

Request to Proceed to Final Defense (M.S. and Ph.D. only)

A *Request to Proceed with Final Defense* form (www.uidaho.edu/cogs/forms) must be submitted to the College of Graduate Studies before the defense. For Ph.D. students, the form must be submitted at least 10 working days before the defense. M.S. students do not have a specific deadline but must submit the form before the defense.

After receiving the *Request to Proceed with Final Defense* form, the College of Graduate Studies will email the student a *Report of Final Defense* form which the student must bring to the defense. It will be signed by the committee after the defense and submitted to the College of Graduate Studies by the major professor.

Final Presentation/Paper or Defense

Evaluation Rubrics

Rubrics are used to evaluate the final presentation/paper or defense. They are located in Appendix C.

M.Engr. Project, Report, and Presentation

Students must be enrolled in the university the semester they complete their M.Engr. project, report, and presentation. The M.Engr. committee will review the student's work, which should include both of the following:

- A technical report of no less than five pages of single-spaced text in a 12-point font with 1-inch margins. (The inclusion of figures, equations, tables, and references is encouraged but does not contribute to the page count.) The report format should be reviewed and approved by the major professor. The report should be submitted to the review committee at least 1 week prior to the presentation.
- An oral presentation of 20-30 minutes, given on campus or via video conferencing, followed by a discussion to allow questions and comments between the committee and the student.

A one-hour follow-up examination may be required at the discretion of the committee.

For on-campus students, the topic of the M.Engr. project should support M.E. department research and/or scholarly activity and must be approved by the major professor. Off-campus students can alternatively select a project topic related to their employment; this topic must be approved by the major professor. The project workload should be consistent with the number of ME 599 Project credits in the M.Engr. study plan (45 hours per credit).

Completion of Non-Thesis Requirements

With the approval of the committee, the major professor will submit a memo to the department chair confirming non-thesis requirements have been met. The major professor will also confirm that non-degree requirements have been met on the Banner Workflow system.

M.S. Thesis Defense

Students must be enrolled in the university the semester they complete the Thesis Defense, either in a class or ME 500 Master's Research and Thesis.

The final thesis defense is scheduled in conjunction with the major professor. All graduate committee members must be present at the defense. Graduate students are responsible for determining a suitable date and time.

The thesis defense starts with a presentation (~30-60 minutes) describing the students thesis research work, followed by time for questions. An oral examination may also be given on course work and/or matters related to the thesis. After deliberation, the graduate committee may require additional research, thesis content, or edits to the thesis. In case of failure, students may be required to repeat the thesis defense.

At least a week before the defense students should provide a copy of the abstract to the Mechanical Engineering office so it can be posted. (See sample abstract in Appendix B.) A draft of the thesis should be submitted to committee members at least two weeks prior to the date of the defense.

Ph.D. Dissertation Defense

Students must be enrolled in the university the semester they complete the Dissertation Defense, either in a class or ME 600 Doctoral Research and Dissertation.

The final dissertation defense is scheduled in conjunction with the major professor and graduate committee. All committee members must be present at this examination. Graduate students are responsible for determining a suitable date and time.

The dissertation defense starts with a presentation (~45-60 minutes) describing the dissertation research work, followed by time for questions. After deliberation, the graduate committee may require additional research, dissertation content, or edits to the dissertation. In case of failure, students may be required to repeat the dissertation defense.

At least ten days before the defense students should provide a copy of an abstract to the Mechanical Engineering office so it can be posted. (See the sample abstract in Appendix B.) A draft of the dissertation should be submitted to committee members at least two weeks prior to the date of the defense.

Electronic submission of Theses and Dissertations (ETD)

The final submission of the thesis/dissertation is electronic. See: www.uidaho.edu/cogs/degree-steps and find "Thesis & Dissertation Resources, Preparing, Defending and Submitting Your Thesis or Dissertation."

Graduate students should contact the Thesis and Dissertation Advisor for the College of Graduate Studies with questions regarding the submission process and arrange a review of a draft of their manuscript in ETD (https://www.etdadmin.com/main/home?siteId=126) for compliance to the requirements listed in the Thesis/Dissertation Handbook.

ETD should not be used for managing edits and revisions. Once a completed draft (in final formatting) of the thesis or dissertation manuscript is ready to share with the graduate committee, around the time of the defense, the student should submit the document to ETD for a formatting review. This is referred to on the COGS website as "Submit Final Version to ETD". Before and after the defense, students should work with their major professor and committee to make all required revisions and edits. Students should only submit their final version to ETD once their entire committee is ready to sign off on their manuscript. This is referred to on the COGS website as "Final Document Approved in ETD".

Appendix A. Graduate Resources

Graduate Forms: www.uidaho.edu/cogs/forms

Credit Reservation Request Form: www.uidaho.edu/-/media/UIdaho-Responsive/Files/registrar/Forms/CreditReservation.pdf

Credit Reservation Form Help: www.uidaho.edu/-/media/uidaho-responsive/files/engr/academic-programs/me/degrees/creditreservationformhelp.pdf

Dates and Deadlines: www.uidaho.edu/cogs/deadlines

Thesis/Dissertations Deadlines: www.uidaho.edu/cogs/deadlines/thesis-dissertations

Fellowship Atlas: www.uidaho.edu/cogs/secure?destination=/cogs/secure/atlas

Funding Opportunities: www.uidaho.edu/cogs/student-resources/current-op

U of I Graduate Catalog: www.catalog.uidaho.edu/colleges-related-units/graduate-studies/

Graduate & Professional Student Association (GPSA): www.uidaho.edu/cogs/student-resources/gpsa

Graduate Student Resources: www.uidaho.edu/cogs/student-resources

M.Engr. Mechanical Engineering (with 4+1 Option): www.uidaho.edu/engr/departments/me/degrees/mengr

Newly Admitted Students: www.uidaho.edu/cogs/student-resources/newly-admitted

Research: www.uidaho.edu/cogs/student-resources/research

Steps to a Graduate Degree: www.uidaho.edu/cogs/degree-steps

PDF Guide: Steps to a Graduate Degree: www.uidaho.edu/-/media/UIdaho-Responsive/Files/cogs/BrochuresHandbooksGuides/Steps-How-To.pdf

Study Plan/Degree Audit Instructions: www.uidaho.edu/cogs/forms

Teaching/Research Assistant: www.uidaho.edu/cogs/student-resources/tara-resources

Thesis and Dissertations: www.uidaho.edu/cogs/student-resources/thesis-dissertation

Workshops: www.uidaho.edu/cogs/student-resources/workshops

Appendix B. Sample Defense Abstract/Announcement

Experimental Determination of Young's Modulus in a Cantilevered Beam

A thesis defense by Joseph Nature
for the
Master of Science in Mechanical Engineering Degree

Thursday, March 23, 2017, 11:00 A.M.
CNR room 14

Abstract

This paper describes the experimental determination of Young's modulus using strain gauges on a cantilevered beam. The experimental apparatus consisted of a 30 cm long cantilevered steel beam with metallic strain gauges mounted to the top and bottom of the beam at the same distance from the fixed end. These two strain gauges were used to in half-arm Wheatstone bridge circuit to measure the strain from bending stress caused by hanging weights from the free end of the beam. At each loading of the beam, bending stress was calculated at the location of the strain gauges. Multiple loadings were performed, and the recorded data was used to create a stress vs. strain plot. A line was fit to the data using least-squares regression. The slope of this line, known as Young's Modulus, was determined to be 198 ± 5 MPa, which is consistent with the standard published value of 200 MPa.

Appendix C. Evaluation Rubric

MEngr/MS/PhD Project/Defense Presentation and Report/Thesis/Dissertation Evaluation Form

Student: _____ Date: _____

Evaluators: (committee members) _____

_____

_____

_____

Evaluation Instructions:

- Complete the **Defense Presentation Rubric** on page 2, checking either M.Engr. M.S., or Ph.D. at the top.
- Complete the **Manuscript Rubric** on page 3, checking either: M.Engr., M.S., or Ph.D. at the top.
- Both rubrics are to be used for M.Engr., M.S., and Ph.D. students with expected performance expectations:
  - M.Engr. students are expected to perform over the range of Competent/Proficient/Master (2-4).
  - M.S. students are expected to perform over the range of Competent/Proficient/Master (2-4).
  - Ph.D. students are expected to perform over the range of Proficient/Master/Expert (3-5).

Some students may perform outside of these ranges. If a M.Engr. student is not required to submit a written report, the manuscript rubric may be completed based on the written presentation content (slides).

- The rubrics on this form should be completed by the Major Professor with committee agreement.
- In case of disagreement, a committee member may fill out a separate form.

Notes/Comments:

Defense Presentation Rubric: □MEngr Project *or* □MS Thesis *or* □PhD Dissertation

Competency	Novice 1	Competent 2	Proficient 3	Master 4	Expert 5	Sub-Score
Organization and Language 12%	Fails to recognize audience and purpose Poorly organized with poor or sporadic detail. Distracting grammar and spelling errors.	Some effort to target audience and purpose. Minimally organized with marginal detail. Acceptable grammar & some spelling errors.	Audience and purpose clearly understood. Moderately organized with appropriate detail. Solid grammar & minimal spelling errors.	Constructed for audience and purpose. Well-organized with insightful detail. Good grammar and sparce spelling errors.	Tailor-made for audience and purpose. Thoroughly organized with astute detail. Excellent grammar and no spelling errors.	
Background and Motivation 14%	Incomplete description of problem and previous work. Insufficient argument for research significance.	Reasonable description of problem and previous work. Obscure argument for research significance.	Suitable description of research and previous work. Clear argument for research significance.	Good description of research and previous work. Strong, clear argument for research significance.	Insightful description of problem and previous work. Convincing argument for research significance.	
Research Methods 16%	Contribution unclear and/or un-differentiable from previous work. Inadequate derivation of research design & theory. Poor description of equipment & procedures.	Contribution is obscure and difficult to differentiate from previous work. Incomplete derivation of research design & theory. Adequate description of equipment & procedures.	Contribution sufficiently defined and differentiated from previous work. Coherent derivation of research design & theory. Appropriate description of equipment & procedures.	Notable contribution, clearly differentiated from previous work. Rigorous derivation of research design & theory. Good description of equipment & procedures.	Considerable contribution, easily differentiated from previous work. Eloquent derivation of research design & theory. Insightful description of equipment & procedures.	
Research Results and Conclusions 16%	Novelty, significance, and impact of results unclear. Methods and/or hypotheses poorly validated. Conclusions unclear from analysis of results.	Novelty, significance, and impact of results are vague. Methods and/or hypotheses sufficiently validated. Conclusions backed by analysis of results.	Novelty, significance, and impact of results conveyed. Methods and/or hypotheses clearly validated. Conclusions supported by analysis of results.	Novelty, significance, and impact well conveyed. Methods and/or hypotheses strongly validated. Conclusions corroborated by analysis of results.	Novelty, significance, and impact expertly conveyed. Methods and/or hypotheses convincingly validated. Conclusions verified by analysis of results.	
Mastery of Topic 16%	Incomplete understanding of research & presented work. Unsatisfying responses to questions and comments.	Competent understanding of research & presented work. Reasonable responses to questions and comments.	Solid understanding of research & presented work. Knowledgeable responses to questions and comments.	Adept understanding of research & presented work. Proficient responses to questions and comments.	Expert understanding of research & presented work. Skillful responses to questions and comments.	
Visual Aids 14%	Insufficient pictures, plots, figures, and tables. Visualizations inhibit communication of research.	Appropriate pictures, plots, figures, and tables. Visualizations enable communication of research.	Descriptive pictures, plots, figures, and tables. Visualizations serve communication of research.	Informative, quality pictures, plots, figures, and tables. Visualizations aid in communicating research.	Illuminating pictures, plots, figures, and tables. Visualizations enhance communication of research.	
Delivery Style 12%	Poor, distracting articulation, insufficient descriptors. Presentation style limits communication of research.	Rudimentary articulation, adequate descriptors. Presentation style permits communication of research.	Adaptive articulation, appropriate descriptors. Presentation style serves communication of research.	Illustrative articulation, strong descriptors. Presentation style supports communication of research.	Eloquent articulation, excellent descriptors. Presentation style optimizes communication of research.	

Comments:

Manuscript Rubric: □MEngr Project *or* □MS Thesis *or* □PhD Dissertation

Competency	Novice 1	Competent 2	Proficient 3	Master 4	Expert 5	Sub-Score
Abstract 12%	Poor, confusing summary of significance & methods. Results unclear, main conclusions poorly explained.	Summarizes significance and methods. Presents results with clear conclusions.	Efficient summary of significance and methods. Effectively summarizes results and main conclusions.	Good, clear summary of methods and significance. Strong summary of results and significant conclusions.	Captivating and strong summary of methods and significance. Excellent summary of results and main conclusions.	
Introduction 14%	Appropriate review of previous work with limitations identified. Unclear argument for importance of research. Goals and scope of work obscure.	Acceptable review of previous work with limitations identified. Sufficient argument for importance of research. Goals and scope of work adequately stated.	Descriptive review of previous work with limitations identified. Clear, sufficient argument for importance of research. Goals and scope of work precisely stated.	Good review of previous work with limitations identified. Convincing argument for importance of research. Goals and scope of work effectively defined.	Insightful review of previous work with limitations identified. Incontrovertible argument for importance of research. Goals and scope of work excellently elucidated.	
Research Methods 16%	Insufficient theoretical analysis & mathematical detail, poor use of figures/diagrams/images. Out-of-date equipment, procedures, and data collection. Author contributions unclear.	Adequate theoretical analysis & mathematical detail, appropriate use of figures/diagrams/images. Appropriate equipment, procedures, and data collection. Author contributions implied.	Proficient theoretical analysis & mathematical detail, good use of figures/diagrams/images. Advanced equipment, procedures, and data collection. Author contributions indicated.	Strong theoretical analysis & mathematical detail, strong use of figures/diagrams/images. State-of-the-art equipment, procedures, and data collection. Strong contributions signified.	Cutting-edge theory, analysis & mathematical detail, excellent use of figures/diagrams/images. State-of-the-art equipment, procedures, and data collection. Great contributions signified.	
Research Results 16%	Results validate methods and/or confirm hypotheses. Low-quality, insufficient plots, figures, and visualizations. Applies deficient statistical tools & analysis, unclear description of features of the results.	Results corroborate methods and/or confirm hypotheses. Appropriate plots, figures, and visualizations. Applies reasonable statistical tools & analysis, describes features of the results.	Results confirm methods and/or hypotheses. Good plots, figures, and visualizations. Applies modern statistical tools & analysis, presents significant features of the results.	Results validate methods and/or confirm hypotheses. High-quality plots, figures, and visualizations. Applies advanced statistical tools & analysis, highlights important features.	Results affirm methods and/or confirm hypotheses. Excellent, illuminating plots, figures, and visualizations. Applies innovative statistical tools & analysis, summarizes important features.	
Discussion and Conclusions 16%	Goals & scope not considered in discussion of results. Borderline conclusions with undefined limitations. Significance within field vague, suggested future work unclear.	Discussion of results consider goals & scope of work. Appropriate conclusions with some limitations mentioned. Defines significance within field, suggests future work.	Results interpreted in context of goals and scope of work. Logical conclusions with defined limitations. Explains significance within field, points to future work.	Results effectively evaluated in context of goals and scope. Compelling conclusions with clearly defined limitations. Significance strongly explained, future work directions outlined.	Results expertly evaluated in context of goals and scope. Indisputable conclusions with well-defined limitations. Significance expounded; future directions specified.	
Originality and Significance 14%	Insufficient theory, design, approach, or application. Negligible impact expected. Publication or IP not produced nor anticipated.	Sufficient theory, design, approach, or application. Minimal impact expected. Low-impact publication produced or anticipated.	Strong theory, design, approach, or application. Targeted impact expected. Publication and/or IP produced or anticipated.	State-of-the art theory, design, approach, or application. Significant impact expected. Significant publication(s) or IP produced or anticipated.	Innovative theory, design, approach, or application. Broad impact expected. Consequential publication(s) or IP produced or anticipated.	
Style and Mechanics 12%	Unclear, wordy, difficult to read & understand. Distracting grammar/spelling errors, poor use of voice and verb tense.	Reasonably clear and concise, some effort to read/understand. Some grammar/spelling errors, acceptable use of voice and verb tense.	Clear and concise, easy to read & understand. Minimal grammar/spelling errors, appropriate use of voice and verb tense.	Well-written, concise, easy to read & understand. Scarce grammar/spelling errors, good use of voice and verb tense.	Eloquent, concise, pleasure to read & understand. Absent of grammar/spelling errors, excellent use of voice and verb tense.	

Comments: