School of Engineering

UNIVERSITY OF MISSISSIPPI

BIOMEDICAL ENGINEERING

Graduate Student Handbook

Departmental Faculty Approval: October 8, 2025

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Welcome

Welcome to the Biomedical Engineering Graduate Program at the University of Mississippi!

Our department equips graduate students with the tools, knowledge, and mentorship needed to bridge engineering principles with life sciences and drive advancements in health care. Whether you are pursuing an M.S. or Ph.D., you will find a program that allows you to tailor your academic and research experience to your aspirations—through coursework, project, or thesis options at the master's level, or through original research culminating in a dissertation at the doctoral level.

Our goal is not just to train biomedical engineers, but to cultivate leaders who will shape the future of medical technology, research, and patient care. Whether your path leads to academia, industry, government, or professional school, our program provides a strong and transformative foundation.

Graduate school is not only about academics and research, but it is also about building community. We encourage you to get involved with organizations such as the Biomedical Engineering Graduate Student Association (BMEGA), the Graduate Student Council (GSC), and other organizations, outreach, and service opportunities across campus. These groups offer valuable professional development, leadership experience, and a supportive network of peers.

We are proud to be part of an institution that values interdisciplinary collaboration, academic rigor, and a supportive community. Oxford, Mississippi, our vibrant home, offers opportunities for both professional growth and personal enrichment in a welcoming college town rich with culture and creativity.

We are excited to have you join us and look forward to all you will accomplish.

Warm regards,
BME Faculty and Staff

School of Engineering Mission

School of Engineering Vision

The School will positively transform lives and communities through innovative engineering education and discovery.

School of Engineering Mission

The School capitalizes on its engineering science tradition, a low student to faculty ratio, and a rich liberal arts environment to give future professionals deep technical abilities, the capacity to adapt to the rapid changes in engineering, and the interdisciplinary background to help them excel in a competitive world.

The School aims to:

- Ensure an environment conducive to learning, teaching, and research. This includes a diverse and multicultural first-rate faculty, staff and students and state-of-the-art facilities.
- Provide top-quality ABET accredited undergraduate programs suitable for the 21st century.
- Foster vibrant graduate programs and perform quality research in line with national trends and achieve national recognition in selected areas.
- Establish strong partnerships and lasting relationships with industry, government, professional societies, alumni and academia.
- Make significant contribution to the technological and economic development of the State of Mississippi and the region through education, research, and service.
- Increase the visibility of the School of Engineering locally and nationally.

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Introduction

This Handbook is intended to acquaint graduate students with applicable policies and requirements relating to study for the Master's and Doctorate degrees in the Department of Biomedical Engineering and to inform them of the procedures that must be followed in accordance with Graduate School and Department regulations.

This Handbook summarizes the general requirements for the Ph.D. and M.S. degrees of Engineering Science with emphasis in Biomedical Engineering and serves as a guide for those students who desire to obtain these advanced degrees.

This Handbook is to be used as a supplement to the policies of the University, available at https://policies.olemiss.edu/, which are set by the University's Graduate Council.

It is in the best interests of the student to acquaint themselves with the location of the Graduate School and develop and maintain a friendly and professional relationship with the staff therein. It is the student's responsibility to stay abreast of changes in Graduate School requirements, policies, and procedures relating to the degree they are pursuing. The Department's Graduate Program Coordinator can also be of assistance in many instances. Please see https://gradschool.olemiss.edu/ for resources and information.

Academics

Registration and Residency

Each semester, each student needs to register for courses during the registration period. The student should secure approval for the schedule of courses by either their major professor (for thesis or project-based degrees) or Graduate Program Coordinator (for coursework-based degrees). New graduate students should obtain registration instructions from their Graduate Program Coordinator prior to or at the beginning of their first period of enrollment. Continuing or re-admitted students are encouraged to take advantage of the priority registration periods.

Full-Time Status

If a student is receiving a tuition scholarship (e.g., most research-based students or teaching assistants), they must be registered as a full-time student in each term of residence (fall, spring, and full summer terms) to receive the tuition scholarship. **If the student is not registered as a full-time graduate student in each term, they will be charged tuition and fees!** This does not apply to self-pay students (e.g., coursework-based master's).

A graduate student registered for 9 or more credit hours (5500-level or higher) during the fall or spring semesters at the University is considered to be a full-time student. A graduate student may take undergraduate courses as necessary, but these do not contribute the number of required graduate hours necessary to receive a tuition scholarship.

In a summer term, a graduate student registered for 4 or more semester hours is considered a full-time student, though, to satisfy residence requirements for financial aid (i.e., student loans), the student must enroll for a total of 9 hours during the summer session terms. Typically, students on a teaching or research assistantship with a tuition scholarship will register for 6 hours during the full summer term to maintain full-time status.

The faculty advisor should ensure that their students are enrolling in appropriate courses and maintaining full-time status when on an assistantship.

The faculty advisor should also ensure that the academic home department of the student (e.g., the department in which the student is seeking a degree; BME, Ch E, BMS, etc.) knows to enroll students in the full summer term for research hours, and they are on the list to receive a summer tuition scholarship. Email notices about summer tuition scholarships typically go out in late March or early April. Students must be on this list by the deadline given each year. Otherwise, the student will be charged summer tuition and fees.

Enrollment in Classes

Students are responsible for enrolling in classes each semester and summer term. When possible, students should always check with the “instructor of record” of a course before enrolling. In some instances, the course may not be offered, or the student may not have the appropriate background for enrolling in the course.

Research hours come from ENGR 6997 and ENGR 7998. ENGR 6997 is for master’s students and doctoral students before attaining Ph.D. candidacy. ENGR 7998 is for students after they successfully complete their candidacy exams (e.g., Ph.D. candidates). Within each of those classes are sections specific to each research advisor. The faculty advisor should let the academic home department for the student (e.g., the department in which the student is seeking a degree) know how many hours are needed for each student in each term.

Transfer of Graduate Credit

A student may receive credit toward a graduate degree for work accomplished in recognized institutions upon the recommendation of the department and the approval of the dean of the Graduate School. Only courses for which the student received a grade of B or higher may be transferred. Transfer of credit from another institution will not be accepted for workshops, internships, and other courses of a similar nature, and for courses in which regular letter grades are not awarded. Grades from other institutions may not substitute for unsatisfactory grades earned at the university; nor may the grade of A or B earned at another institution be used to offset a lower grade earned at the university. Transfer work from another institution that constitutes an overload while enrolled as a full-time student at the University of Mississippi will not be accepted.

All transfer of credit is subject to the following conditions: (1) The residence or degree credit requirement is not reduced. (2) The other graduate school must offer a graduate degree in the field in which the work has been completed. (3) The credit must be recommended by the student’s department in the university as specifically applicable to the student’s degree program.

With department approval, a student may transfer up to one half, but no more than 12 hours, of the graded coursework credit hours required for a master’s or specialist degree program (e.g., up to 12 hours may be transferred if the degree program requires 24 hours of graded coursework). There is a six-year time limit on the applicability of transferred credit, as there is on all credits applicable toward the master’s degree.

With department approval, a student may transfer up to one half, but no more than 24 hours, of the graded coursework credit hours required for a doctoral degree program (e.g., up to 12 hours may be transferred if the degree program requires 24 hours of graded coursework). There is a six-year time limit on the applicability of transferred credit. Beyond the 24 credit hour limit, departmental doctoral program requirements may be waived or reduced as a result of graduate work completed at other institutions; however, Graduate

School minimum degree requirements must be met, and students must take at least 50% of their graded credit hours applied toward the doctoral degree at the University of Mississippi.

Two exceptions to the limit on credit hours for transfer of doctoral credit apply. First, a student who transfers to the University of Mississippi following the recruitment of their faculty advisor as a new faculty member at the University of Mississippi may submit a request to apply additional transfer credit hours toward their doctoral degree. However, the comprehensive exams and dissertation must be completed at the University of Mississippi. Second, when there is a Memorandum of Understanding between the University of Mississippi and another university in which specific courses for transfer are approved by the program faculty and Graduate School, programs may allow additional hours to transfer. The student must complete at least 18 graded doctoral hours at the University of Mississippi and must complete the comprehensive exam and dissertation at the University of Mississippi.

Form GS3 is used to request to accept transfer credit from another institution.

Time in Residence

The average doctoral student requires four to five years to complete the Ph.D. degree requirements (no student may exceed seven years in their attempt to attain the Ph.D.). As a general rule, after seven years, a doctoral student will be recommended for dismissal from the graduate program. The average M.S. student requires two to three years for completion of degree requirements (may not exceed four years). As a general rule, after four years, a Master's student will be recommended for dismissal from the graduate program. Financial support may be terminated depending on the faculty advisor's funding availability and the student's research productivity.

Academic and Research Performance

A graduate student must maintain an overall GPA of at least 3.0 to graduate. The Graduate School will place a student whose GPA falls below 3.0 in any given semester on academic probation. A student on probation who earns less than a 3.0 GPA the following semester will be recommended to the Graduate Dean for dismissal from the program.

Grades of C-, D, or F are not acceptable for graduate credit, and a BME graduate student cannot have more than one C on their graduate record that counts toward their final GPA. A course may be repeated for credit at the instructor's discretion. No course may be repeated more than once, and no more than two courses may be repeated and applied toward a degree.

Students have the initial responsibility to recognize when they are having academic difficulties and are expected to initiate steps to resolve the problem. A student can be dismissed from the program not only for failure to maintain an adequate grade point

average, but also for non-course related academic reasons defined by the department or division, such as inadequate research progress, inability to pass a comprehensive examination, failure to prepare or to defend a thesis or dissertation in a satisfactory manner or failure to complete thesis or dissertation work in an acceptable amount of time. The Graduate School has established time limitations for master's and doctoral degree programs. The advisor and/or graduate program coordinator must provide reasonable warning to the student, in writing and copying the department chair, about academic performance deficiencies. The decision to recommend a student to the Graduate Dean or dismissal due to inadequate non-course work academic progress is made in collaboration with the Graduate Program Coordinator, student's graduate advisor, and chair. Details are given in the University's "Policy on the Dismissal or Change in Status of Graduate Students".

Application for a Degree

A student is expected to submit an Application for Graduate Degree Form GS8 during the first part of the last semester of resident enrollment. All students planning to receive their graduate degrees must be enrolled for at least 3 hours during the fall or spring semester in which they successfully defend their thesis or dissertation. Students planning to graduate during the summer must be enrolled for at least one hour. **It is the responsibility of the student to apply for the degree in a timely fashion.**

Vacation, Leave, and Work Schedule

Students receiving assistantships from the department are expected to be present at their assigned desks/laboratories each workday when not in classes (during normal 8 am to 5 pm work hours) as required in the terms of the financial support. Most students find it helpful to work extended hours including nights and weekends, and the department provides encouragement towards such activities by providing 24-hour safe access to departmental facilities to those wishing to take advantage of the opportunity.

When it is required for a student to be absent from duties for an extended period during the day, please notify the appropriate faculty advisor. It is requested that all students notify their advisor when they expect to be away from the department for extended periods.

Holidays are set by the University and can be found here.

Graduate students are required to work normal staff hours and days, including spring break, working days before the Thanksgiving break, after fall and spring semesters, and the summer breaks.

Any personal or sick leave must be recorded with the faculty advisor and GPC. Failure to inform the faculty advisor of leave in a timely manner can result in a forfeiture of a student's assistantship. Graduate students should read and be familiar with the university policy, "Graduate Student Leave of Absence, Sick Leave, and Vacation Leave Policy", available at https://policies.olemiss.edu.

Students requesting pregnancy accommodations or family leave should consult https://olemiss.edu/eorc/pregnancy/ and the UM Parental and Family Relief Policy for Graduate Assistants.

Student Mentorship and Evaluation

Forming a Thesis/Dissertation Committee

Master's and doctoral students on the project and thesis/dissertation tracks must form a committee by the end of their first semester in the program. The committee's role is to:

- Guide the student's progress through the program.
- Provide advice on research direction.
- Evaluate and determine the outcome of the thesis/dissertation defense.

For doctoral students, the committee is also responsible for selecting four courses in which the student must maintain a minimum GPA of 3.25 in order to qualify for the Ph.D. candidacy exam. The committee also determines the outcome of the Ph.D. candidacy exam and Prospectus defense. Additional information on the exam and defenses can be found in the Curriculum section.

Committee Composition:

- At least three faculty members from the Department of Biomedical Engineering.
- At least one faculty member from outside the department.
- The faculty advisor serves as chair of the committee.

Students, in consultation with their faculty advisor, should select committee members who can provide constructive feedback and support for their research. It is the student's responsibility to contact potential faculty members to request their participation.

Once the committee is formed, the student must:

1. Email the Graduate Program Coordinator (GPC) with the names of the committee members.
2. Record the committee members in myOleMiss (see instructions here).

Students in the coursework-only Master's program will be evaluated by their instructors of record. More details are available in the Curriculum section.

Annual Committee Meetings

Students on the thesis/dissertation track are required to hold an annual committee meeting to review their academic and research progress.

The meeting provides an opportunity for students to update their committee on:

- Coursework completed and remaining requirements.
- Grades obtained.
- Milestones passed (e.g., candidacy, prospectus) or planned.

- Publications, manuscripts in preparation, and professional presentations.
- Research progress and future plans.

Format:

- Students present slides on the topics listed above and anything else the advisor deems relevant.
- Meetings are typically one hour.
- Students should contact their committee well in advance to coordinate scheduling.

Documentation:

- Following the meeting, the committee chair must draft a memo summarizing the feedback provided.
- The full committee reviews, approves, and signs the memo.
- The memo is then shared with the student and submitted to the Graduate Program Coordinator (GPC) for official record.

This process ensures that students have a transparent understanding of how their committee views their progress and what is needed for continued success, while also reinforcing the committee's responsibility to provide mentorship and communicate clear expectations for the student's development.

Individual Development Plan (IDP)

An individual development plan (IDP) may be viewed as a customizable roadmap to assist with developing a clear pathway toward a successful career. The UM policy regarding IDPs indicates an IDP must be completed by all doctoral students and is highly encouraged for master's students. A completed IDP includes clear academic and professional goals, as well as an action plan for achieving these goals.

Students are encouraged to reflect upon their personal and career goals while initially filling out the IDP form before the meeting with their faculty advisor. The myIDP tool supported by the American Association for the Advancement of Science (AAAS) may be a helpful template.

Annual Evaluation of Graduate Students

In accordance with University of Mississippi and School of Engineering policy, all graduate students must participate in an annual evaluation. This evaluation may be combined with the student's annual Individual Development Plan (IDP) meeting.

The evaluation process requires the faculty advisor to:

1. Document the student's academic and research progress.
2. Meet with the student to review and discuss progress.

3. Complete and sign the evaluation form together with the student.
4. Submit the signed form to the Graduate Program Coordinator (GPC) by June 30 for the immediate past academic year.

The purpose of this evaluation is to ensure clear communication of expectations and to provide an accurate record of each student's progress toward degree completion.

It is highly encouraged for the graduate student to have their annual committee meeting before the annual evaluation so that all feedback can be considered holistically.

Curriculum

M.S. in Engineering Science, Emphasis: Biomedical Engineering

Minimum Total Credit Hours: 30

M.S. Degree Options

The M.S. degree may be completed as a:

- Thesis option (30-hour program, to include 6 hours of thesis),
- Non-Thesis option (30-hour program, to include a minimum of 3 hours of a design-oriented project course), or
- Coursework option (30-hour program, to include a final oral examination in front of a committee, but no written report).

Description

A degree of M.S. in Engineering Science with an emphasis in Biomedical Engineering prepares graduates to apply interdisciplinary science and engineering tools to advance biology and medicine. Graduates will be able to independently solve problems, execute complex projects, and pursue successful careers in research, development, or management within engineering or biomedical science fields, as well as professional degrees such as medicine or law.

Course Requirements

The M.S. in Engineering Science with an emphasis in Biomedical Engineering requires a minimum of 30 hours of graduate credit with an overall GPA of 3.0. The specific coursework requirements depend on the M.S. option pursued by the student.

Students whose undergraduate degree is not in biomedical engineering or a closely related field may be required to take additional coursework beyond the 30-hour requirement at the discretion of the student's committee. The committee should be formed before the end of the first semester.

Coursework Option

All 30 credit hours come from graded 5500+ level coursework agreed upon by the student and their committee. These courses must include at least two BMED 5500+ level courses (6 credit hours) and BMED 6000 (3 credit hours). Students must successfully pass a comprehensive final exam before graduation. Parameters for the exam will be agreed upon by the student and their committee, with final approval by the Graduate Program Coordinator. The student must orally defend the comprehensive exam material to their committee.

Non-Thesis Option

This option requires at least 27 credit hours of graded 5500+ level coursework agreed upon by the student and their committee. These courses must include at least two BMED 5500+ courses (6 credit hours) and BMED 6000 (3 credit hours). In addition, students must complete no less than 3 hours of project credit (ENGR 6997) and successfully defend their project to their committee before graduation.

Thesis Option

Students must take BMED 6000 (3 credit hours) and three hours of BMED 6010 (1 credit hour). In addition, students must take 18 credit hours of graded 5500+ level coursework agreed upon by the student and their committee. The coursework must include at least two BMED 5500+ courses, not including BMED 6000 or BMED 6010. In addition, students must complete no less than 6 credit hours of thesis (ENGR 6997). Students must successfully write and defend a thesis to their committee before graduation.

M.S. Degree Milestones

Coursework-based M.S. Final Exam

All students completing the coursework-only Master's degree in Biomedical Engineering must successfully pass a Final Oral Examination. The purpose of this examination is to assess the student's ability to synthesize and apply knowledge gained through coursework and to demonstrate mastery of at least two areas of biomedical engineering.

Format and Duration

- The exam will last up to two hours.
- Students will be examined in two subject areas based on the courses taken throughout their M.S. program, one of which must be a Biomedical Engineering (BMED) listed course. The second may also be a BMED course or another approved graduate-level course relevant to the student's plan of study or career trajectory.
- For each selected area, the student will:
    - Prepare a 15-minute presentation that provides a solution to a problem or defense of a paper/topic supplied in advance by the instructor of record.
    - Engage in up to 45 minutes of oral questioning and defense led by the examining faculty.
- This format is repeated for both selected areas, for a total examination time of up to two hours.

Examiners

- The examining committee will consist of the faculty members who taught the selected courses and the GPC.
- Each examiner will assess the student's knowledge, ability to integrate concepts, and problem-solving skills within their course domain.

Criteria for Evaluation

To pass the exam, students must demonstrate:

1. Breadth of Knowledge – Clear understanding of key concepts across biomedical engineering coursework.
2. Depth of Mastery – Ability to explain, analyze, and defend advanced material in the two selected subject areas.
3. Problem-Solving Ability – Capacity to apply theoretical knowledge to novel or practical problems.
4. Critical Thinking and Communication – Ability to articulate reasoning, critique scientific/engineering approaches, and defend answers clearly and professionally.

Timeline and Scheduling

- Students must declare their two examination areas in consultation with the Graduate Program Coordinator (GPC) by the semester **before they intend to take the exam** (typically by **December of the second year** for students who begin coursework in the fall semester).

- Examinations are typically scheduled during the student's final semester of enrollment and must be completed before the end of the academic semester the student intends to graduate.
- Form GS7 must be completed by the GPC and submitted to the Graduate School no later than fourteen days prior to the date of the intended exam. Thus, the GPC should be notified as soon as the student intends to take the exam to ensure all degree requirements are met before officially scheduling with the Graduate School.

Outcomes

- The examining committee will deliberate immediately after the oral exam and provide one of the following outcomes:
    - Pass – Student has met the criteria in both subject areas.
    - Conditional Pass – Student must address specific deficiencies (e.g., written clarification, additional assignment).
    - Fail – Student did not demonstrate the required mastery. A student who fails may be permitted one re-examination, subject to GPC approval.

Coursework-based M.S. Timeline

Semester	Activities & Deadlines
Fall, Year 1	• Complete required coursework • Complete IDP at start of semester
Spring, Year 1	• Continue coursework • Annual evaluation with GPC • Revisit and update IDP
Fall, Year 2	• Declare two exam areas with GPC (by December) • Continue coursework • Prepare for final oral exam
Spring, Year 2 (Final Semester)	• Notify GPC of intended exam date ASAP • GPC submits Form GS7 at least 14 days before exam • Schedule and take final oral examination • File Report of Final Exam • Submit Form GS8 to Graduate School for graduation

Ongoing/General Reminders

- Meet with GPC for guidance.
- **Stay aware of Graduate School deadlines each semester.** The Graduate School calendar and graduation checklist can be found here.
- Ensure all forms (GS7, GS8, Report of Final Exam) are submitted on time.

Non-Thesis M.S. Final Exam

All students completing the non-thesis (project-based) Master's degree in Biomedical Engineering must successfully pass a Final Oral Project Defense. The purpose of this defense is to assess the student's ability to design, execute, and communicate an independent project while demonstrating mastery biomedical engineering topics learned throughout the degree program.

Format and Duration

- The defense will last up to two hours.
- Students will prepare and deliver a 30–40 minute presentation summarizing their project, including background, methods, results, and significance.
- Following the presentation, the committee will engage the student in oral questioning and discussion.
- Questions will address both the project itself and the broader biomedical engineering principles underlying the work.

Examiners

- The examining committee will consist of at least three Biomedical Engineering faculty members, including the student's project advisor (who serves as chair).
- At least one additional faculty member outside the project domain may be invited to ensure breadth of evaluation.
- Each examiner will assess the student's ability to explain, defend, and contextualize their project in the broader field.

Criteria for Evaluation

To pass the exam, students must demonstrate:

1. Project Mastery – Ability to explain the project's goals, methods, results, and implications.
2. Integration of Knowledge – Clear understanding of how coursework informed the project.
3. Problem-Solving Ability – Capacity to address challenges encountered and justify chosen approaches.
4. Critical Thinking and Communication – Ability to defend reasoning, critique limitations, and present results professionally.

Timeline and Scheduling

- Students must register for the required project hours and, in consultation with their advisor, identify their examining committee by the end of the first semester.
- Defenses are typically scheduled during the student's final semester of enrollment and must be completed before the end of the academic semester in which the student intends to graduate.

- Form GS7 must be completed by the GPC and submitted to the Graduate School no later than fourteen days prior to the date of the intended exam. Thus, the GPC should be notified as soon as the student intends to take the exam to ensure all degree requirements are met before officially scheduling with the Graduate School.

Outcomes

- The examining committee will deliberate immediately after the defense and provide one of the following outcomes:
    - Pass – Student has met the criteria and successfully defended the project.
    - Conditional Pass – Student must address specific deficiencies (e.g., written revisions, additional analysis).
    - Fail – Student did not demonstrate the required mastery. A student who fails may be permitted one re-examination, subject to GPC approval.

Non-Thesis M.S. Timeline

Semester	Activities & Deadlines
Fall, Year 1	• Complete required coursework • Complete IDP at start of semester • Identify potential project committee members • Begin project • Establish project committee by end of semester in myOleMiss
Spring, Year 1	• Continue coursework and project • Meet regularly with advisor to discuss potential project topics and direction
End of Year 1	• Committee meeting to review progress • Annual evaluation with advisor and committee • Revisit and update IDP based on first-year progress
Fall, Year 2	• Continue coursework if needed • Register for project research hours (ENGR 6997) • Conduct project work and start drafting project report/presentation • Notify GPC of intended project defense date ASAP • GPC submits Form GS7 to authorize eligibility for comprehensive (project) exam
Spring, Year 2	• Continue project work and report/presentation writing • Submit completed project report/materials to committee at least 2 weeks before defense • Form GS8 Application for Graduate Degree due: Early March for May graduation • Schedule and complete project defense/exam • File Report of Final Exam with Graduate School
Summer, Year 2 (if applicable)	• Continue project work if needed • Form GS8 Application: Early June/July for August graduation • Schedule and complete project defense/exam • File Report of Final Exam

Ongoing/General Reminders

- Meet regularly with advisor and committee for guidance.
- Maintain progress on project work and report/presentation writing.
- Attend additional committee meetings if needed.
- **Stay aware of Graduate School deadlines each semester.** The Graduate School calendar and graduation checklist can be found here.
- Ensure all forms (GS7, GS8, Report of Final Exam) are submitted on time.

Thesis-based M.S. Final Exam

All students completing the thesis-based Master's degree in Biomedical Engineering must successfully write and defend a Master's Thesis. In addition, students must complete no fewer than 6 credit hours of thesis research (ENGR 6997) prior to graduation. The purpose of the thesis defense is to evaluate the student's ability to conduct independent research, analyze and interpret results, and place their work in the broader context of biomedical engineering.

Format and Duration

- The thesis defense will last up to two hours.
- Students will submit their written thesis to the committee a **minimum of two weeks in advance**, following Graduate School formatting requirements and deadlines.
- The defense consists of a 30–40 minute oral presentation summarizing the research question, methods, results, and conclusions.
- Following the presentation, the committee will engage the student in oral questioning and discussion.
- Questions will address both the thesis research and the broader biomedical engineering principles underlying the work.

Examiners

- The examining committee will consist of at least three Biomedical Engineering faculty members and one faculty member from outside the department, in accordance with Graduate School policy.
- The student's thesis advisor serves as the committee chair.
- Each examiner will evaluate the quality of the written thesis, the clarity of the oral presentation, and the student's ability to defend and contextualize their work.

Criteria for Evaluation

To pass the exam, students must demonstrate:

1. Research Mastery – Ability to articulate research questions, methodology, and results clearly and rigorously.
2. Original Contribution – Evidence that the thesis represents an independent, scholarly contribution to biomedical engineering.
3. Integration of Knowledge – Understanding of how coursework and literature informed the research.
4. Critical Thinking and Communication – Ability to defend conclusions, acknowledge limitations, and articulate the significance of findings in professional, scholarly terms.

Timeline and Scheduling

- Students must enroll in ENGR 6997 (Thesis) for a minimum of 6 credit hours.

- In consultation with their advisor, students must select their thesis committee by the end of the first semester of enrollment.
- A completed written thesis must be submitted to the committee at least two weeks before the defense.
- Form GS7 must be completed by the GPC and submitted to the Graduate School no later than fourteen days prior to the date of the intended exam. Thus, the GPC should be notified as soon as the student intends to take the exam to ensure all degree requirements are met before officially scheduling with the Graduate School.
- The oral defense must be scheduled in the final semester of enrollment and completed before the end of the academic semester in which the student intends to graduate.

Outcomes

- The examining committee will deliberate immediately after the defense and provide one of the following outcomes:
    - Pass – Student has met the criteria and successfully defended the thesis.
    - Conditional Pass – Student must address specific deficiencies (e.g., thesis revisions, additional clarifications).
    - Fail – Student did not demonstrate the required mastery. A student who fails may be permitted one re-examination, subject to GPC and Graduate School approval.

Thesis-based M.S. Timeline

Semester	Activities & Deadlines
Fall, Year 1	• Complete required coursework • Complete IDP at start of semester • Identify potential thesis committee members • Begin research • Establish thesis committee by end of semester in myOleMiss
Spring, Year 1	• Continue coursework and research • Meet regularly with advisor to discuss potential thesis topics and research direction
End of Year 1	• Committee meeting to review progress • Annual evaluation with advisor and committee • Revisit and update IDP based on first-year progress
Full Summer after Year 1	• Continue research • Register for ENGR 6997 credit
Fall, Year 2	• Continue coursework if needed • Register for research/thesis hours (ENGR 6997) • Conduct research and start drafting thesis • Notify GPC of intended defense date ASAP • GPC submits Form GS7 to authorize eligibility for comprehensive (thesis) exam
Spring, Year 2	• Continue research and thesis writing • Form GS8 Application for Graduate Degree due: Early March for May graduation • Submit completed thesis to committee at least 2 weeks before defense • Schedule and complete thesis defense/exam • Make edits (if needed as indicated by the committee during the defense) to the thesis • Submit final version of thesis to ProQuest & pay fees: Early May for May graduation • File Report of Final Exam with Graduate School
Summer, Year 2 (if applicable)	• Continue thesis research if needed • Register for ENGR 6997 credit • Form GS8 Application: Early June/July for August graduation • Submit thesis to ProQuest & pay fees: Early August • Schedule and complete defense/exam • File Report of Final Exam

Ongoing/General Reminders

- Meet regularly with advisor and committee for guidance.
- Maintain thesis writing progress throughout Year 2.
- Attend additional committee meetings if needed.
- **Stay aware of Graduate School deadlines each semester.** The Graduate School calendar and graduation checklist can be found here.
- Ensure all forms (GS7, GS8, Report of Final Exam) are submitted on time.

Ph.D. in Engineering Science, Emphasis: Biomedical Engineering

Minimum Total Credit Hours: 54

Description

A degree of Ph.D. in Engineering Science with an emphasis in Biomedical Engineering prepares graduates to apply interdisciplinary science and engineering tools to advance biology and medicine. Graduates will be able to independently solve problems, execute complex projects, and pursue successful careers in research, development, or management within engineering or biomedical science fields, as well as professional degrees such as medicine or law. Graduates will be especially prepared to enter research positions in academia, industry, or government agencies.

Course Requirements

The Ph.D. in Engineering Science with an emphasis in Biomedical Engineering requires a minimum of 54 hours of graduate credit beyond the bachelor's degree. No specific course requirements are required beyond those specified for the M.S. thesis option. Upon successful defense of the Ph.D. candidacy exam, the student will switch from taking ENGR 6997 thesis to ENGR 7998 dissertation credit, where a minimum of 18 credit hours of ENGR 7998 is required for the Ph.D. degree.

If the students enters the program with a M.S. degree in biomedical engineering or a closely related field from another institution, up to three courses may be transferred for credit toward the Ph.D. degree, if the grade is a B or higher, and with approval by the student's committee.

Students whose undergraduate degree is not in biomedical engineering or a closely related field may be required to take additional coursework beyond the 54-hour requirement at the discretion of the student's committee in order to satisfy prerequisites. The committee should be formed before the end of the first semester.

Other Academic Requirements

Students in the Ph.D. track must achieve a GPA of 3.25 or higher on 12 credit hours selected by the committee. Selection must be done by the end of the first semester. To be admitted to candidacy, the student must successfully complete the pre-selected courses and pass the Ph.D. candidacy examination. After the candidacy exam, the Ph.D. candidate must then write and defend a dissertation before graduation.

Ph.D. Candidacy Exam

When a student has completed the 12 credit hours agreed upon by the committee with a 3.25 GPA or higher, they will be eligible to complete their Ph.D. candidacy exam. The student must write and orally defend an NSF or NIH-style research proposal based on

their dissertation research. Students are required to follow current proposal preparation instructions set forth by the appropriate agency (NSF PAPPG, NIH SF424). The proposal must include:

- Aims Cover Page (NSF Project Summary/NIH Specific Aims)
- Research Proposal (NSF Project Description/NIH R01)
- References

Upon successful defense, the student will be a Ph.D. candidate and begin taking ENGR 7998 dissertation hours.

Prospectus

The student must write and defend a Prospectus. The Prospectus defense cannot occur during the same full term (fall, spring, full summer) as the anticipated dissertation defense, and there must be a minimum of four calendar months between these events.

Dissertation

The student will be eligible to defend their dissertation upon:

- completion of at least 18 hours of ENGR 7998,
- having anticipated completion of the minimum 54 total credit hours by the end of the term of graduation,
- and approval of the student's Prospectus.

Ph.D. Degree Milestones

Ph.D. Candidacy Exam

Purpose of the Candidacy Exam

The Ph.D. Candidacy Examination evaluates whether a student is prepared to transition from coursework into independent dissertation research. Students must demonstrate:

1. Mastery of the foundational knowledge in biomedical engineering.
2. The ability to conceive, develop, and defend an original research proposal (ORP).
3. Independent critical thinking and originality in research idea generation.
4. Strong scientific communication skills, both written and oral.

Successful completion of the candidacy exam is required for advancement to Ph.D. candidacy.

Eligibility Requirements

To qualify to sit for the Ph.D. candidacy exam, a student must meet both program-level and Graduate School–level requirements:

Program-Level Requirements

- Completion of **four graduate-level courses** chosen by the Ph.D. committee with a **minimum GPA of 3.25** in those courses.
- Students without a prior bachelor's degree in engineering may be required to complete additional coursework (e.g., mathematics or engineering fundamentals), as outlined in their admission/offer letter. These requirements must be satisfied before the candidacy exam.
- Prior to the scheduled exam, the Department Chair or Graduate Program Coordinator (GPC) must submit the GS5 form (GS5 form link) to the Graduate School confirming the student's eligibility to sit for the exam. This form must be submitted at least two weeks before the scheduled defense.

Graduate School–Level Requirements

- The student must be in full-standing status.
- Any foreign language requirement specified by the program or Graduate School must be satisfied.
- The student must have a graduate GPA of 3.0 or higher.
- The student must not have any outstanding I (Incomplete) grades on their record.

Timeline & Scheduling

- Students are encouraged to complete the ORP by the end of their second year, summer after their second year, or fall semester of their third year.
- The candidacy exam must be scheduled with the committee at least four weeks in advance.
- The GS5 form must be submitted no later than two weeks before the defense date to confirm eligibility. Ideally, the GS5 would be submitted at the time of the Preliminary Submission confirmation (see below).

The Original Research Proposal (ORP)

- The ORP must be written in the format of an NIH R01 proposal (Specific Aims + Research Strategy) or an NSF standard research proposal (Project Summary + Project Description), following the official guidelines for structure, length, and formatting.
- The proposal must be based on the student's dissertation research topic.

Proposal Development Process

1. **Preliminary Submission**: The student submits a one-page **Specific Aims page (NIH)** or **Project Summary (NSF)** to their committee **along with a ½ page Original Contribution Statement**.
    - The statement must clearly articulate the student's original intellectual contribution.
    - The program recognizes that dissertation projects are typically pursued within the framework of the advisor's funded projects and lab objectives. The ORP is not expected to be entirely original in scope; however, the student must demonstrate a distinct intellectual contribution within the proposal.
2. **Committee Feedback**: The committee reviews both the summary/aims page and the contribution statement, providing written or oral feedback. Approval of the topic must be obtained before the student proceeds. Topics should be approved or denied within a week of submission to the committee.
3. **Proposal Completion**: Once the topic is approved, the student has **three months** to complete the full written ORP and schedule the oral defense.
    - The completed written ORP must be submitted to the committee for review at least **two weeks** before the scheduled oral defense.
    - One round of draft feedback is permitted from the advisor (stylistic, clarity, or grant-writing guidance only; see below) before final submission to the committee.

Research Advisor Involvement

The candidacy exam is intended to assess the student's **intellectual independence**. Faculty advisors are expected to provide guidance while ensuring that the student takes primary ownership of the proposal.

- **Permitted Advisor Contributions**:
  - Review feasibility of ideas in the context of the lab's expertise, resources, and funding constraints.
  - Ensure alignment with the broader dissertation direction.
  - Provide **one round of feedback on a complete draft** of the ORP. Feedback may include stylistic suggestions, clarity of writing, and structural guidance in proposal formatting.
  - Mentor students in grant-writing conventions (e.g., hypothesis-driven framing, alignment of aims and methods).
- **Not Permitted**:
  - Generating research ideas for the student's "original contribution".
  - Writing or rewriting substantive sections of the proposal.
  - Dictating experimental approaches beyond feasibility checks.
  - Providing grant proposals written by the PI as examples.

Oral Defense

- The oral defense will consist of a **presentation and examination** before the student's committee:
  - A 30–40 minute presentation of the ORP.
  - Followed by questioning and defense to evaluate the student's depth of understanding, originality, and ability to justify research decisions.

Outcomes and Graduate School Documentation

The committee will determine the exam outcome:

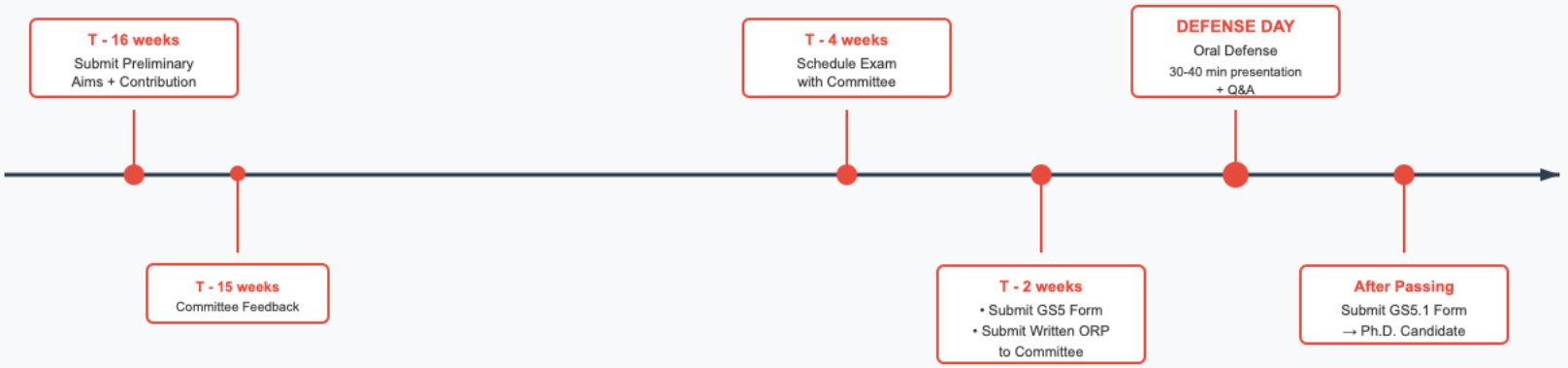
- Pass: Student advances to Ph.D. candidacy.
- Conditional Pass: Student must address specified deficiencies (e.g., revise written proposal, repeat part of the oral defense) within a set timeframe (typically ≤3 months).
- Fail: Student does not advance. The committee may permit one re-examination, typically within six months.

Upon successful completion of the defense:

- The Chair of the Dissertation Committee must submit the GS5.1 form (GS5.1 form link) to the Graduate School.
- Submission of this form officially transitions the student to Ph.D. Candidate status, after which the student may begin registering for dissertation credit (ENGR 7998).

Ph.D. Candidacy Examination Timeline

Biomedical Engineering



Prerequisites Before Starting

- Complete 4 graduate courses (GPA ≥3.25)
- Graduate GPA ≥3.0, Full standing, No incompletes
- Satisfy any foreign language requirements

ORP Format Requirements

- NIH R01 format (Specific Aims + Research Strategy) OR
- NSF format (Project Summary + Project Description)
- Must include Original Contribution Statement (½ page)

Advisor Involvement

✓ ONE round of draft feedback permitted

✓ Feasibility and resource guidance

✗ Cannot generate ideas or write sections

Prospectus

It is a requirement of the University of Mississippi Graduate School that each doctoral student prepare a dissertation prospectus. Specifically:

- A written dissertation prospectus will be required of every doctoral student (see below for format).
- An oral defense of the prospectus to the student's committee will be required. All members of the committee shall have equal voting rights.
- A single negative vote in the committee will require negotiation among the committee members in order to achieve reconciliation of the point(s) of objection.
- Only if the committee cannot agree on the merits of the prospectus and, through reasoned discussion, accept the prospectus **unanimously**, a review process by a committee of the department/school will be invoked.
- **Although a unanimous vote of the committee is necessary in order to accept the prospectus, only a majority vote will be required on the final dissertation defense.**
- An email from a member of the committee approving the prospectus must be sent to gschool@olemiss.edu. Also, an approved copy of the prospectus in a PDF format must be sent to gschool@olemiss.edu immediately following the defense.
- Any research involving human subjects must be approved by the Institutional Review Board. Any research using animals must be approved by the IACUC. To determine if these provisions apply, please contact the IRB or IACUC through the Office of Research at x7482 for applications and assistance.
- When any member of the committee believes that a substantial change in the research plan has been made, the committee will be reconvened. Unanimous approval of any substantial revision is required. A report of substantial changes must be filed in the Graduate School.

Written Document Guidelines

Students are required to prepare a written document as part of the dissertation progress and completion process. The document must include the following elements:

- Title
- Abstract (≤300 words)
- Overview of the Planned Dissertation**,** which should contain:
    - A brief introduction and background for context
    - Research approach
    - Data obtained to date
    - Future experiments required for dissertation completion
    - Anticipated outcomes

Length: The document must not exceed 10 pages, excluding references.

Supplemental Materials (not included in the 10-page limit):

- A brief timeline of activities leading to graduation and anticipated graduation date
- Bullet-point list of general action items required for degree completion
    - Examples: finish certain experiments, write and submit manuscript, write and defend dissertation, etc.
    - May need editing due to committee feedback before submission to the Graduate School
- A summary of research accomplishments to date, which may include:
    - Publications
    - Papers in progress
    - Presentations
    - Funding awarded
    - Honors and recognitions

Prospectus Defense

It is recommended that the Prospectus defense occurs approximately 1-1.5 years before the student's anticipated graduation.

The prospectus plan should be presented and defended to the student's dissertation committee.

The dissertation prospectus oral defense and completion of the dissertation defense cannot occur during the same full term (fall, spring, full summer), and there must be a minimum of four calendar months between these events.

Within two weeks of the date of the student's passed prospectus, the committee chair and GPC should submit Form GS12 to the Graduate School.

Dissertation Preparation and Defense

The Graduate School's *Thesis and Dissertation Preparation Manual* can be found on the Graduate School's website, as well as templates and instructions for using reference managers. The requirements are very specific and must be followed.

Dissertation Contents

The dissertation must be a cohesive scholarly document that demonstrates the student's ability to conduct independent research. The general structure is as follows:

1. Introduction
    - Provide an overview of the research problem and its significance within the field.
    - Clearly state the central questions or hypotheses addressed.
2. Background
    - Summarize relevant literature and prior work that frames the dissertation research.
    - Establish the context for the studies undertaken.
3. Research Studies
    - Present completed studies and results in a logical sequence.
    - Individual chapters may be written as self-contained manuscripts and may reference published or submitted articles, provided proper attributions and copyright/license permissions are obtained from the respective journals.
    - When using previously published material, **the student must ensure consistency of style, numbering, and formatting across the dissertation, following the formatting guidelines from the Graduate School.**
4. Conclusions and Future Work
    - Summarize the major findings of the dissertation research.
    - Discuss the implications of the work and outline future research directions.
5. References
    - A comprehensive bibliography must be included, formatted according to Graduate School requirements.

The final draft of the thesis/dissertation should contain all scientific data, be free of spelling, grammatical, and other errors, and meet all formatting requirements as set forth by the Graduate School (note: these may change over time so don't rely on older dissertations for formatting). **This draft must be provided to the committee members 2 full weeks in advance of the final oral examination (defense).** The Graduate School should be notified of the final defense via form GS7 "Authorization of the Final Oral/Written Examination" (available from the Graduate School website**) also two weeks prior to the defense.** The candidate should provide an electronic copy and a hard copy to the members of the committee, and as a courtesy, an electronic copy to any member of the departmental faculty who requests it.

Final Oral Examination/Defense

Defense of thesis/dissertation work will be presented in a public seminar, with questioning open to the public, and then further questioning by the committee in a closed session.

A minimum of two hours should be set aside for the oral examination defense.

The student is asked to present a 40-50 minute overview of their background/rationale, hypothesis, approach, experiments, results, conclusions, future directions, and acknowledgements. Generally a few minutes for questions and answers are allowed, after which the general audience will be dismissed and the committee will begin the oral examination of the candidate.

At the time of the defense, members of the committee will also provide the candidate with corrections to be made to the rough draft of the thesis/dissertation. In general, all corrections must be acceptable to the committee members before they will sign a final copy of the thesis/dissertation.

Arrangements must be made by the student for copies of the final dissertation/thesis to be provided to the committee members. Make sure to refer to the Graduate School's "The End Game – Preparing to Graduate" website for important steps and dates.

The student must bear the expense of reproduction of the dissertation or thesis.

Upon defense completion, the committee chair should email the Graduate School informing them of the results. Any committee member who does not sign the final dissertation must file an objection with the Graduate School.

Hooding Policy

The academic hood is the symbol of completing a Master's or Doctoral degree. Hoods are conferred only during official graduation ceremonies and only after a student has successfully completed final exams or defended a thesis or dissertation.

Submission of the GS8 form places students on the list used to contact eligible graduates about the hooding ceremony. Students must respond to these communications to confirm participation.

To be eligible for the hooding ceremony, students on M.S. coursework or project tracks must complete their final exams by the end of the academic semester. Students on research tracks must submit their final M.S. thesis or Ph.D. dissertation to the Graduate School by the published deadline. Failure to meet this deadline will result in graduation being postponed to the following term.

Ph.D. Timeline

Approximate timeline for a 4-5 year Ph.D. program:

Year	Fall	Spring	Summer
Year 1	• Core coursework • Select advisor • Form dissertation committee (by end of semester) • Begin exploratory research • Complete IDP	• Continue coursework • Continue research • Annual committee meeting & evaluation	• Update IDP • Begin focused research
Year 2	• Advanced coursework • Begin ENGR 6997 research • Refine dissertation topic	• Submit ORP (written + oral defense) • Submit GS5 ≥2 weeks before ORP • Advance to candidacy upon passing ORP • Annual committee meeting & evaluation	• Focused dissertation research • Update IDP
Year 3	• Dissertation research (ENGR 7998) • Draft prospectus (≤10 pages + accomplishments, future work)	• Prospectus defense with committee (≥4 months before dissertation defense) • Annual committee meeting & evaluation	• Research, manuscripts, presentations • Update IDP
Year 4	• Continue dissertation research • Submit manuscripts	• Committee approval to defend dissertation (≥4 months before defense) • Annual committee meeting & evaluation	• Research focus • Update IDP
Year 5	• Continue dissertation research • Submit manuscripts • Draft dissertation (Grad School format) • Submit GS7 ≥2 weeks before defense • Provide dissertation to committee ≥2 weeks before defense	• Final Oral Defense (public seminar + closed exam) • Revise dissertation per committee feedback • Submit final dissertation to ProQuest + pay fees • Graduate	—

Academic and Research Ethics

Ethical behavior is an integral part of any professional career. Graduate students at the University of Mississippi are governed by the academic code of ethics, which can be found in the University's M-Book.

In addition, all members of the department must observe the highest research integrity. There are many publications related to research integrity; however, probably the most standard guide is Sigma Xi's The Responsible Researcher: Paths and Pitfalls.

The ethical behavior of students is not an issue that is taken lightly in this department and those found guilty of misbehavior will be recommended to the Graduate Dean for dismissal from the program as described in the University's "Policy on the Dismissal or Change in Status of Graduate Students" in the section on dismissal "Based Upon Failure To Meet Professional, Ethical, And Behavioral Expectations".

Harassment, Discrimination, and Respect Policy

Overview

The University of Mississippi is steadfast in its commitment to fostering a safe, equitable, and respectful academic and research environment. Harassment, discrimination, or any form of misconduct, including sexual harassment, interpersonal violence, sexual exploitation, or other discriminatory behaviors, occurring within or outside of University educational programs or activities is strictly prohibited.

This policy protects all community members, including students, faculty, staff, applicants, and visitors, regardless of gender, sexual orientation, race, ethnicity, religion, age, veteran status, disability, genetic information, pregnancy status, gender identity or expression, national origin, or any other protected characteristic.

Definitions of Prohibited Conduct

- Sex-Based Harassment and Discrimination: Conduct that is so pervasive, severe, or objectively offensive that it effectively denies equal access to educational programs or activities.
- Sexual Misconduct & Interpersonal Violence**:** This includes, but is not limited to, sexual assault, dating violence, domestic violence, stalking, and sexual exploitation, especially non-consensual recording or distribution of sexual content.

Reporting Requirements & Confidentiality

All members of the university community are encouraged to report any concerns or incidents. University employees, except those with privileged roles such as counsel services or CASE/UMatter staff, are required to report allegations of sex-based discrimination or harassment to the Office of Equal Opportunity & Regulatory Compliance (EORC) immediately.

EORC will handle reports with confidentiality to the fullest extent permitted by law, respecting privacy while remaining compliant with applicable procedures.

Support and Resources

Individuals affected by harassment or discrimination can receive support through confidential resources like:

- Office of Confidential Advocacy, Support & Education (CASE) for complainants
- UMatter: Student Support & Advocacy for respondents

Additionally, the EORC/Title IX Office can provide supportive measures, including interim accommodations, whether or not a formal complaint is filed.

Protection Against Retaliation

Retaliation or intimidation against any individual who, in good faith, reports concerns, assists in investigations, or participates as a witness is strictly prohibited. Alleging retaliation may be addressed under the same formal procedures as other policy violations.

Contact Information

- **EORC (General Reports / Title IX matters)**
  120 Lester Hall, South Oxford Center
  Phone: 662-915-7735
  Email: eorc@olemiss.edu

Research Safety and Security

Trainings

The University mandates that no student may enter a chemical and/or biological research laboratory before successfully completing chemical and/or biological safety training. Depending on the student's research, they may also need to take other available trainings (e.g., bloodborne pathogens, lasers, etc.). The request form to sign up for these trainings can be found here. The student's faculty advisor should advise the student on which trainings to complete.

In addition, UM and certain federal agencies also require training in the Responsible Conduct of Research and Research Security. Both of these trainings are through the Collaborative Institutional Training Initiative (CITI).

To access the trainings:

1. If you do not have an account, register at https://www.citiprogram.org/. Your UM username and password will NOT work to login to this system. When you register, you are asked to create a username and password.
2. Once registered and logged in, under Institutional Courses, click "View Courses" under the University of Mississippi – Oxford.
3. On the next page, select "Add a Course," then either "Responsible Conduct of Research" or "Research Security Training," then "Researchers".

All training courses must be completed within the first two weeks in residence. Upon completion, all certificates should be emailed to the student's faculty advisor and kept on file.

Emergency Procedures

Familiarize yourself with the emergency procedures to adopt in the event of an accident or fire, etc. When the fire alarm sounds, you must exit the building immediately. Personnel are requested to wait on the "Grove" side of University Avenue until the "all clear" sign is given. Do not interfere with emergency personnel.

When you come to work in a new laboratory, ask the laboratory supervisor or more senior students about the location of fire extinguishers, fire alarms, first-aid equipment, eyewash facilities and emergency spill kits.

Any questions concerning these safety-training requirements should be referred to the Department of Laboratory Services at 662-915-5433.

Emergency Telephone Numbers

FIRE 9911 (campus landline) 911 (cellular)

UNIVERSITY POLICE 662 915 7234

STUDENT HEALTH SERVICES 662 915 7275

BAPTIST HOSPITAL NORTH MISSISSIPPI 662 232 8100

LABORATORY SERVICES 662 915 5433

UNIVERSITY DISPATCH (after hours) 662-915-7003

Chemical & Biological Spills/Emergency Spill Procedures

Minor spills should be dealt with as indicated here. Major spills may require the immediate evacuation of an area.

If you have been properly trained, you may clean up a small chemical spill with the assistance of other personnel in your area. For small spills, wear appropriate protective clothing, particularly gloves. Be certain to wash out any cloths/paper towels etc. contaminated with chemicals before disposal. Take corrective action to neutralize toxic or hazardous materials. Wash out any contaminated clothing. Remember to wash protective gloves before disposing of them.

A small spill is defined as a spill where:

1. There is little threat to human health, personnel property, or to the environment, and;
2. There are no injuries beyond what simple first aid can manage, and;
3. The characteristics and the hazards of the material are known, and;
4. You have both the supplies and the knowledge necessary to clean up the materials.

If your spill does not fit all of the specifications above, you have a Large Spill.

1. Report injuries to the University Police at 915-4911 immediately.
2. Contact Laboratory Services at 915-5433.
3. Tend to injured personnel if you can do so without putting yourself or others in harm's way

Security

In general, students must assume responsibility for their own personal safety and security of their personal property by practicing common sense and good judgment.

While your research building and Brevard Hall are a relatively safe environment, from time to time personal property is reported stolen. It is incumbent on the student to lock and secure their possessions. If there is a need for special secure storage, the student should consult with their faculty advisor.

All laboratory doors should be left closed and locked from 5:00 pm to 8:00 am on weekdays, and 24 hours a day on weekends and holidays, except when the lab is occupied.

For safety reasons, the laboratory door windows may not be obstructed or covered in any manner.

No student is allowed to perform research experiments alone in the building. If a student must work alone in the laboratory, they are required to notify another individual of their intention, when they will be in the lab and when they leave the lab.

The outside doors of your research building or Brevard Hall must not be left ajar at night or on weekends for any reason and can be considered a criminal offense by the University. On days of football games, if you have to enter the building, be especially cautious that you make sure the outside door is locked behind you. Do not allow access to the building to the public when the building is locked.

Hygiene and Laboratory Tidiness

- Practice good personal hygiene.
- Dress in a manner conducive to a safe, professional, and respectful learning environment.
- Do not put your fingers in or near your mouth or eyes.
- Do not chew on the ends of pens or pencils.
- Do not scratch or bite your nails.
- Wash your hands frequently and always before leaving the laboratory.
- Keep your working area clean and tidy; there must be sufficient bench space to allow safe working procedures. Clean up after yourself.
- Keep lab notebooks organized and in good order. Make sure someone could follow your work.
- Keep notebooks, reference books, and all other paperwork separate from areas where biologicals or chemicals are being handled.
- Microbial cultures must only be used in appropriate microbiological hoods (not fume hoods) and contamination of anything in contact with them must occur after use, as well as specific disposal requirements. There are specific guidelines for this that ensure the safety of the person working with them and everyone else in the Department.
- Keep aisles and hallways clear.

Laboratory Notebooks

The laboratory notebook is one of the basic tools for any experimental work, whether it is basic research, product development, or engineering design. It is primarily for the experimenter's own use, but another person with similar technical background should be able to understand and duplicate any experiment, data, and conclusion, or to prepare a

technical report by following only the lab notebook details. Likewise, your advisor must be able to review your work at any point in time.
Your laboratory notebooks MUST contain all the information that would be required for you or someone else to completely reproduce your experiment.

A good reference to consult in these regards is the American Chemical Society's (ACS) publication, Writing the Laboratory Notebook.

Various electronic notebook programs are now available and students must consult with their major advisor before using these formats.

The research notebook is the property of the Department of Biomedical Engineering and the University of Mississippi. Upon completion of the degree program, the students may furnish themselves with a photocopy of their research notebook but the original lab notebook will remain with the student's faculty advisor.

While each major professor may require somewhat different formats and media, most notebooks contain certain commonalities, which will be discussed here.

There are many reasons to keep an accurate and complete record of experimental work. Among these are:

1. To establish the authenticity of the work.
2. To defend patents.
3. To act as a basis for technical reports and articles.
4. To avoid duplication of effort.
5. To avoid repetition of erroneous procedures.

The nature of the work and the purpose of the experiment will influence the content and format of the laboratory notebook. Many companies and agencies have rigid requirements tailored to specific needs.

Notebooks should be bound, never loose-leaf, and the pages numbers consecutively, preferably by the manufacturer.

A neat, organized, and complete lab notebook record is as important as the investigation itself. The lab notebook is the record of what was done. You must use ink and write directly in the notebook as the experiment is done. You will have to date and sign each entry. Sometimes you may be required to make an entry of no progress made today, just to show that you were working on the project. If a mistake is made, you should place a single line through the mistake, initial and date the crossed-out region, and start over. This leaves the original entry readable and keeps a permanent record of all your work, which can be used as evidence in a patent court or if there is a question regarding a particular sample or procedure.

Use all the pages of a notebook to prevent accusations of adding data after the fact. If pages are left bank after your graduate career, you should draw a large X on each page.

In addition, if blank spaces are on a page, these areas should also have an X drawn through them.

Date and initial each page at the top as it is used.

In industry it is very important to sign and date all work and leave no spaces where additions might be added later in order to preserve the legal integrity of the notebook.

Leave several pages blank at the beginning of the notebook so that they may be used as a table of contents upon completion of experiments.

For each experiment, you should adhere to the following format, or that typically used by your research advisor's notebook protocols. Each experiment should be started on a new page with the following information at the top of every page:

1. date
2. experiment number
3. experiment title
4. your name

The laboratory notebook must answer the following questions (the 4 Ws) in at least one part of the report. You can use this as a checklist.

1. What Was Done
2. Who Did It
3. When Was It Done
4. What Were the Results

Equipment

Scientific laboratory equipment can be extremely expensive to purchase, maintain, and replace; therefore, it is vital that all equipment be kept clean and in working order.

A student should never use ANY equipment on which they have not been trained by an appropriate person in this department, regardless of whether they have been trained on similar equipment at another institution. A student should never use, move, adjust, or modify any instrumentation without prior approval of the person in charge of that equipment. Students should also be vigilant in reporting individuals who do misuse equipment to an appropriate supervisor. A student must immediately report any malfunctioning equipment to the person in charge of the equipment and discontinue use to avoid further damage. After use, a piece of equipment should be left in the condition in which it was found: that is, operational, clean, and ready for the next user.

Failure to obey the above rules will result in the dismissal of a student from the graduate program.

Teaching Assistantships

Graduate Teaching Assistants (TAs) play a vital role in the educational mission of the University. A TA serves as both a representative of the department and a mentor to undergraduate students and is therefore expected to uphold the highest standards of professionalism, integrity, and instructional quality.

Responsibilities of Teaching Assistants

- Collaboration with Instructor of Record
  - Maintain regular communication with the course instructor.
  - Follow the instructor's guidance on teaching methods, grading policies, and classroom management.
  - Seek clarification promptly if responsibilities or expectations are unclear.
- Student Support
  - Hold regular, posted office hours and be accessible to students for questions and guidance.
  - Provide timely and constructive feedback on assignments, quizzes, and exams.
  - Grade consistently and fairly, following rubrics or guidelines established by the instructor.
- Classroom & Instructional Practices
  - Arrive prepared and on time for all assigned classes, labs, or discussion sections.
  - Create a respectful learning environment for all students.
  - Uphold academic integrity by addressing cheating, plagiarism, or misconduct in accordance with University policy.
    - Do not act on suspicions of cheating. Let the Instructor of Record know as soon as possible.

Professional and Ethical Conduct

- Fairness and Integrity
  - Avoid preferential treatment of any student.
  - Apply grading criteria consistently across all students.
- Boundaries and Relationships
  - Personal relationships with students in your class, including romantic or sexual relationships, are strictly prohibited due to the inherent power imbalance between TAs and students.
- Meetings with Students
  - Whenever possible, meet students in public or semi-public spaces such as offices with the door open, conference rooms, or other visible academic spaces.
  - Avoid one-on-one meetings in isolated or private locations. This protects both student and TA and helps ensure professionalism.
- Confidentiality

    - Protect the privacy of student records, grades, and personal information in compliance with FERPA and university policy.
- Respect for Colleagues and Resources
    - Treat fellow TAs, faculty, staff, equipment, and facilities with respect.
    - Report issues with classroom resources or technology promptly.

Family Educational Rights and Privacy Act (FERPA) Compliance

All TAs are required to comply with the Family Educational Rights and Privacy Act (FERPA), a federal law that protects the privacy of student education records. As instructional personnel, TAs must handle student information with the highest level of confidentiality.

Key FERPA Guidelines for TAs

- Email Communication
    - Do not discuss student grades or performance over email. Email is not considered a secure method for sharing protected student information.
    - Direct students to meet with you during office hours or in another appropriate setting to discuss academic performance.
- Assignment and Exam Distribution
    - Do not allow students to pick up assignments, exams, or graded work from a communal stack where other students' grades are visible.
    - Return graded work individually and privately.
- Conversations with Parents or Guardians
    - Do not share student grades, academic performance, or personal information with parents or guardians under any circumstances.
    - Even if a parent claims that the student has granted permission, all inquiries must be directed to the Instructor of Record.
- Grade Inquiries
    - TAs should never disclose course grades or provide unofficial grade reports.
    - Refer all grade inquiries, grade disputes, or requests for official documentation to the Instructor of Record.

Best Practices for Effective Teaching Assistants

- Be approachable, professional, and responsive in all interactions with students.
- Return graded work within a reasonable timeframe so students can learn from feedback.
- Encourage student participation and foster critical thinking.
- Seek mentorship and feedback from faculty to continuously improve teaching effectiveness.
- Demonstrate professionalism in dress, demeanor, and communication, recognizing your role as both a teacher and a representative of the department.
- Treat all student information, grades, attendance, personal data, as **confidential**.

- Only access student records or information required to fulfill your assigned duties.
- When in doubt, **do not share information** and consult the Instructor of Record for guidance.

Fellowships and Scholarships

The Graduate School administers graduate recruiting fellowships and scholarships (including for academic excellence and excellence in inclusivity), dissertation fellowships and Summer Graduate Research assistantships.

Elite Scholars Program
Dissertation Fellowship Program
Advancing STEM Scholarships
University of Mississippi Recruiting Fellowship and Scholarship Program
Summer Graduate Research Assistantship Program

Graduate students are also highly encouraged to apply for federally funded fellowships and scholarships, such as the NSF Graduate Research Fellowship. The Office of Research and Economic Development has a GRFP workshop and incentive program, and the Office of National Scholarship Advisement helps student craft applications.

Graduate Student Health Insurance

Graduate assistants with appointments of 1/4 time or higher are **required*** to participate in a health insurance program. Enrollment and payroll deduction of premiums will be automatic upon appointment for each fall and spring term. Premiums will be subsidized by the university.

Graduate Student Health Insurance Information

Graduate assistants may request a waiver from participation in the above-sponsored group plan **if they already have comparable health insurance.*

Departmental Business

Travel

Graduate students may have the opportunity to travel to present their work at a conference. The appropriateness of the work to be presented and its venue should be discussed with the faculty advisor.

Before Travel – Travel Authorization

Before traveling, the student must fill out a Travel Authorization form. This allows the student to be reimbursed after the trip. Estimated costs for the trip will be added to the form, and the faculty advisor will provide an account number to authorize reimbursement up to that amount. Therefore, the student and faculty advisor should consult on the trip's budget before submission.

If paying for the trip upfront and waiting to be reimbursed is a financial burden on the student, the student can request a partial advance of the reimbursement, such as 80% of the total cost, the registration fee, or airfare fee. If the student requests an advance, the Travel Authorization form must be submitted to Procurement Services at least 20 days before the trip.

Before submission to the BME office, the student should ensure that the form is filled out in its entirety, an account number(s) is indicated with the appropriate amount and approved by the account holder's signature (usually the faculty advisor) and signed and dated by the traveling student. Do not fill out anything in the "APPROVALS" box.

Before Travel – Booking Transportation and Accommodations

When booking everything for the trip (registration, transportation, accommodations, etc.), **keep all *itemized* receipts in order to be reimbursed**.

When budgeting for food, use the Per Diem rates for the destination. Note that travel days do not have the same rates as full days at the destination.

When booking airfare, two quotes are required from different airlines.

When driving a personal vehicle, travelers are reimbursed based on mileage. If the cost of mileage reimbursement is more than a rental car fee that includes mileage, a rental car must be used.

When renting a vehicle, book with the State Contract Rental Car company and identify yourself as a state employee. Intermediate size vehicle is what is allowed by the State. The Contract Rental Car includes unlimited mileage and CDW/LDW insurance. Do not purchase insurance as it will not be reimbursed.

When booking lodging, use the State Travel Office's contracted rates for Mississippi hotels. For out-of-state lodging, request government rates by presenting your University ID for verification.

During Travel

Keep all itemized receipts except for dining. You will be reimbursed at the Per Diem rate for dining.

After Travel – Reimbursement

Upon return, students must fill out and submit a Travel Reimbursement Voucher in order to get reimbursed from the trip. All receipts must be submitted with the form. Before submission, make sure the Travel Authorization number is included; the cost center number that was used on the Travel Authorization, total amount to be reimbursed, and account signatory's approval are included; and the form is signed and dated by the student under "Employee's Signature". Submit the completed form and receipts to the BME office.

Purchasing

In order to purchase items for the research group, the student must have the approval of the faculty advisor and the account on which the item(s) will be charged.

The student should work out a purchasing system with their faculty advisor. The lab may use purchasing software approved by the BME department that handles approvals internally or submit orders manually. For the latter, a student can request purchasing an item to the faculty advisor in the form of an email. The faculty advisor would then forward the email with the relevant information to the BME office indicating the faculty advisor's approval and which account number to use.

When submitting items to purchase, include as much relevant information as possible. For example:

company	item	amount	quantity to buy	catalog #	list price	link
Cytoskeleton	Rhodamine Phalloidin	1x500uL	1	PHDR1	$245	Rhodamine Phalloidin - Cytoskeleton, Inc.

The student may also request a quote and submit it for approval by the faculty advisor. Quotes are common from state contracted vendors, such as FisherScientific. The BME Office Staff can help identify which vendors have state contracts for likely cheaper rates than list prices on websites.

E-forms

E-forms for students that are being paid a stipend by a faculty member will be managed by the faculty member's home department, regardless of the student's academic home. For example, the BME department will submit e-forms for a chemical engineering graduate student working in a BME faculty member's lab. The program manager will send a copy of the e-form to the student's academic home department for their records.

Appendices

I. Graduate School Forms

All forms can be found on the Graduate School website.

Graduate School Forms for Students

GS1 – Update/Change Admission Status or Degree

GS3 – Request to Accept Transfer Credit from Another Institution
Can only be done once the student has 18 hours of UM residency and must be within 6 years of the coursework being taken.

GS4 – Request to Reserve Graduate Credit by a Senior Undergraduate Student
Student must be within 15 hours of graduation with a bachelor's degree.

GS6 – Request for Extension on Time to Degree

GS8 – Application and Instructions to Graduate
Students must submit this by the due date provided on the Graduate School website within "The End Game: Preparing to Graduate" checklist.

GS10 – Re-admission Application

GS11 – ETD Rights, Permission and Contact Form
Use when submitting thesis/dissertation.

Survey of Earned Doctorates (Ph.D. only)

Graduate Student Travel Request Form

Leave of Absence Request Form

Graduate Advisory Committee Request Form Instructions
Instructions with pictures on how to assign committee members in myOleMiss. Do this once the student's committee is formed.

Appointing Student Advisory Committee
Instructions in words on how to assign committee members in myOleMiss. Do this once the student's committee is formed.

Graduate School Forms for Faculty

GS2 – Graduate Advisory Committee Requests

Instructions on how to assign committee members in myOleMiss. Do this once the student's committee is formed.

GS5 – Authorization to Sit for Exam

Submit at least 14 days before student sits for Ph.D. candidacy exam

GS 5.1 – Admission to Doctorate Degree

Submit after successful completion of the Ph.D. candidacy exam.

GS7 – Authorization for Final Oral/Written Exam

Submit at least 14 days before student sits for thesis or dissertation defense.

GS9 – Departmental Acknowledgement of a Second Degree Program

GS12 – Prospectus Approval Form

Submit within 2 weeks of the date the student passed the prospectus. The PDF version of the approved, final version of the prospectus must also be submitted within this period. There must be at least four months between the date of the prospectus and the defense.

II. Templates for Graduate Student Evaluation

In order:

- Graduate Student Annual Evaluation
- Ph.D. Candidacy Exam Document Rubric
- Ph.D. Candidacy Exam Defense Rubric
- Prospectus Rubric
- Graduate Program Assessment Rubric
    - Use for all graduate final exams/defenses.

Graduate Student Annual Review

Student Name: {Student Name}
Program: {M.S. or Ph.D.} in Engineering Science, Emphasis: Biomedical Engineering
Date of Enrollment: {Month 20XX}
Date of Annual Committee Meeting: {Month Day, 20XX}
Date of Annual Graduate Student Review Meeting: {Month Day, 20XX}

Academic Progress

Research Progress

Professional Development

Overall Assessment

The graduate student {Student Name} and supervisor {Dr. Faculty Member} met on the signed date below to discuss their Individual Development Plan (IDP) and performance during the {20XX-20XX} academic year. The graduate student and supervisor understand expectations outlined above moving forward.

_____ _____
(supervisor signature) (date)

_____ _____
(graduate student signature) (date)

Submit this form to the GPC, and each party should keep a copy as a personal record.

Ph.D. Candidacy Exam – Written Proposal Rubric

Criterion	Excellent (4)	Proficient (3)	Developing (2)	Unsatisfactory (1)
Significance & Impact	Clearly addresses an important biomedical engineering problem; strong potential for advancing the field.	Addresses a relevant problem; impact is reasonable.	Problem relevance is weak or insufficiently justified.	Problem is trivial or disconnected from field impact.
Rationale & Background	Comprehensive, critical review of literature; strong justification for research.	Adequate review with some critical analysis.	Limited review or lacks depth.	Background inadequate or missing.
Specific Aims/Research Questions	Well-structured, testable, and logically connected aims/questions.	Aims/questions mostly clear, but could be more precise.	Aims/questions vague or partially aligned with rationale.	Aims/questions unclear, untestable, or missing.
Approach & Feasibility	Research design, methods, and analysis are rigorous, well justified, and feasible.	Methods generally appropriate, with minor feasibility gaps.	Some methodological weaknesses or feasibility concerns.	Methods poorly designed or infeasible.
Independence & Critical Thinking	Demonstrates ownership, independent thought, and deep engagement.	Some independence shown.	Limited evidence of independent thought.	No independent contribution.
Clarity & Organization	Exceptionally clear, well organized, professional writing.	Mostly clear, some minor organizational issues.	Writing sometimes unclear or disorganized.	Poorly written and organized.
Formatting & Compliance	Fully adheres to NIH/NSF formatting and length guidelines.	Minor deviations from format guidelines.	Noticeable formatting/length issues.	Noncompliant with required format.

Outcome Guidelines

- **Pass**: Total ≥ 21 (with no category below “2 – Developing”).
- **Conditional Pass**: Total 15 – 20 or a score of “1 – Unsatisfactory” in one category; student must address deficiencies.
- **Fail**: Total < 15 or multiple categories rated “1” or demonstrates serious deficiencies; major revisions required before re-examination.

Ph.D. Candidacy Exam – Oral Defense Rubric

Criterion	Excellent (4)	Proficient (3)	Developing (2)	Unsatisfactory (1)
Presentation Delivery	Clear, confident, well-paced, professional slides.	Generally clear, minor pacing or clarity issues.	Uneven delivery; noticeable clarity/pacing issues.	Disorganized, unclear, unprofessional.
Understanding of Research Area	Demonstrates deep mastery of foundational knowledge and context.	Solid understanding with minor gaps.	Some gaps in foundational understanding.	Lacks sufficient knowledge of field.
Defense of Proposal	Justifies choices logically and persuasively; handles challenges with confidence.	Generally defends choices; some difficulty with challenging questions.	Struggles to defend rationale or methods; limited critical reasoning.	Unable to defend key aspects of proposal.
Critical Thinking & Problem-Solving	Anticipates questions, considers alternatives, and integrates feedback.	Engages with most questions thoughtfully.	Limited flexibility or depth in responses.	Responses superficial or evasive.
Originality & Independence	Clearly communicates independent contributions and thought.	Some independence shown, though advisor's role apparent.	Limited independence.	Minimal evidence of independent thinking.
Communication & Engagement	Highly engaging; communicates complex ideas accessibly.	Mostly effective communication.	Communication occasionally unclear.	Poor communication; difficult to follow.
Use of Visuals/Slides	High-quality, professional visuals that enhance clarity.	Visuals adequate, with minor flaws.	Visuals sometimes confusing or cluttered.	Visuals poor or absent.

Outcome Guidelines

- **Pass**: Total ≥ 21 (with no category below "2 – Developing").
- **Conditional Pass**: Total 15 – 20 or a score of "1 – Unsatisfactory" in one category; student must address deficiencies.
- **Fail**: Total < 15 or multiple categories rated "1" or demonstrates serious deficiencies; major revisions required before re-examination.

Prospectus Rubric

Category	Excellent (4)	Proficient (3)	Developing (2)	Unsatisfactory (1)
Introduction & Background	Provides thorough context; research gap and significance clearly articulated	Adequate context; minor gaps in rationale or significance	Limited context; significance or gap unclear	Lacks context; rationale missing or unclear
Research Approach & Methodology	Approach clearly described, feasible, well-justified; oral presentation demonstrates strong understanding	Approach mostly clear; minor feasibility or justification issues	Approach partially clear; feasibility or justification weak	Approach unclear, inappropriate, or poorly justified
Data to Date / Preliminary Results	Data presented clearly; interpretation accurate and logically integrated with future work	Data mostly clear; minor interpretation or integration issues	Data partially presented; interpretation weak or unclear	Data missing, unclear, or misinterpreted
Future Experiments / Dissertation Plan	Plan logical, feasible, prioritized; anticipated outcomes clear; oral defense demonstrates understanding of next steps	Plan generally clear; minor concerns with feasibility or prioritization	Plan unclear, partially feasible, or next steps poorly articulated	Plan missing, unrealistic, or poorly described
Integration & Cohesion (Document + Defense)	Document and presentation cohesive; ideas flow logically; arguments well-supported	Mostly cohesive; minor lapses in flow or support	Some disconnection between document and presentation; weak argument support	Document and presentation disjointed; arguments unsupported
Response to Questions / Critical Thinking	Thoughtful, well-reasoned answers; demonstrates adaptability and strong understanding	Mostly adequate responses; minor gaps in reasoning	Responses partially correct or hesitant; reasoning weak	Unable to respond clearly; poor reasoning
Professionalism & Readiness for Degree Completion	Fully prepared, professional, demonstrates clear plan for completing dissertation	Generally prepared; minor professionalism or readiness issues	Somewhat prepared; concerns about professionalism or readiness	Unprepared; lacks professionalism or clear plan

Outcome Guidelines

- **Prospectus Accepted**: Total ≥ 21 (with no category below “2 – Developing”).
- **Accepted with Revisions**: Total 15 – 20 or a score of “1 – Unsatisfactory” in one category; student must address deficiencies.
- **Not Accepted**: Total <15 or multiple categories rated “1” or demonstrates serious deficiencies; major revisions required before another attempt.

University of Mississippi

School of Engineering

Graduate Program Assessment Form

Student Name: _____

Program: _____

Type of Examination:

☐ Master Thesis Defense
☐ Master Project Defense
☐ Ph.D. Dissertation Defense
☐ Other: _____

Date of Examination: _____

Committee Members:

Chair: _____

Member: _____

Member: _____

Member: _____

Member: _____

Revised 2/4/2021

Outcome 1: Learning – knowledge. Graduates demonstrate a mastery of a body of knowledge in the discipline

Measure: During the oral examination or presentation, faculty rate the breadth and depth of each student's demonstrated knowledge. The demonstrated knowledge in the breadth area can be from graduate coursework. ***Faculty are to ask questions related to breadth and depth***.

Unsatisfactory (1)	Satisfactory (2)	Very Strong (3)	Exemplary (4)	Score
Breadth: Student's knowledge of a range of topics is limited to observation and recall of information, knowledge of only major ideas.	Breadth: Student applies knowledge in a range of topics and can use information, methods, concepts, theories, and solve problems using required skills or knowledge.	Breadth: Student can analyze and synthesize knowledge in a range of topics and can see patterns and the organization of parts, recognize hidden meanings, identify components, generalize from given facts, relate knowledge from several areas, predict, and draw conclusions.	Breadth: Student shows a level of evaluation of a range of topics and can compare and discriminate between ideas, assess the value of theories and presentations, make choices based on reasoned argument, verify value of evidence, and recognize subjectivity.	
Depth: Student's knowledge is limited to observation and recall of information, knowledge of only major ideas.	Depth: Student applies knowledge and can use information, methods, concepts, theories in new situations, and solve problems using required skills or knowledge.	Depth: Student can analyze and synthesize knowledge and can see patterns and the organization of parts, recognize hidden meanings, identify components, use old ideas to create new ones, generalize from given facts, relate knowledge from several areas, predict, and draw conclusions	Depth: Student shows a level of evaluation of the subject matter and can compare and discriminate between ideas, assess the value of theories and presentations, make choices based on reasoned argument, verify value of evidence, and recognize subjectivity. Student's work fills knowledge gaps in the current literature.	

Outcome 2: Learning – methods. Graduates successfully use the basic methodologies of the discipline.

Measure: During the oral examination or presentation, faculty rate the student's use of research methods and/or tools and ability to work independently.

Unsatisfactory (1)	Satisfactory (2)	Very Strong (3)	Exemplary (4)	Score
Tools and Methods: Student did not seek, independently learn, or share knowledge on research methods and/or tools.	Tools and methods: Student used research methods and/or tools provided and taught by one or more committee members	Tools and methods: Student sought and learned, with help, research methods and/or tools.	Tools and methods: Student sought, independently learned, and shared knowledge on research methods and/or tools.	
Student Independence: Student needs more help from one or more committee members than should be required.	Student independence: The contribution from one or more committee members was substantial but appropriate for an M.S. student.	Student independence: Student's work was substantially independent.	Student independence: Student's knowledge and insight are unusual and led to independent and innovative contributions from the student rather than any committee member.	

Outcome 3: Learning – Communication. Graduates communicate in a manner and level of proficiency that is standard for the discipline.

Measure: During the oral examination or presentation, faculty rate each student's demonstrated written and oral and visual communication skills.

Written	Unsatisfactory (1)	Satisfactory (2)	Very Strong (3)	Exemplary (4)	Score
Organization/ Format	Little evidence of a cohesive plan. Little or no description or detail. Ideas seem scrambled, jumbled, or disconnected.	Evidence of a cohesive plan. Some effort on description and detail. Ideas are developing, but not quite clear. Presents basic information but may have extraneous material.	Material organized in an appropriate manner, but may lack some clarity or consistency. Writing is understandable to a broad technical audience.	Material organized in a clear, appropriate, and precise manner. Writing is engaging, easily understandable to a broad technical audience without sacrificing thoroughness.	
Content	Little evidence of appropriate content.	Material is appropriate, but may lack a clear connection to the purpose.	Material is clear, relevant, and accurate, but may be lacking conciseness.	Material content is clear, relevant, accurate, and concise.	
Writing Conventions	Little or no evidence of correct writing. Poor conventions seriously limit the paper's readability.	Evidence of correct writing. Poor conventions limit the paper's readability, but not seriously	Minor errors are present, but they do not detract from the readability of the paper.	Writing convention and style enhance the readability of the paper.	
Research and Interpretation of Data/ Information	Data or information incorrectly interpreted, with little or no evidence of analysis or conclusion.	Data or information is rationalized. Some analysis and conclusions may not be supported by research.	Data or information is logically interpreted. Analysis or conclusion adequately convey new knowledge.	Data or information is logically interpreted. Analysis and conclusions clearly convey new knowledge based on well-structured research.	
Appropriate Vocabulary	Use of inappropriate and incorrect vocabulary.	Some inappropriate vocabulary present, or limited use of appropriate vocabulary.	Appropriate vocabulary is articulated within the subject matter.	Appropriate vocabulary and terms are articulated and enhance delivery.	
Total					

Oral/Visual	Unsatisfactory (1)	Satisfactory (2)	Very Strong (3)	Exemplary (4)	Score
Organization	Audience cannot understand presentation because of poor organization; introduction is undeveloped or irrelevant.	Audience has difficulty following presentation because of some abrupt jumps; some of the main points are unclear or not sufficient stressed;	Organization is satisfactory; introduction is clear; main points are well stated, even if some transitions are somewhat sudden.	Organization is superb; main points are well stated and argued, with each leading to the next point of the talk.	
Mechanics	Slides seem to have been cut and pasted together haphazardly at the last minute; numerous mistakes; speaker not always sure what is coming next.	Boring slides; no glaring mistakes but no real effort made into creating truly effective slides;	Generally good set of slides; conveys the main points well;	Very creative slides; carefully thought out to bring out the main points of the presentation; maintains audience interest throughout.	
Delivery	Student mumbles the words, audience members in the back can't hear anything; too many filler words; distracting gestures;	Student has low voice, occasionally inaudible; some distracting filler words and gestures; articulation mostly, but not always, clear.	Student has clear voice, generally effective delivery; minimal distracting gestures, etc., but somewhat monotone.	Student has a natural, confident delivery that does not just convey the message but enhances it; excellent use of volume, pace etc.	
Relating to audience	Student reads most of the presentation from the slides or notes with no eye contact with audience members; seems unaware of audience reactions.	Student makes occasional eye contact with audience but mostly reads the presentation; some awareness of at least a portion of the audience; only brief responses to audience questions.	Student is generally aware of the audience reactions; maintains good eye contact when speaking and when answering questions.	Student keeps the audience engaged throughout the presentation; modifies material on-the-fly based on audience questions and comments; keenly aware of audience reactions.	
Total					

Outcome 4 (Advisor to fill out): Student Achievement -- Professionalism: Graduates function as professionals in the discipline.

Measure: The student's advisor answers the questions below, based on the student's achievement by the time of graduation.

Conferences

a. Number of presentations (oral and poster) made at on-campus events (including 3 Minute Thesis and department seminars): _____
b. Number of presentations (oral and poster) made at technical conferences: _____
c. Number of *submitted* papers to *non-peer-reviewed technical conferences*: _____
d. Number of *submitted* papers to *peer-reviewed technical conferences* (but not yet published): _____
e. Number of *published* papers in *peer-reviewed technical conferences*: _____

Journals

f. Number of *submitted* papers to *peer-reviewed journals*: _____
g. Number of *published* papers in *peer-reviewed journals*: _____

Committee's Assessment

h. Committee's assessment of student's quality of work in technical conference or peer-reviewed journals, based on what is expected *at the student's degree level* (circle one):

1. Unsatisfactory
2. Satisfactory
3. Very Strong
4. Exemplary

Explain, describing any special circumstances or discrepancies of opinion among committee members:

i. Committee's evaluation of ***breadth*** of knowledge (see Outcome 1) (circle one):

1. Unsatisfactory
2. Satisfactory
3. Very Strong
4. Exemplary

Explain, describing any special circumstances or discrepancies of opinion among committee members:

j. Committee's written statement assessing the quality and professionalism of the student's publications or presentations (e.g., impact factor):