

The University of Georgia College of Engineering GRADUATE STUDENT HANDBOOK

INTRODUCTION

This **University of Georgia College of Engineering Graduate Student Handbook** provides details of our graduate programs and presents guidelines for completing degree requirements. It also describes some of the operational aspects of the programs that will be of value to students as they proceed through their programs.

This **Graduate Handbook** does not replace or supersede the *Graduate Bulletin* (<http://grad.uqa.edu/index.php/current-students/policies-procedures/graduate-bulletin/graduate-bulletin-a-c/>) issued by the University of Georgia, and it should be viewed as a supplement to the material in the catalog. In the event of a conflict between this handbook and the Graduate Bulletin, the Graduate Bulletin shall prevail.

It cannot be overemphasized how important it is that all students completely familiarize themselves with all Graduate School, College and School program requirements and milestones as well as information pertaining to the student's program of study. Although we strongly encourage students to seek advice from their Major Professors, Graduate Directors, and the College of Engineering Graduate Program Office regarding degree requirements, it is ultimately the student's responsibility to meet the rules and regulations for degree completion.

THE COLLEGE OF ENGINEERING

Engineering has a long history at the University of Georgia (UGA). The first engineering students graduated from UGA in 1868. Recognizing the importance of engineering to the state and the need to provide new opportunities for the citizens of Georgia and beyond, the Board of Regents established the College of Engineering at UGA on July 1, 2012. In 2017, the College organized around three interdisciplinary schools: the School of Chemical, Materials, and Biomedical Engineering; the School of Environmental, Civil, Agricultural, & Mechanical Engineering; and the School of Electrical & Computer Engineering. As the 21st Century's first new College of Engineering at a top ranked land grant university, we are committed to a vibrant learning, discovery and innovation environment for our students that will equip them to have rewarding careers as they contribute to addressing this century's challenges.

OUR MISSION

The College of Engineering at the University of Georgia is a community of visionary researchers, educators and learners embedded in a land-grant liberal arts university. Our overriding priorities are to:

- Create a vibrant environment for learning, discovery, and innovation that relies on teamwork, leadership, and effective communication.
- Reshape the impact of engineers for the 21st century by inspiring students to reach their full potential,
- Create breakthroughs by excellence in education and research, and
- Pursue bold, collaborative research to identify and solve the challenges of our time.

These efforts are motivated by our resolve to help make a purposeful and rounded contribution to help bring about a more capable, responsible and resilient global society. Our college values the creation of communities of learning, discovery and innovation.

COLLEGE OF ENGINEERING RESOURCES

Building/Maintenance Requests

Report issues with buildings and maintenance to your direct supervisor or major professor.

Desks/Work Spaces

Contact your direct supervisor or major professor to request an assigned work space.

Experiential Labs

The College offers a variety of work environments for students working on research or course-related projects. These spaces range from completely open-access areas to those that require intensive training for access. See <http://www.engr.uga.edu/student-resources/current/undergraduate/experiential-labs> for detailed descriptions of our resources. Request support online at labsupport@engr.uga.edu.

Faculty Directory

The College's online faculty directory may be accessed at www.engr.uga.edu/people.

Human Resources

Contact Patsy Adams (patsy@engr.uga.edu, 706.542.7825) if you have questions about your employment with the College or need assistance with your I-9 forms.

Instructional Technology

Information about Instructional Technology may be found at www.engineering.uga.edu/it. Contact the College of Engineering's IT Support Desk (support@engr.uga.edu) if you experience an issue related to instructional technology in the College. Examples include slow logins, difficulty logging into an engineering lab computer, engineering software difficulties, and assistance with video conference meetings. Our Computer Lab Guide is online at <http://www.engr.uga.edu/uploads/main/ITLabGuide.pdf>. If you experience a wifi or MyID problem, please contact EITS directly (helpdesk@uga.edu, 706.542.3106).

Keys

Contact your direct supervisor or major professor to request keys and/or access to College facilities.

Mailboxes

Graduate students who have a Teaching Assistantship through the College of Engineering are assigned a mailbox in the Driftmier Engineering Center room #1119.

Payroll

Contact one of our Business Office staff members if you have questions or issues with payroll:

Chad Adams (jcadams@uga.edu)

Andrew Hale (ahale@engr.uga.edu)

Teresa Melton (tmelton@uga.edu)

Purchasing and Reimbursement Requests

Contact one of our administrative professionals for help with purchasing and reimbursement requests:

Ellen King (eking@engr.uga.edu, 706.542.1653)

Angie Malone (tamalone@uga.edu, 706.542.8902)

Pam Pontenberg (pam@engr.uga.edu, 706.542.4180)

UNIVERSITY RESOURCES

Athena

Athena (<https://athena.uga.edu>) is the online portal to the student information system application. It allows students to view course schedules, register for courses, view or update student records, check holds, view financial aid information, and much more.

Bursar's Office

The Bursar and Treasury Services Division (www.busfin.uga.edu/) is comprised of Accounts Receivable, Bursar and Treasury Services, and Student Account Services. These departments are responsible for and provide assistance with tuition and fees, payment plans and deadlines, taxes, and other student account services.

Counseling & Psychiatric Services (CAPS)

CAPS is dedicated to student mental health and wellbeing. They support students in achieving both academic and personal life goals. CAPS is committed to providing high quality, affordable, and confidential services to UGA students and their eligible partners. See www.uhs.uga.edu/caps/welcome or call 706-542-2273 for more information.

Disability Resource Center

Graduate students with disabilities requesting accommodations and services should contact the Disability Resources Center (www.drc.uga.edu , 706.542.8719) to discuss specific needs.

Graduate School

The Graduate School coordinates the graduate programs of all schools and colleges of the University. Resources for continuing students (including the Graduate Bulletin, important dates and deadlines, and required forms) are housed on their website at www.grad.uga.edu.

Information Technology

UGA's Enterprise Information Technology Services (EITS) is the central IT department at the University. EITS manages key technology systems and services on campus, such as UGAMail, Athena and eLearning Commons (eLC). Contact the EITS Help Desk at helpdesk@uga.edu or 706-542-3106 for assistance.

The EITS Help Desk's website (www.eits.uga.edu/) features detailed information on how to reset your UGA MyID password and configure your UGAMail account for your phone, as well as provides answers to other top questions. The UGA Student Technology Guide and New Student Tech Checklist is housed on the EITS website at www.eits.uga.edu/support/new_to_campus.

International Student Life (ISL)

The department of International Student Life (www.isl.uga.edu) enhances the student-learning environment through programs and services that internationalize the campus experience. ISL organizes an international student orientation for new students; program include information concerning immigration issues, taxes for non-residents, cross-cultural adjustment, housing assistance, course registration procedures, Social Security Cards, UGA payroll, and campus tours. A helpful Resource Guide for new international students is shared on their website at www.isl.uga.edu/content_page/international-student-resources-content-page.

Office of the Registrar

The Registrar's Office supports the academic mission of the University by providing services such as student transcripts, letters of certification, graduation clearance, diploma printing, residency classification, course scheduling, grading, re-admittance to the University, tuition waivers, FERPA, University governance, Veteran's Education Benefits, and general academic information. See www.reg.uga.edu for more information.

University Health Center

The Health Center (www.uhs.uga.edu) advance the wellbeing of students by providing primary, specialty, and mental health care services. All full-time UGA students and their eligible spouses/partners may use health center services.

University Libraries

The UGA Libraries (www.libs.uga.edu/) provide a vast array of electronic and print resources. Librarians are available to help you in person or via an online chat service. The Research/Instruction Librarian for College of Engineering graduate students is Chandler Christoffel (christof@uga.edu, 706.542.0696).

Transportation and Parking Services

This office issues parking permits for the UGA campus and oversees the UGA bus routes. See www.tps.uga.edu for more information.

Ramsey Student Center

The Ramsey Student Center (www.recsports.uga.edu/site) is the 440,000 square foot student recreational and athletic facility located on the East Campus. Known by students as "Ramsey," the facility is one of the largest student athletic recreation facilities in the United States. Full-time students are assessed a recreation fee which gives them access to this facility. Student registered in fewer than 12 credit hours may purchase access to this facility.

Travel Funding

The UGA Graduate School provides travel grants on a quarterly basis to doctoral students who are at an advanced stage in their graduate program and who are presenting results of their dissertation findings. Interested students submit their request to the College's Graduate Program Office by the College deadline, which is provided via the College's graduate student mailing list each semester. See <https://grad.uga.edu/index.php/current-students/financial-information/travel-funding/> for additional information.

University Health Center

The Health Center (www.uhs.uga.edu) advance the wellbeing of students by providing primary, specialty, and mental health care services. All full-time UGA students and their eligible spouses/partners may use health center services.

University of Georgia Police Department

The UGA Police Department (www.police.uga.edu, 706.542.2200) exists to protect and serve the University community and provide a safe and secure learning environment. Call 911 in case of emergency.

Writing Center

The Writing Center (www.english.uga.edu/writing-center) assists students in understanding the writing process, elaborating on their ideas and theories, and evaluating and editing their own work. To schedule an appointment, visit www.uga.mywconline.com and click on the "Appointments" link.

COLLEGE OF ENGINEERING GRADUATE PROGRAM OFFICE

The College of Engineering Graduate Program Office assists with student recruitment, processes admission applications for graduate programs, provides support to faculty in the application review process, provides information to students on University and College policies and procedures, and provides registration assistance when applicable.

Dr. Lawrence A. Hornak, Ph.D.
Dean of Research & Graduate Programs, Professor in the School of ECE, Graduate Coordinator
Paul D. Coverdell Center, room 130
lahornak@uga.edu, 706.542.2462

Margaret Sapp, M.Ed.
Graduate Program Administrator
Paul D. Coverdell Center, room 123
mjsapp@uga.edu, 706.542.7503

Victoria Martinez
Administrative Associate
Paul D. Coverdell Center, room 120
vicmart8@uga.edu, 706.542.1130

SCHOOL GRADUATE PROGRAM CONTACTS

Graduate Program Directors

Graduate Directors have been designated for the programs in their schools in order to provide program-specific coordination as well as insights and guidance to students for the programs in their schools. The Graduate Directors are:

- **School of CMBE**
Mark Eiteman, Ph.D., eiteman@engr.uga.edu, 706.542.0833
- **School of ECAME**
Civil & Environmental programs: Sung-Hee “Sonny” Kim, Ph.D., kims@uga.edu, 706.542.9804
Agricultural & Mechanical programs: Xianqiao “X.Q.” Wang, Ph.D., xqwang@uga.edu, 706.542.6251
- **School of ECE**
Peter Kner, Ph.D., kner@engr.uga.edu, 706.201.3261

Following their Advisory Committee’s approval, the Graduate Directors are the next stop for students in the approval process as students reach their required program milestones. This program-specific input will inform the final check of requirements and Graduate Coordinator signoff at the College level.

School Chairs

School Chairs have administrative responsibility for the programs in their schools. They are an excellent source for information regarding programs as well as teaching assistantship opportunities and other professional opportunities related to the disciplines housed in their schools.

- **School of CMBE**
Dr. James Warnock, james.warnock@uga.edu, 706.542.0870
- **School of ECAME**
Dr. Sidney Thompson, sidt@engr.uga.edu, 706.542.0873
- **School of ECE**
Dr. Fred Beyette, fred.beyette@uga.edu, 706.542.8698

GRADUATE DEGREE PROGRAM LISTING

M.S. Programs

M.S. in Agricultural Engineering
M.S. in Agricultural Engineering (Non-Thesis)
M.S. in Biochemical Engineering
M.S. in Biological Engineering
M.S. Engineering
M.S. Engineering with Civil Engineering Emphasis
M.S. Engineering with Electrical & Computer Engineering Emphasis
M.S. Engineering with Electrical & Computer Engineering Emphasis (Non-Thesis)
M.S. Engineering with Mechanical Engineering Emphasis
M.S. Engineering with Mechanical Engineering Emphasis (Non-Thesis)
M.S. in Environmental Engineering

Ph.D. Programs

Ph.D. in Biological & Agricultural Engineering
Ph.D. in Engineering
Ph.D. in Engineering – Biochemical Engineering Emphasis
Ph.D. in Engineering – Biomedical Engineering Emphasis
Ph.D. in Engineering – Dynamic Systems & Controls Emphasis
Ph.D. in Engineering – Electrical & Computer Engineering Emphasis
Ph.D. in Engineering – Energy Systems Emphasis
Ph.D. in Engineering – Engineering Education + Transformative Practice Emphasis
Ph.D. in Engineering – Environment & Water Emphasis
Ph.D. in Engineering – Mechanics & Materials Emphasis
Ph.D. in Engineering – Fluid & Thermal Systems Emphasis
Ph.D. in Engineering – Resilient Infrastructure Systems Emphasis

Certificate Program

Certificate in Coastal & Oceanographic Engineering

EXPECTATIONS OF GRADUATE STUDENTS

Students are expected to demonstrate professional behavior while enrolled in the graduate program and to act in a manner that demonstrates integrity and respect for others and the campus environment. Students are expected to adhere to all UGA policies governing research and academic conduct, non-discrimination and anti-harassment, and workplace violence. See the following links for detailed information:

UGA Academic Honesty: <https://honesty.uga.edu/Academic-Honesty-Policy/>

UGA Non-Discrimination & Anti-Harassment Policy: <https://eoo.uga.edu/policies/non-discrimination-anti-harassment-policy>

UGA Workplace Violence Policy: <http://safeandsecure.uga.edu/workplace.html>

ADMISSION TO THE COLLEGE OF ENGINEERING

Students holding a B.S. degree or M.S. in engineering from an ABET accredited program or a B.S. or M.S. in a related field from an accredited institution are invited to apply for admission to masters or doctoral programs. Students not having an ABET accredited B.S. engineering degree but having degrees in math or physical/biological science or other disciplines may be asked to take additional selected course work to adequately prepare them for their specific engineering studies.

Students with a non-engineering background may be assigned additional undergraduate level courses to address academic deficiencies and prepare them for graduate-level engineering coursework. These courses must be completed successfully before the end of the student's first year and may not be used on a Program of Study.

Base requirements for consideration for admission are listed below. Specific degree programs and emphasis areas may add additional requirements:

- Completion of a B.S. and M.S. (for Ph.D. applicants) with minimum GPA of 3.00 (out of 4.00) from an ABET accredited program or program in a related field. The average undergraduate GPA and graduate GPA of recent accepted students is 3.4 and 3.6, respectively.
- Submission of the UGA College of Engineering graduate program application via EngineeringCAS (<http://engineeringcas.liasoncas.org/apply/>)
- Official undergraduate and graduate academic transcripts. Non-US transcripts must be sent to a US-based evaluation service for a course-by-course US equivalency report.
- A statement of purpose
- Three letters of recommendation, preferably from faculty or supervisors who are familiar with your academic and/or research capabilities
- General Graduate Record Examination (GRE) Scores. M.S. applicants holding a UGA degree may waive this requirement if they meet GPA and undergraduate research requirements.
- Official TOEFL (or IELTS) scores that are not more than two years old are required for international students whose native language is other than English.
 - Minimum TOEFL requirement: overall score of 80 with at least 20 on speaking and writing
 - Minimum IELTS requirement: overall band-width of 6.5; no single band score below 6.0.

Direct Ph.D. Admission

Exceptional and highly motivated students with a B.S. degree who have not completed an M.S. degree may apply for direct admission to a Ph.D. program provided they have demonstrated research experience. The student's desire and suitability to enter a Ph.D. program should be clearly articulated in their statement of purpose and in accompanying letters of recommendation.

Application Deadlines

While applications are accepted on a rolling basis, full consideration for financial support will be given to applications received by the following deadlines:

- Fall (or Summer): December 15*
- Spring: September 15*

**these deadlines differ from the UGA Graduate School deadlines*

We will still consider all applications received by the following UGA Graduate School deadlines:

Domestic Applicants

Fall Semester – July 1
Spring Semester – November 15
Summer Semester – May 1

International Applicants

Fall Semester – April 15
Spring Semester – October 15
Summer Semester – February 15

FINANCIAL SUPPORT

Most graduate students in College degree programs conducting thesis or dissertation research and all students serving as teaching assistants receive financial support through assistantships.

Admission to graduate programs is considered separately from offers of assistantships. Accepted applicants may be considered for graduate assistantships. Assistantships are offered to accepted students on a competitive basis.

Research Assistantships

Graduate research assistantships are awarded by individual faculty members. Prospective students are responsible for pursuing research assistantship opportunities with individual faculty members and are strongly encouraged to reach out to individual faculty whose research intersects their career objectives.

Accepted Ph.D. applicants with strongest academic credentials may also be named College of Engineering Fellows and awarded a College of Engineering Graduate School Research Assistantship for four years of support. Fellows are nominated from each year's applicants by the faculty member interested in supporting the student and the program's School Chair. All qualified accepted applicants are considered automatically therefore the applicant does not need to apply for consideration.

College of Engineering graduate students receiving Research Assistantships must register for a minimum number of credit hours for each semester when accepting an assistantship award. For fall and spring semesters, the minimum is 18 credit hours. For summer semester, the minimum is 12 credit hours. These hours also include research and project-based research hours.

Teaching Assistantships

All accepted applicants may be considered for graduate teaching assistantships. Those interested should complete the application found at <http://www.engineering.uga.edu/assistantships/applications/graduate>.

Graduate students receiving Teaching Assistantships from the College must adhere to UGA TA Policy (<https://www.ctl.uga.edu/grad-student/ta-policy/>) which states that all TA's must:

1. Attend TA Orientation
2. Complete GRSC 7770 or departmental equivalent (ENED 7010)
3. For international students, demonstrate proficiency with the English language (see <https://www.ctl.uga.edu/grad-student/ta-policy/language-requirement/>)

The College of Engineering also requires that TA's:

4. Register and attend ENGR 8950 (1) each semester while receiving TA funds
5. Register a minimum number of 12 graduate credit hours for each fall/spring semester and 9 hours each summer semester when receiving TA funds

Additional Funding Opportunities

Information on available university-level funding is available through the UGA Graduate School at <http://grad.uga.edu/index.php/current-students/financial-information/> . This site also provides links to additional fellowship, scholarship, and financial aid opportunities.

A variety of fellowships funded by external organizations are also available (e.g., DOE, NSF, and SMART fellowships, private foundations, etc.). Information can be found at the websites of these organizations. Students should apply directly to the specific organization awarding a particular external fellowship.

MASTER'S PROGRAMS

Discipline-specific M.S. programs and Emphasis Areas within the M.S. in Engineering degree enable students to focus their master's work in either a specific disciplinary specialty or interdisciplinary area. Students work closely with their faculty advisor and committee to select the most appropriate coursework and emphasis area to meet the student's career and research objectives.

M.S. PROGRAM OF STUDY REQUIREMENTS

The M.S. in Engineering and all named disciplinary M.S. degree programs in the College of Engineering require a minimum of 33 semester hours in the student's Program of Study, which consists of:

- **A minimum of 24 semester hours of coursework, which must include**
 - 23 hours of graduate-level coursework, 12 of which must be from UGA courses open only to graduate students and exclusive of thesis (7300) and research (7000, 7010).
 - 1 hour of Graduate Seminar **

And either

- **Thesis Option:**
 - A minimum of 6 hours of master's research (7000) or project-based research (7010). A typical student's research hours will exceed this minimum; however, at most 6 hours of 7000/7010 may be listed on the Program of Study.
 - 3 hours of Master's Thesis (7300), thesis writing under the direction of the major professor.

Or

- **Non-Thesis Option***:**
 - 6 hours of additional courses as defined by the program or emphasis area
 - 3 hours of ENGR 7010 Project Research and a Master's Project Report

*Discipline-specific M.S. and Emphasis Area programs will require completion of a set of specific courses detailed by each program. These courses may increase the total number of semester hours required for program completion.

** Only 1 hour of Graduate Seminar may apply on the Program of Study. Individual Programs or Schools may require students to enroll for additional semesters. (ECAME and ECE students register ENGR 8950; CMBE students register BCHE 8970.) Students are strongly encouraged to continue regular attendance of speaker series presentations even if not formally registered in the seminar.

*** The Non-Thesis Option is available only in the following programs: M.S. Agricultural Engineering, M.S. Civil and Environmental Engineering (pending program approval), and the ECE and Mechanical Eng. Emphasis Areas of the M.S. in Engineering.

The thesis option is provided for students wishing to receive professional training via coursework integrated with research training through the successful completion of a thesis. In the M.S. Thesis Option, all coursework is selected consistent with specific degree and emphasis area requirements in coordination with the Student's Faculty Advisor and approved by the student's Advisory Committee on the Program of Study. To receive the M.S. degree, each student is required to present a satisfactory research proposal approved by the student's advisory committee and the graduate coordinator and pass a final examination and defense of the research thesis.

The non-thesis option is provided for students either currently employed in professional practice or wishing to emphasize only professional training through their M.S.. For the M.S. Non-Thesis Option, all coursework is selected

consistent with specific degree and emphasis area requirements and approved by the program's Graduate Director and Advisory Committee on the Program of Study. The Graduate Director serves as the student's faculty advisor. The student identifies an appropriate faculty member to serve as supervisor for their Master's Project who then works in coordination with the Graduate Director to advise the student through degree completion. The supervising faculty for the Master's Project, the Graduate Director, and Graduate Coordinator comprise the student's Advisory Committee. To receive the M.S. degree under the Non-Thesis Option, each student is required to complete a Master's Project under the supervision of a faculty member and submit a Masters Project Report for approval by the student's Advisory Committee.

Students elect their M.S. option at the start of their programs. In the event a student wishes to change their degree option during their program, the student must request a change in degree objective. Students successfully petitioning to change their previously elected M.S. option must 1) complete at least two full-time semesters in their new option before they are eligible for graduation, 2) adequately complete any prior work to which they committed or for which they were supported under assistantship in their prior option, and 3) after option change start and complete either the M.S. project requirement (ENGR 7010) or M.S. thesis research requirement (ENGR 7000/7010, 7300). Only students in the thesis option are eligible for College assistantship support.

Completion of the M.S. requirements for all programs in the College of Engineering fulfill all requirements of the University of Georgia Graduate School. No grade below C will be accepted in the program of study. To be eligible for graduation, a student must maintain a 3.0 (B) average on the graduate transcript and a 3.0 (B) average in the program of study.

MASTER'S PROGRAM FRAMEWORK – MILESTONES & TIMELINE

The "Thesis Master's Program Framework – Milestones & Timeline" document is posted on the following page. This documents provides a list of our program milestones, the required timeline for completion of each milestone, and the steps students must take to complete each milestone.

The "Non-Thesis Master's Program Framework – Milestones & Timeline" document will be available pending College Curriculum Committee approval.

The College of Engineering Graduate Program Office sends Progress Reports via UGA email to each enrolled student as well as his/her Major Professor (if any) and Graduate Director. These reports include a checklist of degree completion requirements and indicate which requirements remain unfulfilled. Students are encouraged to resolve any delinquent issues as quickly as possible.

UGA CENGR Masters Program Framework - Milestones & Timeline

Student Program Milestones	MS Program Event	Student Required Action	Timeline for Completion	Steps to Take
<p>Defining an Advisory Committee: The MS student has fully discussed with his/her research advisor the scale and scope of his/her intended work and arrived at recommendations for committee members who can provide critical input for the benefit of the student's research and professional formation.</p>	<p>Formation of student's MS Advisory Committee</p>	<p>MS Advisory Committee form*</p>	<p>Due by the end of student's second semester.**</p>	<p>Ask proposed committee members to serve on your committee. Submit Advisory Committee form online at http://grad.uga.edu/index.php/current-students/forms/.</p>
<p>Scoping a Program of Study: With the input of her/his Advisory Committee, the student arrives at a planned set of classroom courses and research.</p>	<p>Student Completes her/his Program of Study in coordination with Advisory Committee.</p>	<p>Program of Study (PS) form*</p>	<p>Due by the end of student's second semester.**</p>	<p>Submit PS form online at http://grad.uga.edu/index.php/current-students/forms/.</p>
<p>Scoping the planned thesis research</p>	<p>In consultation with the her/his Advisory Committee, the student defines the scope of the research which will comprise the student's thesis.</p>	<p>Depending on discipline and Advisory Committee, the student may informally discuss or formally defend the proposed thesis research.</p>	<p>Completed by the end of the student's first year.**</p>	<p>Confer with your Graduate Director to determine what form, if any, your School may require.</p>
<p>Execution and completion of the masters research and program of study</p>	<p>Application for Graduation: With the concurrence of the student's committee, the application for graduation is made.</p>	<p>Application for graduation must be filed with the Graduate School online (Athens)</p>	<p>Due no later than Friday of the second full week (the first full week for summer) of classes in the semester of the anticipated graduation date.</p>	<p>See http://grad.uga.edu/wp-content/uploads/2015/04/apprgradinstructions.pdf for detailed instructions.</p>
<p>Preparation of thesis draft</p>	<p>Format Check of thesis draft by Graduate School</p>	<p>College is not involved in this action; students submit drafts online directly to GS.</p>	<p>Graduate School deadline is approximately four weeks prior to commencement; see GS site http://grad.uga.edu/index.php/current-students/important-dates-deadlines/ for exact date each term.</p>	<p>See http://grad.uga.edu/index.php/current-students/policies-procedures/theses-dissertations-guidelines/format-check/ for detailed instructions.</p>
<p>Scheduling of the Thesis Defense: The student has the agreement of her/his Advisory Committee to defend with the research concluded and the thesis in or nearing final draft.</p>	<p>With agreement of the Advisory Committee, the student is ready to defend her/his research.</p>	<p>The student must submit specifics (day, time, place, etc.) to the CENGR Graduate Program Administrator, who then submits it to the Graduate School. The Graduate School announces the defense to the public; the online posting should be in place no less than two weeks prior to the defense.</p>	<p>Specifics (day, time, place, etc.) must be submitted to the Graduate Program Administrator at least three weeks prior to the defense.</p>	<p>Schedule the defense with your committee and reserve a room with one of the CENGR administrative assistants. Submit details via UGA email to mjsapp@uga.edu three weeks prior to defense.</p>
<p>Thesis Defense ("Final Exam" as referred to by the Graduate School)</p>	<p>The student presents and defends his/her research in an open forum and further defends the research approach and results in an open and/or closed session to the advisory committee.</p>	<p>Final Defense Approval Form*, ETD Submission Approval Form, and Faculty Assessment Rubrics – to be completed at the thesis defense</p>	<p>Forms must be submitted to the College of Engineering no later than three weeks prior to graduation.</p>	<p>Pick up assessment packet from Victoria Martinez (Coverdell 120) prior to defense. Obtain remaining forms online at http://grad.uga.edu/index.php/current-students/forms/, obtain Advisory Committee members' signatures at your defense, and return forms to Victoria Martinez along with your sealed assessment envelope.</p>
<p>Thesis submission</p>	<p>An electronic submission of the corrected thesis</p>	<p>An electronic submission of the corrected thesis</p>	<p>Due to the Graduate School no later than two weeks prior to graduation – see GS site http://grad.uga.edu/index.php/current-students/important-dates-deadlines/ for exact date each term.</p>	<p>Upload final corrected copy of your thesis online at https://getd.lib.uga.edu/.</p>
<p>MS Maximum Time to Completion</p>	<p>All requirements for the degree must be completed</p>	<p>All requirements for the degree must be completed</p>	<p>Within six years, beginning with the first registration for graduate courses on the program of study. An extension of time may be granted only for conditions beyond the control of the individual.</p>	<p>Contact Margaret Sapp (mjsapp@uga.edu) for additional information.</p>

(Grad School Reference: <http://grad.uga.edu/index.php/current-students/policies-procedures/academic/types-of-degrees-offered/masters-degree/>)

*Approved by the CENGR Curriculum Committee, Spring 2018

**Reviewed by Schools' Graduate Director and CENGR Graduate Office, then approved by CENGR Graduate Coordinator

***Double Degree students should complete during their first semester as a graduate student.

SPECIFIC M.S. PROGRAM REQUIREMENTS

M.S. in Agricultural Engineering (School of ECAME)

Admission Requirements

See the general College of Engineering admission requirements

Program of Study

In addition to the requirements for the M.S. in Agricultural Engineering requires a minimum of 33 semester hours in the Program of Study, which consists of:

► A minimum of 24 semester hours of coursework, which must include

- 23 hours of graduate-level coursework, including
 - 15 hours of which must be selected from the Sustainable Food Systems and/or Natural Resource Management course lists.
 - 12 hours of which must be from UGA courses open only to graduate students and exclusive of thesis (7300) and research (7000, 7010).
- 1 hour of ENGR 8950 Graduate Seminar *

** Only 1 hour of Graduate Seminar may apply on the Program of Study. Students are strongly encouraged to continue regular attendance of speaker series presentations even if not formally registered in the seminar.*

► And either a Thesis Option or a Non-Thesis Option:

Thesis Option:

- A minimum of 6 hours of master's research (ENGR 7000) or project-based research (ENGR 7010). A typical student's research hours will exceed this minimum; however, at most 6 hours of ENGR 7000/7010 may be listed on the Program of Study.
- 3 hours of M.S. thesis preparation and writing (ENGR 7300)

Non-Thesis Option:

- 6 hours of additional elective courses.
- 3 hours of ENGR 7010 Project Research and a Master's Project Report

The thesis option is provided for students wishing to receive professional training via coursework integrated with research training through the successful completion of a thesis. In the M.S. Thesis Option, all coursework is selected consistent with specific degree and emphasis area requirements in coordination with the Student's Faculty Advisor and approved by the student's Advisory Committee on the Program of Study. To receive the M.S. degree, each student is required to present a satisfactory research proposal approved by the student's Advisory Committee and the graduate coordinator and pass a final examination and defense of the research thesis.

The non-thesis option is provided for students either currently employed in professional practice or wishing to emphasize only professional training through their M.S.. For the M.S. Non-Thesis Option, all coursework is selected consistent with specific degree and emphasis area requirements and approved by the program's Graduate Director and Advisory Committee on the Program of Study. The Graduate Director serves as the student's faculty advisor. The student identifies an appropriate faculty member to serve as supervisor for their Master's Project who then works in coordination with the Graduate Director to advise the student through degree completion. The supervising faculty for the Master's Project, the Graduate Director, and Graduate Coordinator comprise the student's Advisory Committee. To receive the

M.S. degree under the Non-Thesis Option, each student is required to complete a Master's Project under the supervision of a faculty member and submit a Masters Project Report for approval by the student's Advisory Committee.

General guidelines for selecting courses for the program of study consistent with the College of Engineering requirements for the M.S. are for the student to have approximately 1/3 quantitative courses (e.g., math, finite element, and statistics), 1/3 supporting sciences courses available in many departments across campus, and 1/3 engineering courses. Typical choices for engineering and supporting science courses in each area are shown below. Students work with their graduate advisor and their committee to provide guidance in formulating the final plan of study so that it complements the chosen research area.

Sustainable Food Systems

- ENGR 8103 Computational Engineering
- ENGR 6140 Systems modeling
- FDST 6011 Food Processing I
- FDST 6012 Food Processing II
- FDST 6013 Food Processing III
- ENGR 6490 Renewable Energy Engineering
- ENGR 8103 Computational Engineering
- ENVE 6230 Energy in Nature, Civilization and Engineering
- ENVE 6530 Energy and Environmental Policy Analysis
- ENVE 6250 Energy Systems and the Environment
- ENGR 6350 Finite Element Analysis
- ENGR 6210 Linear Systems
- ENGR 6220 Feedback Control Systems
- ENGR 6230 Sensors and Transducers

Natural Resource Management

- ENVE 6230 Energy in Nature, Civilization, and Engineering
- ENGR 8103 Computational Engineering
- ENVE 6410 Open Channel Hydraulics
- ENVE 6430 Advanced Open Channel Design
- ENVE 6440 Computer Modeling in Water Resources
- ENVE 6450 Engineering Hydrology and Hydraulics
- ENVE 6460 Groundwater Hydrology for Engineers
- ENVE 6430 Natural Resources Engineering

M.S. in Biochemical Engineering (School of CMBE)

Admission Requirements

In addition to the general College of Engineering requirements, the School of CMBE has the following admission guidance and requirements:

- Consideration is given particularly to the following components of the application: GRE and other test scores, undergraduate Grade Point Average, the student's Statement of Purpose (SOP), and letters of recommendation.
- Quality students who have completed a B.S. degree in a non-engineering field such as Physics, Chemistry or Biology and who have completed mathematics through differential equations will be considered for admission to the School's graduate program. These students typically are required to complete 3-4 additional engineering courses at the onset of their graduate education which will be determined by the School Curriculum Committee in coordination with the College Graduate Admissions and Advisory Committee.

- Change of major from M.S. to Ph.D.: a) each GRE score must be at least 150 (verbal and quantitative), b) Ph.D. entrance requirements must be met, c) adequate progress in the M.S. must be demonstrated, d) the undergrad GPA must be at least 3.0 (or its equivalent), and e) a compelling case for the change must be given.

Program of Study

The M.S. in Biochemical Engineering degree requires a minimum of 33 semester hours, which consist of the following on the student's Program of Study:

- A minimum of 24 semester hours of coursework:
 - ENGR 6910: Foundations for Engineering Research (3 credit hours)
 - BCHE 8970: Bioengineering Seminar (2 semesters, 2 credit hours, 1 credit hour on Program of Study*)
 - ENGR 8103: Computational Engineering (3 credit hours)
 - Choose 2 from the following (6 credit hours):
 - BCHE 8150: Heterogeneous Reactor Design and Bio/Catalysis (3)
 - CVLE (MCHE) 8160: Advanced Fluid Mechanics (3)
 - CVLE (MCHE) 8170: Advanced Heat Transfer (3)
 - ENGR 8180: Advanced Mass Transport (3)
 - Electives (11 credit hours)
 - Minimum of 11 additional credit hours of *graduate-level* coursework selected with the approval of the student's Graduate Advisory Committee. At least 3 credits must be from courses open to graduate students only.
- A minimum of 6 hours of Master's Research (BCHE 7000) or Project-based Research (BCHE 7010). A typical student's research hours will exceed this minimum; however, at most 6 hours of BCHE 7000/7010 may be listed on the program of study.
- 3 hours of thesis (BCHE 7300)

* Only 1 hour of the Bioengineering Seminar may apply on the Program of Study, although the School of CBM requires completion of at least 2 hours.

This program of study is effective Spring Semester 2019. Previous program of study requirements may be found at [http://engineering.uga.edu/uploads/main/MS Biochemical Engineering-Fall-17-Fall-18.pdf](http://engineering.uga.edu/uploads/main/MS_Biochemical_Engineering-Fall-17-Fall-18.pdf) .

Additional Requirements:

- M.S. students should form their Advisory Committee comprised of 3 faculty members within 12 months of starting their M.S. program.
- M.S. students should complete their research proposal within 15 months of starting their M.S. program.
- Student must make one oral presentation in the School Seminar.

The research is expected to generate significant scholarship (such as publications, patents, conference presentations).

M.S. in Biological Engineering (School of CMBE)

Admission Requirements

In addition to the general College of Engineering requirements, the School of CMBE has the following admission guidance and requirements:

- Consideration is given particularly to the following components of the application: GRE and other test scores, undergraduate Grade Point Average, the student's Statement of Purpose (SOP), and letters of recommendation.
- Quality students who have completed a B.S. degree in a non-engineering field such as Physics, Chemistry or Biology and who have completed mathematics through differential equations will be considered for admission to the School's graduate program. These students typically are required to complete 3-4 additional engineering courses at the onset of their graduate education which will be determined by the School Curriculum Committee in coordination with the College Graduate Admissions and Advisory Committee.
- Change of major from M.S. to Ph.D.: a) each GRE score must be at least 150 (verbal and quantitative), b) Ph.D. entrance requirements must be met, c) adequate progress in the M.S. must be demonstrated, d) the undergrad GPA must be at least 3.0 (or its equivalent), and e) a compelling case for the change must be given.

Program of Study

The M.S. in Biological Engineering degree requires a minimum of 33 semester hours, which consist of the following on the student's Program of Study:

- A minimum of 24 semester hours of coursework:
 - ENGR 6910: Foundations for Engineering Research (3 credit hours)
 - BCHE 8970: Bioengineering Seminar (2 semesters, 2 credit hours, 1 credit hour on Program of Study*)
 - ENGR 8103: Computational Engineering (3 credit hours)
 - BIOE 8510: Advanced Systems Physiology (3 credit hours)
 - Choose 1 from the following (3 credit hours):
 - BCHE 8150: Heterogeneous Reactor Design and Bio/Catalysis (3)
 - CVLE (MCHE) 8160: Advanced Fluid Mechanics (3)
 - CVLE (MCHE) 8170: Advanced Heat Transfer (3)
 - ENGR 8180: Advanced Mass Transport (3)
 - Electives (11 credit hours)
 - Minimum of 11 additional credit hours of *graduate-level* coursework selected with the approval of the student's Graduate Advisory Committee. At least 3 credits must be from courses open to graduate students only.
- A minimum of 6 hours of Master's Research (ENGR 7000) or Project-focused Master's Research (7010). A typical student's research hours will exceed this minimum; however, at most 6 hours of ENGR 7000/7010 may be listed on the program of study.
- 3 hours of thesis (ENGR 7300)

* Only 1 hour of the Bioengineering Seminar may apply on the Program of Study, although the School of CBM requires completion of at least 2 hours.

This program of study is effective Spring Semester 2019. Previous program of study requirements may be found at http://engineering.uga.edu/uploads/main/MS_Biological_Engineering-Fall-2018-Fall-2019.pdf.

Additional Requirements:

- M.S. students should form their Advisory Committee comprised of 3 faculty members within 12 months of starting their M.S. program.
- M.S. students should complete their research proposal within 15 months of starting their M.S. program.
- Student must make one oral presentation in the School Seminar.

The research is expected to generate significant scholarship (such as publications, patents, conference presentations).

[M.S. Engineering - \(Schools of CMBE, ECAME, and ECE\)](#)

Admission Requirements

See the general College of Engineering admission requirements

Program of Study

Requirements for the M.S. in Engineering and all named disciplinary M.S. degree programs in the College of Engineering require a minimum of 33 semester hours in the student's Program of Study, which consists of:

- A minimum of 24 semester hours of coursework, which must include
 - 23 hours of graduate-level coursework, 12 of which must be from UGA courses open only to graduate students and exclusive of thesis (7300) and research (7000, 7010).
 - 1 hour of Graduate Seminar **
- A minimum of 6 hours of master's research (7000) or project-based research (7010). A typical student's research hours will exceed this minimum; however, at most 6 hours of 7000/7010 may be listed on the Program of Study.
- 3 hours of thesis (7300)

*Discipline-specific M.S. and Emphasis Area programs will require completion of a set of specific courses detailed by each program. These courses may increase the total number of semester hours required for program completion.

** Only 1 hour of Graduate Seminar may apply on the Program of Study. Individual Programs or Schools may require students to enroll for additional semesters. (ECAME and ECE students register ENGR 8950; CMBE students register BCHE 8970.) Students are strongly encouraged to continue regular attendance of speaker series presentations even if not formally registered in the seminar.

All coursework is selected in coordination with the Student's Faculty Advisor and approved by the student's Advisory Committee on the Program of Study. To receive the M.S. degree, each student is required to present a satisfactory research proposal approved by the student's Advisory Committee and the graduate coordinator and pass a final examination and defense of the research thesis.

Completion of the M.S. requirements for all programs in the College of Engineering fulfill all requirements of the University of Georgia Graduate School. No grade below C will be accepted in the program of study. To be eligible for graduation, a student must maintain a 3.0 (B) average on the graduate transcript and a 3.0 (B) average in the program of study.

[M.S. Engineering with Civil Engineering Emphasis \(School of ECAME\)](#)

Admission Requirements

See the general College of Engineering admission requirements

Program of Study

In addition to the requirement for the M.S. in Engineering, the Civil Engineering Emphasis Area requires Masters coursework to be taken from classes in discipline specific areas. The M.S. in Engineering with Civil Engineering Emphasis requires a minimum of 33 semester hours in the Program of Study, which consists of:

- ▶ A minimum of 24 semester hours of coursework, which must include
 - 23 hours of graduate-level coursework, including
 - 9 hours of which must be selected from the Civil Engineering Emphasis course list.

- 12 hours of which must be from UGA courses open only to graduate students and exclusive of thesis (7300) and research (7000, 7010).
- 1 hour of ENGR 8950 Graduate Seminar*

▶ A minimum of 6 hours of master's research (7000) or project-based research (7010). A typical student's research hours will exceed this minimum; however, at most 6 hours of 7000/7010 may be listed on the Program of Study.

▶ 3 hours of M.S. thesis preparation and writing (7300)

* Only 1 hour of Graduate Seminar may apply on the Program of Study. Students are strongly encouraged to continue regular attendance of speaker series presentations even if not formally registered in the seminar.

As a requirement of the M.S. Engineering Degree with Emphasis in Civil Engineering, students must complete a minimum of 9 credit hours selected from the list below. Students will work with their graduate advisor to select the most appropriate specialty area and coursework to ensure breadth of understanding as well as mastery of knowledge in a specific subject area. Emphasis courses will be reviewed each academic year and updated as needed to reflect new areas in the field. In addition to completing 9 credit hours selected from the list below, students may work with their graduate advisor to develop an interdisciplinary plan of coursework drawing from the extensive graduate course offerings available at UGA.

Civil Engineering Emphasis Course List:

➤ **Structural and Geotechnical Engineering**

- ENGR 6350 Finite Element Analysis
- ENGR 8103 Computational Engineering
- CVLE 6330 Advanced Structural Analysis
- CVLE 6340 Design of Bridges
- CVLE/MCHE 8350 Nonlinear Finite Element Analysis
- CVLE/MCHE 8640 Advanced Strength of Materials
- CVLE 8550 Prestressed Concrete Design
- CVLE 6470 Pavement Design
- CVLE 8420 Geomechanics
- CVLE 8460 Soil Improvement
- STAT 6315 Statistical Methods Researcher

➤ **Environment and Water**

- ENVE 6230 Energy in Nature, Civilization, and Engineering
- ENGR 6440 Environmental Engineering Unit Operations
- ENGR 6450 Environmental Engineering Remediation Design
- ENGR 8103 Computational Engineering
- ENGR 6410 Open Channel Hydraulics
- ENGR 6430 Advanced Open Channel Design
- ENVE 6440 Computer Modeling in Water Resources
- ENVE 6450 Engineering Hydrology and Hydraulics
- ENVE 6460 Groundwater Hydrology for Engineers
- ENVE 6430 Natural Resources Engineering
- CVLE 8110 Environmental River Mechanics
- ENGR 8160 Advanced Fluid Mechanics
- CVLE 8140 Mixing & Transport
- CRSS (GEOL) 8710 Watershed-Scale Modeling
- WASR 8200 Hillslope Hydrology
- GEOL (WASR) 8740 Hydrologic Flow and Transport Modeling
- STAT 6315 Statistical Methods Researcher

M.S. Engineering with Electrical & Computer Engineering Emphasis (School of ECE)

Admission Requirements

In addition to the general College of Engineering admission requirements for the M.S. or Ph.D., students entering with a B.S. degree from disciplines other than ECE should have taken Calculus through Differential Equations, Introductory Physics with Calculus (Mechanics, Electricity and Magnetism, Optics, and Modern Physics), Circuits, Introductory Programming, and Linear Systems (or equivalent). Students without the necessary engineering background can be accepted but must take remedial coursework in addition to the degree and emphasis requirements.

Program of Study

The M.S. in Engineering with Electrical and Computer Engineering Emphasis requires a minimum of 33 semester hours in the Program of Study, which consists of:

► A minimum of 24 semester hours of coursework:

- 20 hours of graduate-level coursework
 - 12 hours of 8000-level courses from one or more of the ECE Emphasis Area tracks listed below.
 - 8 hours of 6000-level or higher coursework from any UGA school or college, exclusive of thesis (7300) and research (7000, 7010)
- 3 hours of Foundations for Engineering Research (ENGR 6910)
- 2 hours of Graduate Seminar (ENGR 8950)**

And either

► Thesis Option:

- A minimum of 6 hours of master's research (ENGR 7000) or project-based research (ENGR 7010). A typical student's research hours will exceed this minimum; however, at most 6 hours of 7000/7010 may be listed on the program of study.
- 3 hours of M.S. thesis preparation and writing (ENGR 7300)

Or

► Non-Thesis Option:

- 6 hours of additional emphasis area courses
- 3 hours of ENGR 7010 Project Research and a Master's Project Report

*** Only 1 hour of Graduate Seminar may apply on the Program of Study and is counted toward the 33 hour M.S. minimum. Students are free to register for the course multiple times and are encouraged to continue regular attendance of speaker series presentations even if not registered for seminar.*

Students will work with their graduate advisor to select the most appropriate set of courses to ensure breadth of understanding as well as mastery of knowledge in a specific area consistent with their interests and research. In addition to completing 12 credit hours selected from the tracks below, students may work with their graduate advisor to develop an interdisciplinary plan of study drawing from the extensive graduate course offerings at UGA.

The thesis option is provided for students wishing to receive professional training via coursework integrated with research training through the successful completion of a thesis. In the M.S. Thesis Option, all coursework is selected consistent with specific degree and emphasis area requirements in coordination with the Student's Faculty Advisor and approved by the student's Advisory Committee on the Program of Study. To receive the M.S. degree, each student is required to present a satisfactory research proposal approved by the student's advisory committee and the graduate coordinator and pass a final examination and defense of the research thesis.

The non-thesis option is provided for students either currently employed in professional practice or wishing to emphasize only professional training through their M.S.. For the M.S. Non-Thesis Option, all coursework is selected consistent with specific degree and emphasis area requirements and approved by the program's Graduate Director and Advisory Committee on the Program of Study. The Graduate Director serves as the student's faculty advisor. The student identifies an appropriate faculty member to serve as supervisor for their Master's Project who then works in coordination with the Graduate Director to advise the student through degree completion. The supervising faculty for the Master's Project, the Graduate Director, and Graduate Coordinator comprise the student's Advisory Committee. To receive the M.S. degree under the Non-Thesis Option, each student is required to complete a Master's Project under the supervision of a faculty member and submit a Masters Project Report for approval by the student's Advisory Committee.

Emphasis Area Course List

Coursework fulfilling the ECE Emphasis Area credit hour requirement for the Ph.D in Engineering or M.S. in Engineering degree may be chosen from one or more of the areas below. Courses will be reviewed each academic year and updated as needed to reflect new areas in the field.

Track 1: Control Systems

Through this track, students can gain expertise in the analysis and design of controllers for complex, large scale systems. The need for improved safety and a cleaner environment have posed countless challenges that can only be addressed through the design and implementation of intelligent feedback controls. Numerous emerging applications for controls include cyber-physical systems (e.g., smart grids and intelligent transportation systems) and biological networks.

- ENGR 8240 - Instrumentation programming
- CSCI (ENGR) 8940 - Computational intelligence
- ENGR 8930 - Optimization Theory and Applications
- ELEE 8220- Nonlinear Control Systems

Track 2: Electronics & Photonics

Students develop an understanding of the design and analysis of systems involving electromagnetic waves from RF electronics to photonic systems for signal processing and communication and optical systems for image capture and processing. High-speed communication and signal processing at gigabit speeds requires sophisticated electro-optic systems that must be understood at both the device and the systems level. Modern optical imaging systems use a wide variety of electrical and photonic technologies to achieve everything from imaging biological systems at the nanometer scale to imaging distant galaxies.

- ELEE 8510 - Microwave Photonics
- ENGR 8570 - Topics in Advanced Microscopy
- ELEE 8530 - Advanced Optics and Photonics
- PHYS 8201 - Advanced Electromagnetic Theory I
- PHYS 8202 - Advanced Electromagnetic Theory II
- ENGR 8310 - MEMS Design
- ENGG 8840 - Advanced Image Analysis

Track 3: Cyber-physical Systems

This track develops in students an understanding of engineered systems that are built from, and depend upon, the seamless integration of computational algorithms and physical components. Advances in CPS will enable capability, adaptability, scalability, resiliency, safety, security, and usability that will far exceed the simple embedded systems of today. CPS technology will transform the way people interact with engineered systems -- just as the Internet has transformed the way people interact with information. New smart CPS will drive innovation and competition in sectors such as agriculture, energy, transportation, building design and automation, healthcare, and manufacturing.

- CSEE 8300 – Principles of Cyber-Physical Systems
- CSEE 8830 - AR/VR 3D User Interface Design
- ELEE 8240 - Instrumentation programming
- CSCI (ENGR) 8940 - Computational intelligence
- CSCI 8820 - Computer Vision and Pattern Recognition
- CSCI 8380 - Advanced Topics in Information Systems
- CSCI 8250 - Advanced Network Security Systems
- ENGG 8840 - Advanced Image Analysis
- ENGR 8990 - Optimization Theory and Applications

Selected Course Offerings

Students may want to consider the following courses in building their Programs of Study, as appropriate:

- ENGR 4210/6210 Linear Systems
- ENGR 4220/6220 Feedback Control Systems
- ENGR 4230/6230 Sensors and Transducers
- ENGR 4240 Introduction to Microcontrollers
- ENGR 4250/6250 Advanced Microcontrollers
- ENGR 4260/6260 Introduction to Nanoelectronics
- ELEE 4040 Communication Electromagnetics
- ENGR 4620/6620 Biomedical Imaging

In addition, graduate courses from other colleges that are relevant for ECE students include:

- PHYS 8101 Quantum Mechanics I
- PHYS 8102 Quantum Mechanics II
- PHYS 8201 Advanced Electromagnetic Theory I
- PHYS 8202 Advanced Electromagnetic Theory II
- CSCI 8820 Computer Vision and Pattern Recognition
- CSCI 8380 Advanced Topics in Information Systems
- CSCI 8250 Advanced Network Security Systems

This program of study is effective Spring Semester 2019. Previous program of study requirements may be found at [http://engineering.uga.edu/uploads/main/MS_Engineering - ECE - legacy.pdf](http://engineering.uga.edu/uploads/main/MS_Engineering_-_ECE_-_legacy.pdf).

[M.S. Engineering with Mechanical Engineering Emphasis \(School of ECAME\)](#)

Admission Requirements

See the general College of Engineering admission requirements

Program of Study

In addition to the requirement for the M.S. in Engineering, the Mechanical Engineering Emphasis Area requires Masters coursework to be taken from classes in discipline specific areas. The M.S. in Engineering with Mechanical Engineering Emphasis requires a minimum of 33 semester hours in the Program of Study, which consists of:

► A minimum of 24 semester hours of coursework, which must include

- 23 hours of graduate-level coursework, including
 - 9 hours of which must be selected from the Mechanical Engineering Emphasis course list.

- 12 hours of which must be from UGA courses open only to graduate students and exclusive of thesis (7300) and research (7000, 7010).
- 1 hour of ENGR 8950 Graduate Seminar *

And either

► Thesis Option

- A minimum of 6 hours of master's research (7000) or project-based research (7010). A typical student's research hours will exceed this minimum; however, at most 6 hours of 7000/7010 may be listed on the Program of Study.
- 3 hours of M.S. thesis preparation and writing (7300)

Or

► Non-Thesis Option

- 6 hours of additional emphasis area courses
- 3 hours of ENGR 7010 Project Research and a Master's Project Report

** Only 1 hour of Graduate Seminar may apply on the Program of Study. Students are strongly encouraged to continue regular attendance of speaker series presentations even if not formally registered in the seminar.*

The thesis option is provided for students wishing to receive professional training via coursework integrated with research training through the successful completion of a thesis. In the M.S. Thesis Option, all coursework is selected consistent with specific degree and emphasis area requirements in coordination with the Student's Faculty Advisor and approved by the student's Advisory Committee on the Program of Study. To receive the M.S. degree, each student is required to present a satisfactory research proposal approved by the student's advisory committee and the graduate coordinator and pass a final examination and defense of the research thesis.

The non-thesis option is provided for students either currently employed in professional practice or wishing to emphasize only professional training through their M.S.. For the M.S. Non-Thesis Option, all coursework is selected consistent with specific degree and emphasis area requirements and approved by the program's Graduate Director and Advisory Committee on the Program of Study. The Graduate Director serves as the student's faculty advisor. The student identifies an appropriate faculty member to serve as supervisor for their Master's Project who then works in coordination with the Graduate Director to advise the student through degree completion. The supervising faculty for the Master's Project, the Graduate Director, and Graduate Coordinator comprise the student's Advisory Committee. To receive the M.S. degree under the Non-Thesis Option, each student is required to complete a Master's Project under the supervision of a faculty member and submit a Masters Project Report for approval by the student's Advisory Committee.

Mechanical Engineering Emphasis Course List

As a requirement of the M.S. Engineering Degree with Emphasis in Mechanical Engineering, students must complete a minimum of 9 credit hours selected from among the list below. Students will work with their graduate advisor to select the most appropriate specialty area and coursework.

As a requirement of the M.S. Engineering Degree with Emphasis in Mechanical Engineering, students must complete a minimum of 9 credit hours selected from among the list below. Students will work with their graduate advisor to select the most appropriate specialty area and coursework.

Design, Optimization, and Manufacturing

- ENVE 6230 Energy in Nature, Civilization, and Engineering
- ENGR 6350 Finite Element Analysis

- ENGR 6210 Linear Systems
- ENGR 6220 Feedback Control Systems
- ENGR 6230 Sensors and Transducers
- ENGR 6260 Introduction to Nanoelectronics
- ENGR 6540 Applied Machine Vision
- ENGR 6920 Theory of Design
- ENGR 8103 Computational Engineering
- ENGR 8310 MEMS Design
- CVLE/MCHE 8640 Advanced Strength of Materials
- MCHE 6360 Robotic Manipulators
- MCHE 6390 Advanced Mechanical Vibration
- CHEM 8880 Nanomaterials: Engineering and Characterization
- STAT 6315 Statistical Methods Researcher

Energy, Fluid, and Thermal Systems

- ENGR 6490 Renewable Energy Engineering
- ENGR 6350 Finite Element Analysis
- ENGR 6650 HVAC Systems for Buildings and Industry
- ENGR 8103 Computational Engineering
- ENGR 8160 Advanced Fluid Mechanics
- ENGR 8170/80 Advanced Heat and Mass Transfer
- MCHE 8380 Continuum Mechanics
- PHYS 6300 Thermodynamics and Kinetic Theory
- PHYS 8301 Statistical Mechanics I
- STAT 6315 Statistical Methods Researcher

Mechanics and Materials

- ENGR 6350 Finite Element Analysis
- ENGR 6740 Biomaterials
- ENGR 6760 Biomechanics
- ENGR 8103 Computational Engineering
- ENGR 6270/8270 Computational Nanomechanics
- CVLE/MCHE 8350 Nonlinear Finite Element Analysis
- CVLE/MCHE 8440 Advanced Strength of Materials
- MCHE 8380 Continuum Mechanics

[M.S. in Environmental Engineering \(School of ECAME\)](#)

Admission Requirements

See the general College of Engineering admission requirements

Program of Study

The M.S. in Environmental Engineering requires a subset of Masters coursework to be taken from classes in discipline specific areas. The M.S. in Environmental Engineering requires a minimum of 33 semester hours in the Program of Study, which consists of:

- A minimum of 24 semester hours of coursework, which must include
 - 23 hours of graduate-level coursework, including
 - 9 hours of which must be selected from the Environmental Engineering Emphasis course list.

- 12 hours of which must be from UGA courses open only to graduate students and exclusive of thesis (7300) and research (7000, 7010).
 - 1 hour of ENGR 8950 Graduate Seminar *
- A minimum of 6 hours of master's research (7000) or project-based research (7010). A typical student's research hours will exceed this minimum; however, at most 6 hours of 7000/7010 may be listed on the Program of Study.
- 3 hours of M.S. Thesis (7300)

* Only 1 hour of Graduate Seminar may apply on the Program of Study. Students are strongly encouraged to continue regular attendance of speaker series presentations even if not formally registered in the seminar.

Environmental Engineering Course List

As a requirement of the M.S. Environmental Engineering degree, students must complete a minimum of 9 credit hours selected from the list below. Students will work with their graduate advisor to select the most appropriate specialty area and coursework to ensure breadth of understanding as well as mastery of knowledge in a specific subject area. In addition to completing 9 credit hours selected from the list below, students may work with their graduate advisor to develop an interdisciplinary plan of coursework drawing from the extensive graduate course offerings available at UGA.

Energy Systems

- ENGR 6490 Renewable Energy Engineering
- ENGR 8103 Computational Engineering
- ENVE 6230 Energy in Nature, Civilization and Engineering
- ENVE 6530 Energy and Environmental Policy Analysis
- ENVE 6250 Energy Systems and the Environment
- ENVE 8110 Ecological Energetics

Environment and Water

- ENVE 6230 Energy in Nature, Civilization, and Engineering
- ENGR 6440 Environmental Engineering Unit Operations
- ENGR 6450 Environmental Engineering Remediation Design
- ENGR 8103 Computational Engineering
- ENVE 6410 Open Channel Hydraulics
- ENVE 6430 Advanced Open Channel Design
- ENVE 6440 Computer Modeling in Water Resources
- ENVE 6450 Engineering Hydrology and Hydraulics
- ENVE 6460 Groundwater Hydrology for Engineers
- ENGR 8160 Advanced Fluid Mechanics
- CVLE 8110 Environmental River Mechanics
- CVLE 8140 Mixing & Transport
- CRSS (GEOL) 8710 Watershed-Scale Modeling
- WASR 8200 Hillslope Hydrology
- GEOL (WASR) 8740 Hydrologic Flow and Transport Modeling
- STAT 6315 Statistical Methods Researcher

Sustainable Coastal Engineering

- ENGR 8103 Computational Engineering
- ENGR 8160 Adv. Fluid Mechanics
- CVLE 8140 Mixing & Transport
- CVLE 8160 Jets & Plumes
- MARS 8030 Physical Oceanography
- MARS 8100 Estuarine and Coastal Oceanography
- MARS 7380 Quantitative Methods in Marine Science
- MARS 8150 Ocean Waves
- MARS 8510 Modeling Marine Systems

M.S. PROGRAM ENROLLMENT REQUIREMENTS & TIME LIMITS

Minimum Enrollment

All enrolled students pursuing graduate degrees at the University of Georgia must register for a minimum of 3 hours of credit during any semester in which they use University facilities and/or faculty/staff time. This includes semesters in which they are completing comprehensive examinations and defending their thesis or dissertation.

Continuous Enrollment Policy

All enrolled graduate students must maintain continuous enrollment from matriculation until completion of all degree requirements. Continuous enrollment is defined as registering for a minimum of three (3) credits in at least two semesters per academic year (Fall, Spring, Summer) until the degree is attained or status as a degree-seeking graduate student is terminated. All students must be enrolled for at least three graduate credits in the semester in which degree requirements are completed.

Residence Credit Requirement

There is no residency requirement for master's degree programs.

Leave of Absence

A leave of absence provides a mechanism for students experiencing unusual circumstance to be exempt temporarily from the continuous enrollment policy. A leave of absence requires approval of the Graduate Coordinator and the dean of Graduate School. A leave of absence will be granted only for good cause such as serious health-related issues, significant family issues; and other major personal circumstances that interfere with the ability to undertake graduate study. Contact the Graduate Program Administrator for additional information.

Time Limits

Master's degree students must complete all degree requirements, including all coursework on their approved program of study, and defend their thesis within **six years** of matriculation. The six-year limit begins with the semester the student matriculated into the program and ends with the last semester before the beginning of the sixth year.

Extension of Time

A special request for an extension of time on the six-year expiration of coursework or the five year expiration of candidacy may be made to the Dean of the Graduate School. This request must include specific reasons that the student did not complete requirements in the time allotted by Graduate School policy. A petition of this type must include 1) a specific timeline for the completion of requirements, 2) an approved Advisory Committee form, if required for the degree, 3) an approved program of study and a letter of support from both the program graduate coordinator and the Major Professor.

SELECTION OF MAJOR PROFESSOR (M.S. THESIS OPTION)

A student's major professor serves as her/his professional mentor and guide and is typically the student's source of assistantship support as the student proceeds through their graduate study. It is the student's responsibility to identify a graduate faculty member willing to serve as their major professor by the end of their first year. Students who do not have a major professor may be dismissed from the program.

Initiating discussion with faculty regarding serving as Major Professor is the responsibility of the student. The decision regarding this selection is a mutual one between faculty and student and is based on common research interest. No faculty member is required to serve as the major professor for any student. It is the Major Professor's responsibility to advise the student in her/his program, chair the Advisory Committee and facilitate the professional growth of the student through the student's program of study and the timely completion of the student's degree.

M.S. students may be admitted without a Major Professor being defined or without assistantship support. In this case, the student is advised by the Graduate Director of their chosen program until such time as the student is able to find a good match in the faculty for a Major Professor.

Faculty holding an adjunct appointment in the College who are graduate program faculty in other school/colleges may serve as co-major professors for students pursuing the Ph.D. degrees supported by the College, with approval of the

School Chair and the College Graduate Office. The other co-major professor must be an appointed graduate faculty member within the College.

In rare cases, the need may arise for a student to change her or his Major Professor. This change is done by mutual agreement among all parties in coordination with the program's Graduate Director and the College Graduate Coordinator.

SELECTION OF M.S. ADVISORY COMMITTEE (M.S. THESIS OPTION)

The Advisory Committee and Major Professor share responsibilities to monitor graduate student progress and guide the student toward timely degree completion. The advisory committee is charged with framing and approving programs of study, advising students on required research skills, guiding the design of thesis/final project research, reading and approving the final thesis/project document, and approving the final oral exam (thesis defense).

M.S. Advisory Committee Appointment

The M.S. Advisory Committee Form (<https://grad.uga.edu/index.php/current-students/forms/>) must be submitted by the end of the student's second semester in the M.S. program per College policy. See the M.S. Program Milestones and Timeline document at <http://www.engr.uga.edu/masters/program-milestones>.

The College of Engineering requires that a minimum of three members serve on MS Advisory Committees. All members comprising this minimum must be Graduate Program Faculty in their respective programs. The Major Professor (who serves as chair) must be a member of both the College and UGA Graduate Faculty. The majority of committee members must be College of Engineering Graduate Program Faculty.

The third member may be a member of the Graduate Faculty or a person with a terminal degree holding one of the following ranks at the University of Georgia: professor, associate professor, assistant professor, academic professional, public service assistant, public service associate, senior public service associate, assistant research scientist, associate research scientist, or senior research scientist. A UGA employee who holds one of these ranks or who holds a terminal degree in his/her field may be appointed as a third member upon approval by the Graduate Coordinator and the Dean of the Graduate School.

The third member can also be unaffiliated with UGA and hold an earned terminal degree in his/her field of study. When nominating a non-affiliated person, the student must upload the nominee's CV along with the M.S. Advisory Committee form and a letter addressed to the Dean of the Graduate School explaining why the services of the non-affiliated person are requested. The uploaded letter must be signed by the College of Engineering Graduate Coordinator, indicating his/her approval. A non-affiliated person must attend meetings associated with the appointment as well as the thesis defense. No more than one non-UGA committee member may be appointed as a voting member.

- **Adjunct:** Adjunct faculty who hold appointments in the College of Engineering and are Graduate Program Faculty in the College are eligible to serve on M.S. and Ph.D. committees.
- **Co-Major Professors:** Co-Major Professors, limited to two, may be appointed to an Advisory Committee provided both parties are members of the Graduate Program Faculty in their respective UGA programs and one co-major professor is an appointed faculty member within the College.

Committee members with an adjunct appointment from the College who are graduate program faculty in other schools/colleges may serve as co-major professors for students pursuing the MS or Ph.D. degrees offered by the College, with approval of the School Chair and the College Graduate Program Office. The other co-major professor must be an appointed faculty member and graduate program faculty in the College.

Both co-major professors must sign all forms requiring the chair's signature. The Co-Major Professors count as one member of the committee; therefore, an additional faculty member must be added to the committee to achieve the required majority of College Graduate Program Faculty members.

- **Advising Members of Immediate Family:** The nepotism policy defines members of the immediate family as the following: spouse, parents, siblings, children, and in-laws of the same. When a member of the immediate family

is involved, a faculty member may not serve as Major Professor or as a member of any committee which plans a program of study or evaluates the educational progress of the student.

- **Non-affiliated Persons on Advisory Committees:** In addition to the regular committee members, a person having no official relationship with the University of Georgia may be appointed to serve as a voting member on the Advisory Committee of a graduate student on nomination by the Graduate Coordinator and approval of the Dean of the Graduate School. When nominating a non-affiliated person, the student must upload the nominee's CV along with the Advisory Committee form and a letter addressed to the Dean of the Graduate School explaining why the services of the non-affiliated person are requested. The uploaded letter must be signed in advance by the College of Engineering Graduate Coordinator, indicating his/her approval. A non-affiliated person must attend meetings associated with the Advisory Committee appointment as well as the dissertation defense.
- **Visiting Professors:** A visiting professor or a part-time or temporary faculty member may not serve on an Advisory Committee unless that person is replacing a professor with sole expertise in a designated area on the student's program of study.
- **Committee Revisions:** Replacements for original members of the Advisory Committee must be approved well in advance of any program milestone. A revised Advisory Committee Form showing the reconstituted committee must be approved by the Graduate Coordinator and the Dean of the Graduate School prior to their service in any capacity.

Students should contact their Major Professor and Graduate Director to learn if there are additional School-specific requirements for M.S. Advisory Committee appointments.

M.S. PROGRAM OF STUDY APPROVAL

The M.S. Program of Study (PS) form (<https://grad.uga.edu/index.php/current-students/forms/>) outlines the planned classroom courses and research for M.S. students in accordance with the student's degree requirements. The form should be completed in coordination with the advisory committee and must be submitted by the end of the student's second semester of the M.S. program.

THESIS STYLE & FORMATTING GUIDELINES

The UGA Graduate School Style Manual (www.grad.uga.edu/wp-content/uploads/2014/09/theses_and_dissertations.pdf) establishes a set of standards designed to ensure consistency, legibility, and professional appearance of theses and dissertations. These standards are not intended to comprehensively address all the minutiae of style and formatting. Students should confer with their advisory committee members and Graduate Director for specifics.

See the Graduate School site at www.grad.uga.edu/index.php/current-students/policies-procedures/theses-dissertations-guidelines/theses-and-dissertations-overview/ for additional information.

FINAL ORAL EXAMINATION (DEFENSE) & THESIS SUBMISSION

Master's students present and defend their research in an open forum at the final oral examination ("defense"); they further defend the research approach and results in an open and/or closed session to their Advisory Committee. The majority of committee members must be physically present at the defense per UGA Graduate School policy.

The UGA Graduate School's Final Defense Approval Form and Faculty Assessment Rubrics are to be completed at the thesis defense. Students must complete their defense and submit all required forms to the College of Engineering

Graduate Program Office no later than three weeks prior to graduation. Final corrected copies of M.S. theses must be uploaded to the UGA Library by the Graduate School deadline posted at www.grad.uga.edu/index.php/current-students/important-dates-deadlines/ .

GRADUATION

Graduate students must register for a minimum of 3 hours in at least two semesters per academic year (Fall, Spring, Summer) including the 3 hours of graduate credit that is required for registration during the semester in which degree requirements are completed, per University policy.

Applications for graduation must be submitted in Athena by the UGA Graduate School's deadline www.grad.uga.edu/index.php/current-students/important-dates-deadlines/ .

UGA does not have a summer commencement ceremony, but summer graduates are permitted to participate in the fall commencement event following degree completion. Students who have not completed degree requirements as determined by the Graduate School and by published deadlines will not be allowed to walk in the ceremony but may return to walk in a subsequent commencement event. There are no exceptions to this policy.

DOCTORAL PROGRAMS

The Ph.D. in Engineering provides maximum flexibility for students and faculty to address 21st century engineering problems. Emphasis Areas within the Ph.D. in Engineering degree as well as the Ph.D. in Biological and Agricultural Engineering degree enable students to focus in either a specific disciplinary specialty or interdisciplinary area.

PH.D. PROGRAM OF STUDY REQUIREMENTS

Requirements for the Ph.D. in Engineering, its Emphasis Area programs and all named disciplinary Ph.D. degree programs in the College include a minimum of 72 credit hours in the student's program of study beyond the B.S. degree. A thesis master's degree from an accredited university may be accepted for up to 30 credit hours, in which case a minimum of 42 credit hours of approved course work, research and dissertation beyond the M.S. degree would be required as follows:

- A minimum of 16 semester hours of coursework, which must include*
 - At least 15 hours of 8000- and 9000-level courses in addition to research, dissertation writing, and directed study
 - 1 hour of Graduate Seminar **
- A minimum of 23 Doctoral Research hours (Doctoral research (9000) or Doctoral project-focused research (9010)) for students with an M.S. ***
- The Program of Study must include 3 hours of ENGR 9300 Doctoral Dissertation.

** Discipline-specific Ph.D. and Emphasis Area programs will require completion of a set of specific courses detailed by each program. These courses may increase the total number of semester hours required for program completion.*

*** Only 3 hours of Graduate Seminar may apply on the Ph.D. Program of Study. Individual Programs or Schools may require students to enroll for additional semesters. (ECAME and ECE students register ENGR 8950; CMBE students register BCHE 8970.) Students are strongly encouraged to continue regular attendance of speaker series presentations even if not formally registered in the seminar.*

**** A typical student's total research hours will exceed these minimums.*

DIRECT PH.D. ADMISSION & REQUIREMENTS

A student accepted to enter the Ph.D. program directly from the B.S must meet the above requirements, a minimum of 29 doctoral research hours, and all other specific requirements for their chosen Ph.D. program and emphasis area. Additional coursework beyond the minimums above will be required by the direct Ph.D. student's Advisory Committee consistent with the student's background from their B.S. and the student's chosen doctoral path.

The program of study for a B.S. student who bypasses the M.S. degree must contain 4 semester hours of University of Georgia courses open only to graduate students in addition to 16 semester hours of 8000 and 9000 level courses. Doctoral research (9000), doctoral project (9010), independent study courses, and dissertation writing (9300) may not be counted in these 20 hours.

All coursework is selected in coordination with the student's Faculty Advisor and approved by the student's Advisory Committee on the Program of Study. Each student must pass a formal comprehensive written and oral examinations before being admitted to candidacy. Proposal and defense of a dissertation of original research showing independent thinking, scholarly ability, and technical mastery of a field of study is required.

Completion of the Ph.D. requirements for all programs in the College of Engineering fulfill all requirements of the University of Georgia Graduate School. No grade below C will be accepted in the program of study. To be eligible for graduation, a student must maintain a 3.0 (B) average on the graduate transcript and a 3.0 (B) average in the program of study.

CHANGE OF DEGREE FROM M.S. TO PH.D.

Students admitted into a College of Engineering M.S. program may apply for a change in degree objective after one full year in the M.S. program. Demonstrated excellence in research and a minimum grade point average of 3.5 will be used as a basis for a petition to change the degree objective.

Applicants must provide a letter of support from their Major Professor to the Graduate Program Administrator, then submit the Change of Degree application (<http://grad.uga.edu/index.php/current-students/forms/>) which will be reviewed by the applicant's School Chair and Graduate Admissions and Advisory Committee representative. The College has final approval of the request.

DOCTORAL PROGRAM FRAMEWORK – MILESTONES & TIMELINE

The “Doctoral Program Framework – Milestones & Timeline” document is posted on the following pages. This document provides a list of our doctoral program milestones, the required timeline for completion of each milestone, and the steps doctoral students must take to complete each milestone.

The College of Engineering Graduate Program Office sends Progress Reports via UGA email to each enrolled student as well as his/her Major Professor and Graduate Director. These reports include a checklist of degree completion requirements and indicate which requirements remain unfulfilled. Students are encouraged to resolve any delinquent issues.

UGA CENGR Doctoral Program Framework - Milestones & Timeline

Student Program Milestones	PHD Program Event	Student Required Action	Timeline for Completion	Steps to Take
Defining an Advisory Committee: The PhD student has fully discussed with his/her research advisor the scale and scope of the intended work and arrived at recommendations for committee members who can provide critical input for the benefit of the student's research and professional formation.	Formation of student's PhD Advisory Committee	PHD Advisory Committee form*	Due by the end of student's first year	Ask proposed committee members to serve on your committee. Submit Advisory Committee form online at http://grad.uga.edu/index.php/current-students/forms/ .
Scoping a program of study: With the input of her/his Advisory Committee, the student arrives at a planned set of classroom courses and research.	Student completes her/his Preliminary Program of Study in coordination with the Advisory Committee	Preliminary Program of Study (PPS) form*, Final Program of Study (PS) form*	Due by the end of student's first year, due before the written/oral comprehensive exam	Submit PPS form to Victoria Martinez (Coverdell 120) after obtaining Advisory Committee signatures. Submit PPS form online at http://grad.uga.edu/index.php/current-students/forms/ .
Preparation for candidacy: The student executes her/his program of study and completes coursework to a point where he/she is ready for the comprehensive examination.	Scheduling of the Comprehensive Exam: The student has completed his/her required coursework and is prepared for admission to candidacy.	Scoping the planned dissertation research	The Comprehensive Exam must be completed by the end of the second year. The student must submit exam details to the CENGR Graduate Program Administrator three weeks prior to the exam.	Schedule the exam with your Advisory Committee and reserve a room with a CENGR administrative assistant. Submit details (day, time, place, etc.) via UGA email to Margaret Sapp (msisapp@uga.edu) three weeks prior to exam.
Completion of the Comprehensive Examination. The Comprehensive Exam demonstrates that the student is able to use his/her knowledge of the field and has the foundational skills necessary to conduct original research. Successful completion enables application and admission to PhD candidacy, after which the PhD student is a PhD Candidate.	PHD Comprehensive Exam: The exam must have both an oral component and a written component. The exam is constituted by oral presentation of a written report on a topic assigned by the Advisory Committee. The topic is distinct from - but may be complementary to - the envisioned dissertation research area. The oral defense will include an opportunity for the Advisory Committee to explore the student's approach and level of understanding achieved in research of the assigned topic.	Application for Admission to Candidacy form* to be completed during the Oral Comprehensive Exam and returned to the CENGR Graduate Program Administrator along with the Report of the Written and Oral Comprehensive Exam form*.	The completed Application for Admission to Candidacy form along with the Report of the Written and Oral Comprehensive Exam form must be returned to the CENGR Graduate Program Office within one week of the Oral Comprehensive Exam.	Pick up your Report of the Written & Oral Comprehensive Exam form from Victoria Martinez (Coverdell 120) prior to exam. Take this form along with the Application for Admission to Candidacy form (http://grad.uga.edu/index.php/current-students/forms/) to your exam. Obtain signatures from your Advisory Committee members. Obtain your Graduate Director's signature on the "Certification & Recommendation of the Dept" section on the Application for Admission to Candidacy. Return all forms to Victoria within one week of your exam.
Definition and proposal of the research to be undertaken for the dissertation: Working with his/her advisor and committee, the student is at a point in his/her preliminary research to have defined a problem and approach for the dissertation work.	Dissertation Proposal Defense: The student completes a written proposal of the research plan for her/his dissertation and orally presents and defends this proposal to his/her Advisory Committee, receiving input to improve the plan. The student may be requested to explore specific topics in writing for the committee.	Complete a CENGR PhD Dissertation Proposal Defense form.	The proposal should occur no less than two weeks after and no more than one year after the comprehensive exam.	Obtain signatures from your Advisory Committee members on the CENGR PhD Dissertation Proposal Defense form (CENGR website); submit form to Victoria Martinez (Coverdell 120) within one week of defense.
Execution of the dissertation research	Student undertakes proposed research under the mentorship of her/his advisor		Timeframe for research completion will vary. There must be at least two semesters between dissertation proposal and defense. (EX: if your proposal defense is in spring, you may apply for fall graduation.)	
Completion of the dissertation research and final program of study	Application for Graduation: With the concurrence of the student's Advisory Committee, the application for graduation is made.	Application for Graduation must be filed with the Graduate School online (Athena)	The application is due no later than Friday of the second full week (the first full week for summer) of classes in the semester of the anticipated graduation date.	Submit an online application for graduation in Athena. (See http://grad.uga.edu/wp-content/uploads/2015/04/appforgradinstructions.pdf for detailed instructions.)
Preparation of dissertation draft	Format Check of dissertation draft by Graduate School	CENGR is not involved in this action; students submit drafts online directly to Graduate School.	Graduate School deadline is approximately four weeks prior to commencement; see GS site https://grad.uga.edu/index.php/current-students/important-dates-deadlines/ for exact date each term.	Upload dissertation draft to Graduate School site. (See http://grad.uga.edu/index.php/current-students/policies-procedures/theses-dissertations-guidelines/format-check/ for detailed instructions.)

<p>Scheduling of the Dissertation Defense: The student has the agreement of her/his Advisory Committee to defend with the research concluded and the dissertation in or nearing final draft.</p>	<p>With agreement of the Advisory Committee, the student is ready to defend her/his research.</p>	<p>The student must submit specifics (day, time, place, etc.) to the CENGR Graduate Program Administrator, who then submits it to the Graduate School. The Graduate School announces the defense to the public; the online posting should be in place no less than two weeks prior to the defense.</p>	<p>Specifics must be submitted to the Graduate Program Administrator three weeks prior to the defense.</p>	<p>Schedule defense with your Advisory Committee and reserve a room with a CENGR administrative assistant. Submit details (day, time, place, etc.) via UGA email to Margaret Sapp (mjsapp@uga.edu) three weeks prior to defense.</p>
<p>Dissertation Defense ("Final Exam" as referred to by the Graduate School)</p>	<p>The student presents and defends his/her research in an open forum and further defends the research approach and results in an open and/or closed session to the Advisory Committee.</p>	<p>Final Defense Approval Form*, ETD Submission Approval Form, and Faculty Assessment Rubrics – to be completed at the Dissertation Defense</p>	<p>Forms must be submitted to the Graduate Program Office no later than three weeks prior to graduation.</p>	<p>Pick up assessment packet from Victoria Martinez (Coverdell 120) prior to defense. Obtain remaining forms online at http://grad.uga.edu/index.php/current-students/forms/. Obtain Advisory Committee members' signatures at your defense, then deliver forms to Victoria Martinez along with your sealed assessment envelope.</p>
<p>Dissertation submission</p>		<p>An electronic submission of the corrected dissertation</p>	<p>Must be submitted to the Graduate School no later than two weeks prior to graduation – see GS site http://graduate.uga.edu/index.php/current-students/important-dates-deadlines/ for exact date each term.</p>	<p>Upload final corrected copy of your dissertation online at https://getd.lib.uga.edu/.</p>
<p>PhD Maximum Time to Completion</p>		<p>All requirements for the degree must be completed</p>	<p>Within six years, beginning with the first registration for graduate courses on the program of study. An extension of time may be granted only for conditions beyond the control of the individual.</p>	<p>Contact Margaret Sapp (mjsapp@uga.edu) for additional information.</p>

(Graduate School Reference: <http://graduate.uga.edu/index.php/current-students/policies-procedures/academics/types-of-degrees-offered/doctor-of-philosophy-phd/>)
 Approved by CENGR Curriculum Committee, Spring 2018

*Reviewed by School's Graduate Director and CENGR Graduate Office, then approved by CENGR Graduate Coordinator

SPECIFIC PH.D. PROGRAM REQUIREMENTS

Ph.D. in Biological & Agricultural Engineering (School of CMBE)

Admission Requirements

In addition to College of Engineering M.S. and Ph.D. requirements, the School of CMBE has the following admission guidance and requirements:

- Consideration is given particularly to the following components of the application: GRE and other test scores, undergraduate Grade Point Average, the student's Statement of Purpose (SOP), and letters of recommendation.
- Quality students who have completed a B.S. degree in a non-engineering field such as Physics, Chemistry or Biology and who have completed mathematics through differential equations will be considered for admission to the School's graduate program. These students typically are required to complete 3-4 additional engineering courses at the onset of their graduate education which will be determined by the School Curriculum Committee in coordination with the College Graduate Admissions and Advisory Committee.
- Change of major from M.S. to Ph.D.: a) each GRE score must be at least 150 (verbal and quantitative), b) Ph.D. entrance requirements must be met, c) adequate progress in the M.S. must be demonstrated, d) the undergrad GPA must be at least 3.0 (or its equivalent), and e) a compelling case for the change must be given.

Program of Study

Minimum requirement – 72 credit hours (minimum of 32 credit hours course work; minimum of 40 credit hours research and dissertation)

Required Courses (10 credit hours)

- ENGR 6910: Foundations for Engineering Research (3 credit hours)
- BIOE 8970: Bioengineering Seminar (4 semesters, 4 credit hours)*
- ENGR 8103: Computational Engineering (3 credit hours)

Electives (22 credit hours)

Minimum of 22 additional credit hours of course work selected with the approval of the student's Graduate Advisory Committee. At least 10 hours must be 8000-level or above.

Research and Dissertation (40 credit hours)

- A minimum of 37 hours of doctoral research (9000) or project-based research (9010). Typically, students complete more than 37 credit hours with the approval of the Graduate Advisory Committee.
- 3 hours of Ph.D. Dissertation (9300) is required on the Plan of Study.

** Only 3 hours of Graduate Seminar may apply on the Program of Study. Individual Programs or Schools may require students to enroll for additional semesters. Students are strongly encouraged to continue regular attendance of speaker series presentations even if not formally registered in the seminar.*

Additional Program Requirements

In addition to Graduate School and College of Engineering requirements, the School of CMBE has the following doctoral program requirements:

- All Ph.D. programs offered by the School of CMBE have a minimum course requirement of 32 credit hours after the B.S. Additional credit hours are required for research and dissertation completion as provided by the University policies.

- Ph.D. students should form their Graduate Advisory Committee comprised of 5 faculty members within 18 months of starting their Ph.D. program. At least one, but no more than two faculty members on the Advisory Committee must have an appointment exclusively outside the College of Engineering.
- A student must pass written qualifying and oral comprehensive exams before completing and orally defending a dissertation. The written qualifying exam will be administered by the school. The oral comprehensive exam will follow the Graduate School Requirements.
- Ph.D. students are expected to be admitted to candidacy within 24 months of starting their Ph.D. program.
- Student must make two oral presentations in the School Seminar Series advertised to the UGA scientific and engineering community.
- The student's dissertation research is expected to generate significant scholarship (such as publications, patents, conference presentations).

Ph.D. in Engineering (Schools of CMBE, ECAME, and ECE)

Admission Requirements

See the general College of Engineering admission requirements

Program of Study

Requirements for the Ph.D. in Engineering include a minimum of 72 credit hours in the student's program of study beyond the B.S. degree. A thesis master's degree from an accredited university may be accepted for up to 30 credit hours, in which case a minimum of 42 credit hours of approved course work, research and dissertation beyond the M.S. degree would be required as follows:

- A minimum of 16 semester hours of coursework, which must include*
 - At least 15 hours of 8000- and 9000-level courses in addition to research, dissertation writing, and directed study
 - 1 hour of Graduate Seminar **
- A minimum of 23 Doctoral Research hours (Doctoral research (9000) or Doctoral project-focused research (9010)) for students with an M.S. ***
- The Program of Study must include 3 hours of ENGR 9300 Doctoral Dissertation.

** Discipline-specific Ph.D. and Emphasis Area programs will require completion of a set of specific courses detailed by each program. These courses may increase the total number of semester hours required for program completion.*

*** Only 3 hours of Graduate Seminar may apply on the Ph.D. Program of Study. Individual Programs or Schools may require students to enroll for additional semesters. (ECAME and ECE students register ENGR 8950; CMBE students register BCHE 8970.) Students are strongly encouraged to continue regular attendance of speaker series presentations even if not formally registered in the seminar.*

**** A typical student's total research hours will exceed these minimums.*

Ph.D. in Engineering – Biochemical Engineering Emphasis (School of CMBE)

Admission Requirements

In addition to College of Engineering M.S. and Ph.D. requirements, the School of CMBE has the following admission guidance and requirements:

- Consideration is given particularly to the following components of the application: GRE and other test scores, undergraduate Grade Point Average, the student's Statement of Purpose (SOP), and letters of recommendation.

- Quality students who have completed a B.S. degree in a non-engineering field such as Physics, Chemistry or Biology and who have completed mathematics through differential equations will be considered for admission to the School's graduate program. These students typically are required to complete 3-4 additional engineering courses at the onset of their graduate education which will be determined by the School Curriculum Committee in coordination with the College Graduate Admissions and Advisory Committee.
- Change of major from M.S. to Ph.D.: a) each GRE score must be at least 150 (verbal and quantitative), b) Ph.D. entrance requirements must be met, c) adequate progress in the M.S. must be demonstrated, d) the undergrad GPA must be at least 3.0 (or its equivalent), and e) a compelling case for the change must be given.

Program of Study

Minimum requirement – 72 credit hours (minimum of 32 credit hours course work; minimum of 40 credit hours research and dissertation)

Required Courses (10 credit hours)

- ENGR 6910: Foundations for Engineering Research (3 credit hours)
- BCHE 8970: Bioengineering Seminar (4 semesters, 4 credit hours)
- ENGR 8103: Computational Engineering (3 credit hours)

Required Course - choose any three of the following (9 credit hours)

- BCHE 8150: Heterogeneous Reactor Design and Bio/Catalysis (3 credit hours)
- ENGR 8160: Advanced Fluid Mechanics (3 credit hours)
- ENGR 8170: Advanced Heat Transfer (3 credit hours)
- ENGR 8180: Advanced Mass Transport (3 credit hours)
- BCHE 8210: Fermentation Engineering Laboratory (3 credit hours)

Electives (13 credit hours)

Minimum of 13 additional graduate-level credit hours of course work selected with the approval of the student's Graduate Advisory Committee.

Research and Dissertation (40 credit hours)

- A minimum of 37 hours of doctoral research (9000) or project-based research (9010). Typically, students complete more than 37 credit hours with the approval of the Graduate Advisory Committee.
- 3 hours of Ph.D. Dissertation (9300) is required on the Plan of Study.

Additional Program Requirements

In addition to Graduate School and College of Engineering requirements, the School of CMBE has the following doctoral program requirements:

- All Ph.D. programs offered by the School of CMBE have a minimum course requirement of 32 credit hours after the B.S. Additional credit hours are required for research and dissertation completion as provided by the University policies.
- Ph.D. students should form their Graduate Advisory Committee comprised of 5 faculty members within 18 months of starting their Ph.D. program. At least one, but no more than two faculty members on the Advisory Committee must have an appointment exclusively outside the College of Engineering.
- A student must pass written qualifying and oral comprehensive exams before completing and orally defending a dissertation. The written qualifying exam will be administered by the school. The oral comprehensive exam will follow the Graduate School Requirements.
- Ph.D. students are expected to be admitted to candidacy within 24 months of starting their Ph.D. program.

- Student must make two oral presentations in the School Seminar Series advertised to the UGA scientific and engineering community.
- The student's dissertation research is expected to generate significant scholarship (such as publications, patents, conference presentations).

Ph.D. in Engineering – Biomedical Engineering Emphasis (School of CMBE)

Admission Requirements

In addition to College of Engineering M.S. and Ph.D. requirements, the School of CMBE has the following admission guidance and requirements:

- Consideration is given particularly to the following components of the application: GRE and other test scores, undergraduate Grade Point Average, the student's Statement of Purpose (SOP), and letters of recommendation.
- Quality students who have completed a B.S. degree in a non-engineering field such as Physics, Chemistry or Biology and who have completed mathematics through differential equations will be considered for admission to the School's graduate program. These students typically are required to complete 3-4 additional engineering courses at the onset of their graduate education which will be determined by the School Curriculum Committee in coordination with the College Graduate Admissions and Advisory Committee.
- Change of major from M.S. to Ph.D.: a) each GRE score must be at least 150 (verbal and quantitative), b) Ph.D. entrance requirements must be met, c) adequate progress in the M.S. must be demonstrated, d) the undergrad GPA must be at least 3.0 (or its equivalent), and e) a compelling case for the change must be given.

Program of Study

Minimum requirement – 72 credit hours (minimum of 32 credit hours course work; minimum of 40 credit hours research and dissertation)

Required Courses (13 credit hours)

- ENGR 6910: Foundations for Engineering Research (3 credit hours)
- BIOE 8970: Bioengineering Seminar (4 semesters, 4 credit hours)*
- ENGR 8103: Computational Engineering (3 credit hours)
- BIOE 8490: Advanced Biomaterials (3 credit hours)

Required Course - Choose any two of the following (6 credit hours)

- BCHE 8150: Heterogeneous Reactor Design and Bio/Catalysis (3 credit hours)
- ENGR 8160: Advanced Fluid Mechanics (3 credit hours)
- ENGR 8170: Advanced Heat Transfer (3 credit hours)
- ENGR 8180: Advanced Mass Transport (3 credit hours)
- BIOE 8530: Advanced Biomedical Instrumentation (3 credit hours)

Electives (13 credit hours)

Minimum of 13 additional graduate-level credit hours selected with the approval of the student's Graduate Advisory Committee. At least 1 hour must be 8000-level or above.

Research and Dissertation (40 credit hours)

- A minimum of 37 hours of doctoral research (9000) or project-based research (9010). Typically, students complete more than 37 credit hours with the approval of the Graduate Advisory Committee.
- 3 hours of Ph.D. Dissertation (9300) is required on the Plan of Study.

** Only 3 hours of Graduate Seminar may apply on the Program of Study. Individual Programs or Schools may require students to enroll for additional semesters. Students are strongly encouraged to continue regular attendance of speaker series presentations even if not formally registered in the seminar.*

Additional Program Requirements

In addition to Graduate School and College of Engineering requirements, the School of CMBE has the following doctoral program requirements:

- All Ph.D. programs offered by the School of CMBE have a minimum course requirement of 32 credit hours after the B.S. Additional credit hours are required for research and dissertation completion as provided by the University policies.
- Ph.D. students should form their Graduate Advisory Committee comprised of 5 faculty members within 18 months of starting their Ph.D. program. At least one, but no more than two faculty members on the Advisory Committee must have an appointment exclusively outside the College of Engineering.
- A student must pass written qualifying and oral comprehensive exams before completing and orally defending a dissertation. The written qualifying exam will be administered by the school. The oral comprehensive exam will follow the Graduate School Requirements.
- Ph.D. students are expected to be admitted to candidacy within 24 months of starting their Ph.D. program.
- Student must make two oral presentations in the School Seminar Series advertised to the UGA scientific and engineering community.
- The student's dissertation research is expected to generate significant scholarship (such as publications, patents, conference presentations).

Ph.D. in Engineering – Dynamic Systems & Controls Emphasis (School of ECE)

Admission Requirements

In addition to College of Engineering admission requirements, students entering with a BS degree from disciplines other than ECE should have taken Calculus through Differential Equations, Introductory Physics with Calculus (Mechanics, Electricity and Magnetism, Optics, and Modern Physics), Circuits, Introductory Programming, and Linear Systems (or equivalent). Students without the necessary engineering background can be accepted but must take remedial coursework in addition to the degree and emphasis requirements.

Program of Study

If entering with BS degree, a minimum of 72 hours beyond the bachelors is required as follows:

- ENGR 6910 Foundations for Engineering Research (3 credit hours).
- ENGR 8950 Graduate Seminar (1 credit hour).*
- 12 credit hours of ECE Area of Emphasis coursework at the 8000 level (see list below).
- 20 additional credit hours must be taken exclusive of research and dissertation credit. At least 9 hours must be at the 8000 level. The remainder must be at the 6000 level or higher.
- A minimum of 36 credit hours of doctoral research and dissertation.
 - A minimum of 33 credit hours of research (9000 or 9010). A typical student's research hours will exceed this minimum.
 - 3 hours of 9300 Doctoral Dissertation must be listed on the program of study.

If entering with M.S. degree, a minimum of 42 hours beyond the masters is required as follows:

- ENGR 8950 Graduate Seminar (1 credit hour).*
- 9 credit hours of ECE Area of Emphasis at the 8000 level (see list below) .
- 6 additional credit hours of coursework at the 8000 level.

- A minimum of 26 hours of doctoral research and dissertation:
 - A minimum of 23 hours of research (9000 or 9010). A typical student's research hours will exceed this minimum.
 - 3 hours of 9300 Doctoral Dissertation must be listed on the program of study.

** Only 3 hours of Graduate Seminar may apply on the Ph.D. Program of Study. Students are strongly encouraged to continue regular attendance of speaker series presentations even if not formally registered in the seminar.*

Emphasis Area Courses

As a requirement of the Ph.D. Engineering with an Emphasis in Dynamical Systems and Control, students must complete a minimum of 9 credit hours selected from the Dynamical Systems and Control Course List below. Students work with their graduate advisor to select the most appropriate coursework to ensure breadth of understanding as well as mastery of knowledge in a specific subject area. In addition to completing 9 credit hours selected from the list below, students may work with their graduate advisor to develop an interdisciplinary plan of coursework drawing from the extensive graduate course offerings available at UGA.

- ENGR6350 Finite Element Analysis (F)
- ENGR6210 Linear Systems (F)
- ENGR6220 Feedback Control Systems (Sp)
- ENGR6230 Sensors and Transducers (F)
- ENGR6260 Introduction to Nanoelectronics (F)
- ENGR6560 Engineering Design Optimization
- ENGR6540 Applied Machine Vision
- ENGR6920 Theory of Design (Sp)
- ENGR8103 Computational Engineering (Sp)
- ENGR8310 MEMS Design (F)
- CVLE/MCHE8440 Advanced Strength of Materials (Sp)
- MCHE6360 Robotic Manipulators
- CHEM8880 Nanomaterials: Engineering and Characterization (F)
- STAT 6315 Statistical Methods Researcher (Sp)

Ph.D. in Engineering – Electrical & Computer Engineering Emphasis (School of ECE)

Admission Requirements

In addition to College of Engineering admission requirements, students entering with a BS degree from disciplines other than ECE should have taken Calculus through Differential Equations, Introductory Physics with Calculus (Mechanics, Electricity and Magnetism, Optics, and Modern Physics), Circuits, Introductory Programming, and Linear Systems (or equivalent). Students without the necessary engineering background can be accepted but must take remedial coursework in addition to the degree and emphasis requirements.

Program of Study

If entering with BS degree, a minimum of 72 hours beyond the bachelors is required as follows:

- ENGR 6910 Foundations for Engineering Research (3 credit hours).
- ENGR 8950 Graduate Seminar (1 credit hour).*
- 12 credit hours of ECE Area of Emphasis coursework at the 8000 level (see list below).
- 20 additional credit hours must be taken exclusive of research and dissertation credit. At least 9 hours must be at the 8000 level. The remainder must be at the 6000 level or higher.
- A minimum of 36 credit hours of doctoral research and dissertation.
 - A minimum of 33 credit hours of research (9000 or 9010). A typical student's research hours will exceed this minimum.
 - 3 hours of 9300 Doctoral Dissertation must be listed on the program of study.

If entering with M.S. degree, a minimum of 42 hours beyond the masters is required as follows:

- ENGR 8950 Graduate Seminar (1 credit hour).*
- 9 credit hours of ECE Area of Emphasis at the 8000 level (see list below) .
- 6 additional credit hours of coursework at the 8000 level.
- A minimum of 26 hours of doctoral research and dissertation:
 - A minimum of 23 hours of research (9000 or 9010). A typical student's research hours will exceed this minimum.
 - 3 hours of 9300 Doctoral Dissertation must be listed on the program of study.

** Only 3 hours of Graduate Seminar may apply on the Ph.D. Program of Study. Students are strongly encouraged to continue regular attendance of speaker series presentations even if not formally registered in the seminar.*

Emphasis Area Courses

Coursework fulfilling the ECE Emphasis Area credit hour requirement for the Ph.D in Engineering or M.S. in Engineering degree may be chosen from one or more of the areas below. Courses will be reviewed each academic year and updated as needed to reflect new areas in the field.

Track 1: Control Systems

Through this track, students can gain expertise in the analysis and design of controllers for complex, large scale systems. The need for improved safety and a cleaner environment have posed countless challenges that can only be addressed through the design and implementation of intelligent feedback controls. Numerous emerging applications for controls include cyber-physical systems (e.g., smart grids and intelligent transportation systems) and biological networks.

- ENGR 8240 - Instrumentation programming
- CSCI(ENGR) 8940 - Computational intelligence
- ENGR 8990 - Optimization Theory and Applications
- ENGR 8990- Nonlinear Control Systems
- ENGR 8990- Stochastic Control Systems

Track 2: Electronics & Photonics

Students develop an understanding of the design and analysis of systems involving electromagnetic waves from RF electronics to photonic systems for signal processing and communication and optical systems for image capture and processing. High-speed communication and signal processing at gigabit speeds requires sophisticated electro-optic systems that must be understood at both the device and the systems level. Modern optical imaging systems use a wide variety of electrical and photonic technologies to achieve everything from imaging biological systems at the nanometer scale to imaging distant galaxies.

- ELEE 8510 - Microwave Photonics
- ENGR 8570 - Topics in Advanced Microscopy
- ELEE 8530 - Advanced Optics and Photonics
- PHYS 8201 - Advanced Electromagnetic Theory I
- PHYS 8202 - Advanced Electromagnetic Theory II
- ENGR 8270 - Computational Nanomechanics
- ENGR 8310 - MEMS Design
- ENGG 8840 - Advanced Image Analysis

Track 3: Cyber-physical Systems

This track develops in students an understanding of engineered systems that are built from, and depend upon, the seamless integration of computational algorithms and physical components. Advances in CPS will enable capability,

adaptability, scalability, resiliency, safety, security, and usability that will far exceed the simple embedded systems of today. CPS technology will transform the way people interact with engineered systems -- just as the Internet has transformed the way people interact with information. New smart CPS will drive innovation and competition in sectors such as agriculture, energy, transportation, building design and automation, healthcare, and manufacturing.

- ENGR 8990 - Real Time Programming
- ENGR 8980 - Haptic/Tactile Sensors
- CSEE 8830 - AR/VR 3D User Interface Design
- ENGR 8240 - Instrumentation programming
- CSCI(ENGR) 8940 - Computational intelligence
- CSCI 8820 - Computer Vision and Pattern Recognition
- CSCI 8380 - Advanced Topics in Information Systems
- CSCI 8250 - Advanced Network Security Systems
- ENGG 8840 - Advanced Image Analysis
- ENGR 8990 - Optimization Theory and Applications
- INFO 8000 - Foundations of Informatics for Research and Practice

Selected Course Offerings

Students may want to consider the following courses in building their Programs of Study, as appropriate:

- ENGR 4210/6210 Linear Systems
- ENGR 4220/6220 Feedback Control Systems
- ENGR 4230/6230 Sensors and Transducers
- ENGR 4240 Introduction to Microcontrollers
- ENGR 4250/6250 Advanced Microcontrollers
- ENGR 4260/6260 Introduction to Nanoelectronics
- ELEE 4040 Communication Electromagnetics
- ENGR 4620/6620 Biomedical Imaging

In addition, graduate courses from other colleges that are relevant for ECE students include:

- PHYS 8101 Quantum Mechanics I
- PHYS 8102 Quantum Mechanics II
- PHYS 8201 Advanced Electromagnetic Theory I
- PHYS 8202 Advanced Electromagnetic Theory II
- CSCI 8820 Computer Vision and Pattern Recognition
- CSCI 8380 Advanced Topics in Information Systems
- CSCI 8250 Advanced Network Security Systems

Ph.D. in Engineering – Energy Systems Emphasis (School of ECAME)

Admission Requirements

See the general College of Engineering admission requirements

Program of Study

Requirements for the Ph.D. in Engineering with Emphasis in Energy Systems further expand on those of the Ph.D. in Engineering. These include a minimum of 72 credit hours in the student's program of study beyond the B.S. degree. A thesis master's degree from an approved university may be accepted for up to 30 credits hours, in which case a minimum of 42 credit hours of approved course work, research and dissertation beyond the M.S. degree would be required as follows:

- A minimum of 16 semester hours of coursework, which must include
 - At least 15 hours of 8000- and 9000-level courses in addition to research, dissertation writing, and directed study of which 9 hours must be selected from the Energy Systems Course List (below).
 - 1 hour of Graduate Seminar ENGR 8950*
- A minimum of 23 Doctoral Research hours (Doctoral research (9000) or Doctoral project-focused research (9010)) for students with an M.S. **
- The Program of Study must include 3 hours of ENGR 9300 Doctoral Dissertation.

* Only 3 hours of Graduate Seminar may apply on the Ph.D. Program of Study. Students are strongly encouraged to continue regular attendance of speaker series presentations even if not formally registered in the seminar.

** A typical student's total research hours will exceed these minimums.

Emphasis Area Course List

As a requirement of the Ph.D. in Engineering with an Emphasis in Energy Systems, students must complete a minimum of 9 credit hours selected from the Energy Systems Course List below. Students will work with their graduate advisor to select the most appropriate coursework to ensure breadth of understanding as well as mastery of knowledge in a specific subject area. In addition to completing 9 credit hours selected from the list below, students may work with their graduate advisor to develop an interdisciplinary plan of coursework drawing from the extensive graduate course offerings available at UGA.

- ENGR8103 Computational Engineering (Sp)
- ENGR8160 Advanced Fluid Mechanics (Sp)
- ENGR8170/80 Advanced Heat and Mass Transfer
- ENGR8250 Combustion Science
- MCHE8850 Gas Dynamics
- MCHE8380 Continuum Mechanics (F)
- PHYS8301 Statistical Mechanics I
- STAT 6315 Statistical Methods Researcher (Sp)
- MIST6550 Energy Informatics

[Ph.D. in Engineering – Engineering Education + Transformative Practice Emphasis \(Engineering Education Transformation Institute\)](#)

Admission Requirements

See the general College of Engineering admission requirements

Program of Study

Candidates for the Ph.D. degree with an emphasis in Engineering Education and Transformative Practice are expected to acquire the skills, knowledge, and orientations that enable them to make creative and original contributions to their discipline at the national or international level. The philosophy of the area of emphasis is grounded in a diversity of possible pathways that rely on students' agency and initiative in seeking out relevant coursework and interdisciplinary faculty expertise to support their chosen research trajectory.

Requirements for the area of emphasis include a minimum of 73 credit hours in the student's program of study beyond the B.S. degree as follows:

- | | |
|------------------------------------|----|
| • Focus area courses (6 per area)* | 18 |
| • Elective course work* | 18 |

- Graduate seminar 1
- Doctoral research (9000 or 9010) 33
- Doctoral dissertation (9300) 3

**Across selected courses a minimum of 16 hours of 8000 or 9000 level courses and an additional 4 hours of courses open to only graduate students is required.*

A thesis master's degree from an accredited university may be accepted for up to 30 credit hours, in which case a minimum of 42 credit hours of approved course work, research and dissertation beyond the M.S. degree is required as follows:

- Focus area courses (3 per area)* 9
- Elective Course work* 6
- Graduate seminar 1
- Doctoral research (9000 or 9010) 23
- Doctoral dissertation (9300) 3

**Across selected courses a minimum of 15 hours of 8000 or 9000 level courses is required.*

Coursework

The recommended course offering is organized in three focus areas: Engineering Formation Core, Social and Educational Inquiry Methods, and Application and Context. Individual programs of study will be developed collaboratively between the student and their Major Professor.

The following list provides examples of the courses students can take in the focus areas. The selection of courses is neither comprehensive nor necessarily intended as a recommendation. The choice of specific courses is determined through the active suggestion of the student and in consultation with the Major Professor. In this manner students will work with their advisors and committee to design a program of study that best suits their particular research focus on career trajectory.

Engineering Formation Core

The core engineering formation courses provide an understanding of the landscape of this globally connected discipline. Individual course offerings focus on theories of learning and human development in engineering; contemporary issues in engineering formation; and research and evaluation methods in engineering education and practice contexts.

Students are expected to choose a minimum of 3 (6 for direct Ph.D.) credit hours from the following engineering formation core courses:

Current course offerings:

- ENED 8010: Introduction to Engineering Education Research and Methodology (3 hours)
- ENED 8020: Current Issues as a Lens for the Integration of Engineering Education Research and Teaching Practice (3 hours)
- ENED 8030: Educational Research and Evaluation Methods in Engineering (3 hours)
- ENED 8040: Theories of Learning and Human Development in Contemporary Engineering Education Research (3 hours)

Social and Educational Inquiry Methods

The research methods courses draw on the broad offering of courses across the University of Georgia, including the College of Education. In line with the student's research project, these courses can comprise offerings in the qualitative, quantitative, or mixed methods areas.

Students are expected to choose a minimum of 3 (6 for direct Ph.D.) credit hours of advanced coursework in educational or social research methods. The following provides a list of example courses. This list is neither intended to be comprehensive nor constitute a recommendation – the choice of specific courses is determined through the active suggestion of the student and in consultation with the Major Professor.

- ANTH (GEOG) (SOCL) 8430: Community-Engaged Research (Praxis) (3 hours)
- EDHI 8200: Institutional Research (3 hours)
- EDHI 8910: Quantitative Methods in Higher Education I (3 hours)
- EDHI 8930: Qualitative Research in Higher Education (3 hours)
- EDIT 8290: Design-Based Research Methods (3 hours)
- ERSH 6200: Methods of Research in Education (3 hours)
- ERSH 6300: Applied Statistical Methods in Education (3 hours)
- ERSH 7250: Educational Program and Project Evaluation (3 hours)
- ERSH 8610: Theories of Educational Measurement (3 hours)
- ERSH 9210: Quantitative Design in Education (3 hours)
- ETAP(QUAL) 8040: Video Ethnography of Education (3 hours)
- QUAL 8400: Qualitative Research Traditions (3 hours)
- QUAL 8575: Mixed Methods Approaches to Research (3 hours)
- SOWK(MNPO) 7106: Evaluation of Community and Institutional Practices (3 hours)

Application and Context

Course selection in the Application and Context area draws on the full breadth of graduate course offering in technical and non-technical fields that provide specific content, theory, or methods to support and ground the students' chosen research trajectory.

Students are expected to choose a minimum of 3 (6 for direct Ph.D.) credit hours of coursework to provide a deep understanding of the application context of their research project. The following provides a list of courses in some example areas that a student's dissertation may focus on.

Organizations

- ALDR 7350: Team and Organizational Development (3 hours)
- ALDR 8030E: Diffusion of Innovations (3 hours)
- BUSN 7500: Business Ethics (1.5 – 3 hours)
- ECHD 9080: Advanced Theories and Procedures of Group Work (3 hours)
- ECON 8210: Industrial Economics I (3 hours)
- MNML 7947: Social Entrepreneurship (3 hours)

Environment / Agriculture

- AGCM 8100: Culture-Centered Communication and Engagement (3 hours)
- ALDR 8500E: Change Theories in Environmental Conservation (3 hours)
- ECOL 8730: Environmental Policy (3 hours)
- EETH (JURI) 5870/7870: Environmental Dispute Resolution (2 hours)
- PHIL (EETH) 4220/6220: Environmental Ethics (3 hours)

Diversity

- AFAM (PSYC) 4500/6500: Psychology of Prejudice (3 hours)
- ECHD 9320: Teaching and Diversity (3 hours)
- ECHD 9930: Equity, Diversity, and Inclusion in Student Affairs (3 hours)
- EFND (ANTH) 7150: Anthropology of Education (3 hours)
- SOCI (AFAM) 6370: Sociology of Race and Ethnicity (3 hours)

- WMST (AFAM) 4060/6060: Black Feminism (3 hours)

Educational Contexts

- EBUS 5070/7070: Contemporary Entrepreneurship and Management Practices for Educators (3 hours)
- ECHD 8290: Social Justice and Liberation Frameworks in School and Community Settings (3 hours)
- ECHD 9410: Organizational Development and Consultation in Higher Education (3 hours)
- ECHD 9420: Advanced Theories of College Student Development (3 hours)
- EDAP 8070: Ethics in Educational Leadership (3 hours)
- EDHI 9040: Using Technology in the College Classroom (3 hours)
- EDIT 8400: Games and Learning (3 hours)

K-12 Engineering Education

- ECHD 8310: Social Justice Assessment and Program Evaluation in P-16 Settings (3 hours)
- EDAP 8040: Social Psychology of Schools (3 hours)
- EDEC 8030: Research Perspectives in Early Childhood Education (3 hours)

Engineering and Society

- COMM 8350: The Rhetoric of Science (3 hours)
- JURI 5580/7580: Law, Science, and Technology (3 hours)
- PHIL (EETH) 4250/6250: Philosophy of Technology (3 hours)

[Ph.D. in Engineering – Environment & Water Emphasis \(School of ECAME\)](#)

Admission Requirements

See the general College of Engineering admission requirements

Program of Study

Requirements for the Ph.D. in Engineering with Emphasis in Environment and Water further expand on those of the Ph.D. in Engineering. These include a minimum of 72 credit hours in the student's program of study beyond the B.S. degree. A thesis master's degree from an approved university may be accepted for up to 30 credits hours, in which case a minimum of 42 credit hours of approved course work, research and dissertation beyond the M.S. degree would be required as follows:

- A minimum of 16 semester hours of coursework, which must include
 - At least 15 hours of 8000- and 9000-level courses in addition to research, dissertation writing, and directed study of which 9 hours must be selected from the Environment and Water Course List (below).
 - 1 hour of Graduate Seminar ENGR 8950*
- A minimum of 23 Doctoral Research hours (Doctoral research (9000) or Doctoral project-focused research (9010)) for students with an M.S. **
- The Program of Study must include 3 hours of ENGR 9300 Doctoral Dissertation.

** Only 3 hours of Graduate Seminar may apply on the Ph.D. Program of Study. Students are strongly encouraged to continue regular attendance of speaker series presentations even if not formally registered in the seminar.*

*** A typical student's total research hours will exceed these minimums.*

As a requirement of the Ph.D. Engineering with an Emphasis in Environment and Water, students must complete a minimum of 9 credit hours selected from the Environment and Water Course List below. Students work with their graduate advisor to select the most appropriate coursework to ensure breadth of understanding as well as mastery of knowledge in a specific subject area. In addition to completing 9 credit hours selected from the list below, students may work with their graduate advisor to develop an interdisciplinary plan of coursework drawing from the extensive graduate course offerings available at UGA.

Environment and Water Course List

- ENGR 6440 Environmental Engineering Unit Operations
- ENVE 6450 Environmental Engineering Remediation Design
- ENVE 6550 Environmental Life Cycle Analysis
- ENVE 8110 Ecological Energetics
- ENGR 8103 Computational Engineering
- CVLE 8110 Environmental River Mechanics
- CRSS (GEOL) 8710 Watershed-Scale Modeling
- CVLE 8140 Mixing & Transport
- ENGR 8103 Computational Engineering
- ENGR 8160 Advanced Fluid Mechanics
- ENVE 6250 Energy Systems and the Environment
- ENVE 6440 Computer Modeling in Water Resources
- ENVE 6450 Engineering Hydrology and Hydraulics
- ENVE 6460 Groundwater Hydrology for Engineers
- GEOL (WASR) 8740 Hydrologic Flow and Transport Modeling
- MARS 8030 Physical Oceanography
- MARS 8100 Estuarine and Coastal Oceanography
- MARS 7380 Quantitative Methods in Marine Science
- MARS 8150 Ocean Waves
- MARS 8510 Modeling Marine Sys
- STAT 6315 Statistical Methods Researcher
- WASR 8200 Hillslope Hydrology
- CHEM 8880 Nanomaterials: Engineering and Characterization

Ph.D. in Engineering – Mechanics & Materials Emphasis (School of ECAME)

Admission Requirements

See the general College of Engineering admission requirements

Program of Study

Requirements for the Ph.D. in Engineering with Emphasis in Mechanics and Materials further expand on those of the Ph.D in Engineering. These include a minimum of 72 credit hours in the student's program of study beyond the B.S. degree. A thesis master's degree from an approved university may be accepted for up to 30 credits hours, in which case a minimum of 42 credit hours of approved course work, research and dissertation beyond the M.S. degree would be required as follows:

- A minimum of 16 semester hours of coursework, which must include
 - At least 15 hours of 8000- and 9000-level courses in addition to research, dissertation writing, and directed study of which 9 hours must be selected from the Mechanics and Materials Course List (below).
 - 1 hour of Graduate Seminar ENGR 8950*
- A minimum of 23 Doctoral Research hours (Doctoral research (9000) or Doctoral project-focused research (9010)) for students with an M.S. **

- The Program of Study must include 3 hours of ENGR 9300 Doctoral Dissertation.

** Only 3 hours of Graduate Seminar may apply on the Ph.D. Program of Study. Students are strongly encouraged to continue regular attendance of speaker series presentations even if not formally registered in the seminar.*

*** A typical student's total research hours will exceed these minimums.*

As a requirement of the Ph.D. Engineering with an Emphasis in Mechanics and Materials, students must complete a minimum of 9 credit hours selected from the Mechanics and Materials Course List below. Students work with their graduate advisor to select the most appropriate coursework to ensure breadth of understanding as well as mastery of knowledge in a specific subject area. In addition to completing 9 credit hours selected from the list below, students may work with their graduate advisor to develop an interdisciplinary plan of coursework drawing from the extensive graduate course offerings available at UGA.

Mechanics and Materials Course List

- ENGR 6350 Finite Element Analysis (F)
- ENGR 6740 Biomaterials (F)
- ENGR 6760 Biomechanics (Sp)
- ENGR 8103 Computational Engineering (Sp)
- ENGR 6270/8270 Computational Nanomechanics (Sp)
- CVLE/MCHE 8350 Nonlinear Finite Element Analysis (Sp)
- CVLE/MCHE 8440 Advanced Strength of Materials (Sp)
- MCHE 8380 Continuum Mechanics (F)
- ENGG(CHEM) 6615 Soft Materials
- CHEM 8880 Nanomaterials: Engineering and Characterization (F)
- PHYS 6300 Thermodynamics and Kinetic Theory
- STAT 6315 Statistical Methods Researcher (Sp)

Ph.D. in Engineering – Fluid & Thermal Systems Emphasis (School of ECAME)

Admission Requirements

See the general College of Engineering admission requirements

Program of Study

Requirements for the Ph.D. in Engineering with Emphasis in Fluid and Thermal Systems further expand on those of the Ph.D. in Engineering. These include a minimum of 72 credit hours in the student's program of study beyond the B.S. degree. A thesis master's degree from an approved university may be accepted for up to 30 credits hours, in which case a minimum of 42 credit hours of approved course work, research and dissertation beyond the M.S. degree would be required as follows:

- A minimum of 16 semester hours of coursework, which must include
 - At least 15 hours of 8000- and 9000-level courses in addition to research, dissertation writing, and directed study of which 9 hours must be selected from the Fluid and Thermal Systems Course List (below).
 - 1 hour of Graduate Seminar ENGR 8950*
- A minimum of 23 Doctoral Research hours (Doctoral research (9000) or Doctoral project-focused research (9010)) for students with an M.S. **
- The Program of Study must include 3 hours of ENGR 9300 Doctoral Dissertation.

** Only 3 hours of Graduate Seminar may apply on the Ph.D. Program of Study. Students are strongly encouraged to continue regular attendance of speaker series presentations even if not formally registered in the seminar.*

*** A typical student's total research hours will exceed these minimums.*

Emphasis Area Course List

As a requirement of the Ph.D. Engineering with an Emphasis in Fluid and Thermal Systems, students must complete a minimum of 9 credit hours selected from the list below. Students work with their graduate advisor to select the most appropriate coursework to ensure breadth of understanding as well as mastery of knowledge in a specific subject area. In addition to completing 9 credit hours selected from the list below, students may work with their graduate advisor to develop an interdisciplinary plan of coursework drawing from the extensive graduate course offerings available at UGA.

- ENGR6490 Renewable Energy Engineering
- ENGR6350 Finite Element Analysis (F)
- ENGR6650 HVAC Systems for Buildings and Industry
- ENGR8103 Computational Engineering (Sp)
- ENGR8160 Advanced Fluid Mechanics (Sp)
- ENGR8170/80 Advanced Heat and Mass Transfer
- MCHE8380 Continuum Mechanics (F)
- PHYS6300 Thermodynamics and Kinetic Theory
- PHYS8301 Statistical Mechanics I
- STAT 6315 Statistical Methods Researcher (Sp)
- MIST6550 Energy Informatics

Ph.D. in Engineering – Resilient Infrastructure Systems Emphasis (School of ECAME)

Admission Requirements

See the general College of Engineering admission requirements

Program of Study

Requirements for the Ph.D. in Engineering with Emphasis in Resilient Infrastructure Systems further expand on those of the Ph.D. in Engineering. These include a minimum of 72 credit hours in the student's program of study beyond the B.S. degree. A thesis master's degree from an approved university may be accepted for up to 30 credits hours, in which case a minimum of 42 credit hours of approved course work, research and dissertation beyond the M.S. degree would be required as follows:

- A minimum of 16 semester hours of coursework, which must include
 - At least 15 hours of 8000- and 9000-level courses in addition to research, dissertation writing, and directed study of which 9 hours must be selected from the Resilient Infrastructure Systems Course list (below).
 - 1 hour of Graduate Seminar ENGR 8950*
- A minimum of 23 Doctoral Research hours (Doctoral research (9000) or Doctoral project-focused research (9010)) for students with an M.S. **
- The Program of Study must include 3 hours of ENGR 9300 Doctoral Dissertation.

** Only 3 hours of Graduate Seminar may apply on the Ph.D. Program of Study. Students are strongly encouraged to continue regular attendance of speaker series presentations even if not formally registered in the seminar.*

*** A typical student's total research hours will exceed these minimums.*

Emphasis Area Course List

As a requirement of the Ph.D. in Engineering with an Emphasis in Resilient Infrastructure Systems degree, students must complete a minimum of 9 credit hours selected from the list below. Students will work with their graduate advisor to select the most appropriate coursework to ensure breadth of understanding as well as mastery of knowledge in a specific subject area. In addition to completing 9 credit hours selected from the list below, students may work with their graduate advisor to develop an interdisciplinary plan of coursework drawing from the extensive graduate course offerings available at UGA.

- CRSS(GEOL) 8710 Watershed-Scale Modeling
- CVLE 6330 Advanced Structural Analysis (F)
- CVLE 6340 Design of Bridges
- CVLE 6470 Pavement Design
- CVLE/MCHE 8350 Nonlinear Finite Element Analysis (Sp – Every Other Year)
- CVLE/MCHE 8440 Advanced Strength of Materials (Sp- Every Other Year)
- CVLE 8550 Prestressed Concrete Design (F)
- CVLE 8420 Geomechanics (F)
- CVLE 8460 Soil Improvement (F)
- CVLE8140 Mixing & Transport (Sp)
- CVLE8160 Jets & Plumes (Sp)
- CVLE (MCHE) 6350 Finite Element Analysis
- ENGR6490 Renewable Energy Engineering
- ENGR8103 Computational Engineering (Sp)
- ENGR8160 Advanced Fluid Mechanics (Sp)
- ENVE 6230 Energy in Nature, Civilization and Engineering
- ENVE 6250 Energy Systems and the Environment
- ENVE 6440 Computer Modeling in Water Resources
- ENVE 6450 Engineering Hydrology and Hydraulics
- ENVE 6460 Groundwater Hydrology for Engineers
- ENVE 6530 Energy and Environmental Policy Analysis
- ENGR 6440 Environmental Engineering Unit Operations
- ENVE 6550 Environmental Life Cycle Analysis
- MCHE 6650 HVAC Systems for Buildings and Industry
- MCHE 6660 Sustainable Building Design
- GEOL(WASR) 8740 Hydrologic Flow and Transport Modeling
- MARS 8030 Physical Oceanography (Sp)
- MARS 8100 Estuarine and Coastal Oceanography (F)
- MARS 7380 Quantitative Methods in Marine Science (F)
- MARS 8150 Ocean Waves (F)
- MARS 8510 Modeling Marine Sys (F)
- WASR 8200 Hillslope Hydrology

PH.D. PROGRAM ENROLLMENT REQUIREMENTS & TIME LIMITS

Minimum Enrollment

All enrolled students pursuing graduate degrees at the University of Georgia must register for a minimum of 3 hours of credit during any semester in which they use University facilities and/or faculty/staff time. This includes semesters in which they are completing comprehensive examinations and defending their thesis or dissertation.

Continuous Enrollment Policy

All enrolled graduate students must maintain continuous enrollment from matriculation until completion of all degree requirements. Continuous enrollment is defined as registering for a minimum of three (3) credits in at least two semesters per academic year (Fall, Spring, Summer) until the degree is attained or status as a degree-seeking graduate student is terminated.

Doctoral students must maintain enrollment during fall and spring semesters (breaking only for summer semesters) until the residency requirement has been met. All students must be enrolled for at least three graduate credits in the semester in which degree requirements are completed.

Residence Credit Requirement

The residency requirement for the Doctor of Philosophy degree is interpreted as 30 hours of consecutive graduate course work that is included on the approved program of study. There is no residency requirement for master's degree programs.

Leave of Absence

A leave of absence provides a mechanism for students experiencing unusual circumstance to be exempt temporarily from the continuous enrollment policy. A leave of absence requires approval of the Graduate Coordinator and the dean of Graduate School. A leave of absence will be granted only for good cause such as serious health-related issues, significant family issues; and other major personal circumstances that interfere with the ability to undertake graduate study. Contact the Graduate Program Administrator for additional information.

Time Limits

Doctoral students must complete all course work on their approved program of study and be admitted to candidacy within six-years of matriculation. The six-year limit begins with the semester the student matriculated into the program and ends with the last semester before the beginning of the sixth year.

For doctoral students, the time limit to complete the dissertation and qualify for graduation is five years following admission to candidacy. After this time, the student's candidacy will be considered expired and the student must retake the comprehensive exams and be re-admitted to candidacy in order to defend the dissertation and qualify for graduation. If a doctoral student's candidacy expires after the first week of classes in the final semester of the fifth year, the student is granted the remainder of the semester to complete degree requirements without special permission of the Dean of the Graduate School.

Extension of Time

A special request for an extension of time on the six-year expiration of coursework or the five year expiration of candidacy may be made to the Dean of the Graduate School. This request must include specific reasons that the student did not complete requirements in the time allotted by Graduate School policy. A petition of this type must include 1) a specific timeline for the completion of requirements, 2) an approved Advisory Committee form, if required for the degree, 3) an approved program of study and a letter of support from both the program graduate coordinator and the Major Professor.

SELECTION OF MAJOR PROFESSOR

A student's major professor serves as her/his professional mentor and guide and is typically the student's source of assistantship support as the student proceeds through their graduate study. It is the student's responsibility to identify a graduate faculty member willing to serve as their major professor by the end of their first year. Students who do not have a major professor may be dismissed from the program.

Initiating discussion with faculty regarding serving as Major Professor is the responsibility of the student. The decision regarding this selection is a mutual one between faculty and student and is based on common research interest. No faculty member is required to serve as the major professor for any student. For a Ph.D. student, the decision of Major Professor is often made during the recruitment process as a result of many discussions, an offer of assistantship support from a faculty member, and student acceptance of admission. It is the Major Professor's responsibility to advise the student in her/his program, chair the Advisory Committee and facilitate the professional growth of the student through the student's program of study and the timely completion of the student's degree.

Faculty holding an adjunct appointment in the College who are graduate program faculty in other school/colleges may serve as co-major professors for students pursuing the Ph.D. degrees supported by the College, with approval of the School Chair and the College Graduate Office. The other co-major professor must be an appointed graduate faculty member within the College.

In rare cases, the need may arise for a student to change her or his Major Professor. This change is done by mutual agreement among all parties in coordination with the program's Graduate Director and the College Graduate Coordinator.

SELECTION OF PH.D. ADVISORY COMMITTEE

Role/Responsibilities of the Advisory Committee

The Advisory Committee and Major Professor share responsibilities to monitor graduate student progress and guide the student toward timely degree completion. The advisory committee is charged with framing and approving programs of study, advising students on required research skills, directing and approving the comprehensive examinations, guiding the design of dissertation research, reading and approving the final dissertation document, and approving the final oral examination (defense).

Advisory Committee Appointment

The Ph.D. Advisory Committee Form (<https://grad.uga.edu/index.php/current-students/forms/>) must be submitted by the end of the student's third semester in the Ph.D. program per College policy. See the Ph.D. Program Milestones and Timeline document at www.engr.uga.edu/phd/program-milestones.

The College of Engineering requires that a minimum of four members serve on Ph.D. Advisory Committees. All members comprising this minimum must be Graduate Program Faculty in their respective programs. The Major Professor and majority of the committee members must be College of Engineering Graduate Program Faculty. Schools may have additional requirements, and students are advised to confer with their Major Professor and Graduate Director in their school for school-specific policies.

Additional voting members, with proper rank, may be appointed to the committee, including no more than one non-UGA faculty, who must hold the terminal degree in his/her field of study. Persons employed by UGA who hold one of the following ranks may serve on doctoral committees: professor, associate professor, assistant professor, academic professional, public service assistant, public service associate, senior public service associate, assistant research scientist, associate research scientist, and senior research scientist. Persons having the following ranks may not serve on doctoral committees: instructors and lecturers.

- **Adjunct:** Adjunct faculty who hold appointments in the College of Engineering and are Graduate Program Faculty in the College are eligible to serve on M.S. and Ph.D. committees.

- **Co-Major Professors:** Co-Major Professors, limited to two, may be appointed to an Advisory Committee provided both parties are members of the Graduate Program Faculty in their respective UGA programs and one co-major professor is an appointed faculty member within the College.

Committee members with an adjunct appointment from the College who are graduate program faculty in other schools/colleges may serve as co-major professors for students pursuing the MS or Ph.D. degrees offered by the College, with approval of the School Chair and the College Graduate Program Office. The other co-major professor must be an appointed faculty member and graduate program faculty in the College.

Both co-major professors must sign all forms requiring the chair's signature. The Co-Major Professors count as one member of the committee; therefore, an additional faculty member must be added to the committee to achieve the required majority of College Graduate Program Faculty members.

- **Advising Members of Immediate Family:** The nepotism policy defines members of the immediate family as the following: spouse, parents, siblings, children, and in-laws of the same. When a member of the immediate family is involved, a faculty member may not serve as Major Professor or as a member of any committee which plans a program of study or evaluates the educational progress of the student.
- **Non-affiliated Persons on Advisory Committees:** In addition to the regular committee members, a person having no official relationship with the University of Georgia may be appointed to serve as a voting member on the Advisory Committee of a graduate student on nomination by the Graduate Coordinator and approval of the Dean of the Graduate School. When nominating a non-affiliated person, the student must upload the nominee's CV along with the Advisory Committee form and a letter addressed to the Dean of the Graduate School explaining why the services of the non-affiliated person are requested. The uploaded letter must be signed in advance by the College of Engineering Graduate Coordinator, indicating his/her approval. A non-affiliated person must attend meetings associated with the appointment as well as the dissertation defense.
- **Visiting Professors:** A visiting professor or a part-time or temporary faculty member may not serve on an Advisory Committee unless that person is replacing a professor with sole expertise in a designated area on the student's program of study.
- **Committee Revisions:** Replacements for original members of the Advisory Committee must be approved well in advance of any program milestone. A revised Advisory Committee Form showing the reconstituted committee must be approved by the Graduate Coordinator and the Dean of the Graduate School prior to their service in any capacity.

Students should contact their Major Professor and Graduate Director to learn if there are additional School-specific requirements for Ph.D. Advisory Committee appointments.

PH.D. PROGRAM OF STUDY APPROVAL

Preliminary Program of Study Approval

The Preliminary Program of Study (PPS) form (<https://grad.uga.edu/index.php/current-students/forms/>) outlines the planned classroom courses and research for Ph.D. students in accordance with the student's degree requirements. The form should be completed in coordination with the advisory committee and must be submitted to the College of Engineering Graduate Program Office by the end of the student's first year of the Ph.D. program.

Final Program of Study Approval

The Final Program of Study (PS) form (<https://grad.uga.edu/index.php/current-students/forms/>) designates the classroom courses and research for Ph.D. students in accordance with the student's degree requirements. The form should be completed in coordination with the advisory committee must be submitted to (and approved by) the College of Engineering Graduate Program Office and the Graduate School before scheduling the Written or Oral Comprehensive Exam.

COMPREHENSIVE EXAM & ADMISSION TO CANDIDACY

The Comprehensive Exam demonstrates that the student is able to use his/her knowledge of the field and has the foundational skills necessary to conduct original research. Successful completion enables application and admission to Ph.D. candidacy, after which the Ph.D. student is a Ph.D. Candidate.

The exam must have both an oral component and a written component. The exam is constituted by oral presentation of a written report on a topic assigned by the Advisory Committee. The topic is distinct from - but may be complementary to - the envisioned dissertation research area. The oral defense will include an opportunity for the Advisory Committee to explore the student's approach and level of understanding achieved in research of the assigned topic.

The Comprehensive Exam must be completed by the end of the Ph.D. student's second year, after Graduate School approval of the Advisory Committee and Final Program of Study forms as well as completion of all required coursework. The Written Exam must be completed before the Oral Exam. Students should contact their Major Professor and Graduate Director to learn if there are School-specific requirements for the Comprehensive Exam.

The student must submit the Oral Exam details via email to the College of Engineering Graduate Program Administrator at least three weeks prior to the proposed exam. The Graduate School must confirm eligibility and approval before the proposed Comprehensive Exam is finalized; they will send the "Report of the Written and Oral Comprehensive Exam" form to the College of Engineering Graduate Program Office prior to the oral exam. Students must pick up this form and deliver it to their Advisory Committee members at the Oral Exam along with the Application for Admission to Candidacy form (<https://grad.uga.edu/index.php/current-students/forms/>)

Both forms must be returned to the College of Engineering Graduate Program Administrator within 2 business days.

DISSERTATION STYLE & FORMATTING GUIDELINES

The UGA Graduate School Style Manual (https://gradweb01.cc.uga.edu/wp-content/uploads/2017/08/theses_and_dissertations.pdf) establishes a set of standards designed to ensure consistency, legibility, and professional appearance of dissertations. These standards are not intended to comprehensively address all the minutiae of style and formatting. Students should confer with their advisory committee members and Graduate Director for specifics.

See the Graduate School site at <https://gradweb01.cc.uga.edu/index.php/current-students/policies-procedures/theses-dissertations-guidelines/theses-and-dissertations-overview/> for additional information.

FINAL ORAL EXAMINATION (DEFENSE) & DISSERTATION SUBMISSION

Doctoral students present and defend their research in an open forum at the final oral examination ("defense"); they further defend the research approach and results in an open and/or closed session to their Advisory Committee. The majority of committee members must be physically present at the defense per UGA Graduate School policy.

The UGA Graduate School's Final Defense Approval Form and Faculty Assessment Rubrics are to be completed at the Dissertation Defense. Students must complete their dissertation defense and submit all required forms to the College of Engineering Graduate Program Office no later than three weeks prior to graduation.

Final corrected copies of doctoral dissertations must be uploaded to the UGA Library by the Graduate School deadline posted at <http://grad.uga.edu/index.php/current-students/important-dates-deadlines/>.

GRADUATION

Graduate students must register for a minimum of 3 hours in at least two semesters per academic year (Fall, Spring, Summer) including the 3 hours of graduate credit that is required for registration during the semester in which degree

requirements are completed, per University policy. Applications for graduation must be submitted in Athena by the UGA Graduate School deadline posted at <https://grad.uga.edu/index.php/current-students/important-dates-deadlines/> .

UGA does not have a summer commencement ceremony, but summer graduates are permitted to participate in the fall commencement event following degree completion. Plan accordingly if you desire to walk and be hooded. Students who have not completed degree requirements as determined by the Graduate School and by published deadlines will not be allowed to walk in the ceremony but may return to walk in a subsequent commencement event. There are no exceptions to this policy.