CLEMSON

Graduate Policies and Procedures Handbook

Academic Year: 2024–2025

School of Civil and Environmental Engineering and Earth Sciences

School of
CIVIL AND ENVIRONMENTAL ENGINEERING AND EARTH SCIENCES
Clemson University

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SECTION 1 – INTRODUCTION

The School of Civil and Environmental Engineering and Earth Sciences (SCEEES) faculty and staff are excited to welcome you as a graduate student to one of our degree programs!

Founded in Fall 2021, SCEEES is comprised of two Departments: the Glenn Department of Civil Engineering and the Department of Environmental Engineering and Earth Sciences.

The graduate programs within the Glenn Department of Civil Engineering and the Department of Environmental Engineering and Earth Sciences focus on convergent research related to Global Grand Challenges and the United Nations Sustainable Development Goals, particularly those related to Earth Systems Science, sustainable engineering, and the natural and built environment. All our graduate degree programs are built on a foundation of basic and applied sciences, including the science and practice of engineering. Additionally, our graduate degree programs emphasize the advancement of science and engineering knowledge through research. This integrated and multi-faceted approach to graduate education leads to a better understanding of our Earth and environment, which will enable our graduates to develop better solutions for the critical problems that we face now and in the future. The table below shows Master and Doctor of Philosophy degrees offered in the School.

Degree Program	B.S.	M.S.	MEng.	Ph.D.	MS Online
Biosystems Engineering	■	■		■	
Civil Engineering	■	■	■	■	
Environmental Engineering	■				
Environmental Engineering and Science *[optional focus area: Environmental Health Physics]*		■			■
Environmental Engineering and Earth Sciences				■	
Geology	■				
Hydrogeology		■			
Risk Engineering and Systems Analytics			■		

† The Master of Science degree in Environmental Engineering and Science (Environmental Health Physics) is accredited by the Applied and Natural Science Accreditation Commission(s) of ABET, https://www.abet.org, under the General Criteria and the Health Physics Program Criteria.

Degrees Offered – Glenn Department of Civil Engineering

The Glenn Department of Civil Engineering offers graduate degree programs leading to Master of Science and Doctor of Philosophy degrees. The Master of Science program has thesis or non-thesis options. Students will apply to one of the following Specialty Areas:

- Construction Engineering and Management
- Construction Materials
- Geotechnical Engineering
- Structural Engineering
- Transportation Systems
- Water Resources

While applicants to the Glenn Department of Civil Engineering are required to select a Specialty Area on their graduate application, there are also opportunities for cross-disciplinary study.

Degrees Offered – Department of Environmental Engineering and Earth Sciences

The Department of Environmental Engineering and Earth Sciences offers graduate degree programs leading to Master of Science and Doctor of Philosophy degrees. All the Master of Science programs in the Department have a thesis or non-thesis track. In addition, the Master of Science in Environmental Engineering and Science has a completely online option for working professionals in the field.

Master's Degrees

- Biosystems Engineering
- Environmental Engineering and Science
    - Optional Online Track or Traditional Track is Available for EES Degree
    - Environmental Health Physics[†] (Optional Focus Area with Special Accreditation)
- Hydrogeology

Doctoral Degrees

- Biosystems Engineering
- Environmental Engineering and Earth Sciences

SCEEES Graduate Handbook

As a graduate student, your progress in your degree program is individualistic and you are expected to familiarize yourself with the policies and procedures set forth by the Graduate School, those contained in this Handbook, and those set by specific degree programs and concentration/specialty areas. Our graduate student service staff and faculty members are available to assist you in understanding and applying this information to progress towards your degree completion.

[†] The Master of Science degree in Environmental Engineering and Science (Environmental Health Physics) is accredited by the Applied and Natural Science Accreditation Commission(s) of ABET, https://www.abet.org, under the General Criteria and the Health Physics Program Criteria.

Graduate School resources may be accessed through the links below:

- Clemson University Graduate School
- Graduate School Policies and Procedures Handbook

While we have attempted to ensure all material in this Handbook is consistent with the policies set forth by the Graduate School, there may be instances in which there are minor discrepancies. In such an event, the Graduate School policies take precedence *unless* the graduate degree program requirements in question are more stringent than the minimum requirements specified by the Graduate School.

If you have questions about any information contained in this handbook, please reach out to your Graduate Program Coordinator and/or your Graduate Student Services Manager/Coordinator.

SECTION 2 – PROGRAM CONTACTS AND RESOURCES

Glenn Department of Civil Engineering
Dr. Pamela Murray Tuite
Graduate Program Coordinator
pmmurra@clemson.edu

Ms. Kristi Baker
Graduate Student Services Manager
kristi@clemson.edu

Department of Environmental Engineering and Earth Sciences
Dr. Mark Schlautman
Graduate Program Coordinator
M.S. Program in Environmental Engineering and Science
Ph.D. Program in Environmental Engineering and Earth Sciences
mschlau@clemson.edu

Dr. Tim DeVol
Graduate Program Coordinator
M.S. Program in Environmental Engineering and Science – Environmental Health Physics
devol@clemson.edu

Dr. Ron Falta
Graduate Program Coordinator
M.S. Program in Hydrogeology
faltar@clemson.edu

Dr. Christophe Darnault
Graduate Program Coordinator
M.S. and Ph.D. Programs in Biosystems Engineering
cdarnau@clemson.edu

Ms. Barbara Smith
Graduate Student Services Coordinator
barbar2@clemson.edu

SECTION 3 – DOCTOR OF PHILOSOPHY DEGREES OFFERED IN THE SCHOOL OF CIVIL AND ENVIRONMENTAL ENGINEERING AND EARTH SCIENCES

Doctor of Philosophy degrees (hereafter referred to as Ph.D. degrees) offered in the School of Civil and Environmental Engineering and Earth Sciences are:

- Ph.D. in Civil Engineering
- Ph.D. in Biosystems Engineering
- Ph.D. in Environmental Engineering and Earth Sciences

The following pages outline requirements and other relevant information for each Ph.D. program within the SCEEES. It is the responsibility of each student to be familiar with the degree requirements and pertinent information for their specific program. Additional information related to Graduate School policies and procedures can be found in the Graduate School Policies and Procedures Handbook. If there are minor discrepancies with the information in this Section versus official Graduate School policies, then Graduate School policies take precedence *unless* the graduate degree program requirements in question are more stringent than the Graduate School's minimum requirements.

This Handbook is subject to periodic review and revision by the faculty of the School of Civil and Environmental Engineering and Earth Sciences. Each Ph.D. student is subject to the policies in effect at the time of enrollment in their degree program. If policies change, a student may petition in writing for approval, or disapproval, of changing to the new policies.

SECTION 3.1 – DOCTOR OF PHILOSOPHY DEGREE IN THE GLENN DEPARTMENT OF CIVIL ENGINEERING

Specialty Areas in Civil Engineering

Students entering the Ph.D. program in Civil Engineering will follow the requirements of the Specialty Area they selected on their graduate application. The Specialty Areas are:

- Construction Engineering and Management
- Construction Materials
- Geotechnical Engineering
- Structural Engineering
- Transportation Systems
- Water Resources

Each Specialty Area has developed a resource guide for its students, which includes course information and other requirements. More information can be found on the CE website. Faculty advisors can answer specific questions about core area requirements. There are no Departmental course requirements (e.g., no common courses that all students take). In addition to Specialty Area requirements, students are also responsible for ensuring that Graduate School requirements are satisfied. For more information, see the Clemson University Graduate School website and the section that follows.

Requirements for the Ph.D. Degree in Civil Engineering

Ph.D. students without an M.S. Degree:

- Minimum of 60 credits beyond the B.S. degree.
  - Minimum of 18 credits dissertation research (CE 9910).
  - The remaining 42 credits are divided between coursework and dissertation hours based on the recommendation of the Graduate Advisory Committee, with a minimum of 12 credits of coursework.

Ph.D. students with an M.S. Degree:

- Minimum of 30 credits beyond the M.S. degree.
  - Minimum of 18 credits dissertation research (CE 9910).
  - Minimum of 12 credits of coursework.

Ph.D. Advisory Committee

All Ph.D. students must have a major advisor who acts as the chair of their Graduate Advisory Committee. In addition to a Chair, a Co-Chair may also be selected. The student, in consultation with the major advisor, selects the other members of the Advisory Committee. The minimum number of the Committee members (including Chair and Co-Chair) must be four. At least two committee members (including the Chair) must be assigned to the Civil Engineering Department and at least 50% of the members must be from SCEEES. The majority of the Advisory Committee members, including the major advisor, must be Graduate Directing Faculty (see the Graduate School Policies and Procedures Manual for appropriate definitions). In addition, at least four members of the committee must hold a Ph.D. degree. Requests for external committee members must be approved by the department.

External Advisory Committee Members

External committee members (individuals not employed by Clemson University) are required to meet certain standards and must be approved by the department. Students should contact the department's Graduate Student Services Manager to begin the approval process for an external committee member. External committee members must be approved before the Comprehensive Exam/Proposal Defense.

Role of the Ph.D. Advisory Committee

The purpose of the Advisory Committee for Ph.D. students is to:

- Provide guidance on research,
- Recommend courses,
- Administer/evaluate required exam(s) and the proposal defense, and
- Evaluate the dissertation/dissertation defense and recommend the student for graduation.

Advisory Committee Selection and Plan of Study (GS-2 Form)

All graduate students will submit a Committee Selection and Plan of Study (called the GS-2 Form) to the Graduate School. This is a two-step process in iRoar, which serves the following purposes:

- Committee Selection – The official process of selecting individuals to serve on the Graduate Advisory Committee.
- Plan of Study – The official documentation of courses/research credits utilized to satisfy degree requirements.

Ph.D. students are required to submit their Committee Selection and Plan of Study before their Proposal Defense and Comprehensive Exam. Contact the Graduate Student Services Manager before starting the Committee Selection if a committee member is external to Clemson University (see previous section) or a faculty member in another department at Clemson University.

Comprehensive Exam and Research Proposal Defense

Ph.D. students will be admitted into Candidacy upon the successful completion of their Comprehensive Exam and Research Proposal Defense. The format of the Comprehensive Exam and Proposal Defense varies by Advisory Committee; students should discuss this with their Advisory Committee Chair.

The Comprehensive Exam and Proposal Defense must be completed no less than six months prior to a student's anticipated graduation. Refer to the Graduate School's Graduation Deadlines for relevant deadlines for upcoming graduation cycles. More information about the Comprehensive Exam and Proposal Defense is documented in the Graduate School Policies and Procedures Handbook.

At the conclusion of the Comprehensive Exam and Research Proposal Defense, the Advisory Committee will report the results to the Graduate School using the following two forms:

- GS-5D – Results of the Comprehensive Exam and Candidacy Form
- GS-Approval of Thesis/Dissertation Research Proposal

Students should notify the Graduate Student Services Manager at least 3 days prior to their Proposal Defense/Comprehensive Exam to request forms.

Master's en route to Ph.D.

Students who are accepted directly into the Ph.D. program in Civil Engineering without an M.S. degree have the option (upon approval by their advisor) to complete an *M.S. en route to Ph.D.* Students who pursue this option will use 30 of their required 60 credits for the Ph.D. to satisfy the requirements for the M.S. degree. Following are some important considerations:

- The Committee Chair an provide guidance to help determine if *M.S. en route to Ph.D.* is a viable option.
- All requirements for each degree must be satisfied.
- Students should not wait until the last minute to decide – this is a decision that should be made as early as possible.
- Depending on the circumstance, students may pursue an M.S. with the thesis or non-thesis option.

Ph.D. students who decide to pursue an *M.S. en route to Ph.D.* will complete the GS2-14 – M.S. en route to Ph.D. Curriculum form. Unlike the traditional GS-2 process in iRoar, this fillable PDF serves as the Committee Selection and Plan of Study for the M.S. degree. This form will be completed by the student and signed by the M.S. Advisory Committee (Refer to Section 4/5 for information on the M.S. Advisory Committee) and submitted to the Graduate Student Services Manager.

Application for Graduation

Students will apply for graduation in iRoar early in the semester that they plan to graduate. Graduation deadlines can be found on the Graduate School website. Students who apply to graduate, but later determine that they need to postpone graduation, should notify the Graduate

Student Services Manager by email (copying their Advisory Committee Chair) asking to be removed from the graduation list.

Dissertation Defense

Ph.D. Candidates will present their research at their final dissertation defense, generally held during the semester they intend to graduate. Students should reference the Graduate School's Graduation Deadlines for guidance on scheduling their defenses. Additionally, the Advisory Committee will review a student's final dissertation prior to the defense – students will work with their Advisory Committee Chair to determine the deadline for submitting the final dissertation to the Committee.

At the conclusion of the dissertation defense, the Advisory Committee will submit the GS-7D Doctoral Dissertation Defense and Approval Form to the Graduate School to report the results. Students should notify the Graduate Student Services Manager at least 3 days prior to their defense to request a GS-7D form.

Dissertation Approval

After the dissertation has been approved by the Advisory Committee, the dissertation must be submitted electronically (manuscriptreview-l@clemson.edu) to the Manuscript Review Office for approval. Information about formatting can be found here.

SECTION 3.2 – DOCTOR OF PHILOSOPHY DEGREES IN THE DEPARTMENT OF ENVIRONMENTAL ENGINEERING AND EARTH SCIENCES

SECTION 3.2.1 – DOCTOR OF PHILOSOPHY IN BIOSYSTEMS ENGINEERING

Requirements for the Ph.D. Degree in Biosystems Engineering

Ph.D. students with an M.S. Degree:

- Minimum of 33 credits beyond the M.S. degree.
  - Minimum of 18 credits dissertation research (BE 9910).
  - Minimum of 15 credits of coursework.

Ph.D. students without an M.S. Degree:

- Minimum of 60 credits beyond the B.S. degree.
  - Minimum of 18 credits dissertation research (BE 9910).
  - Minimum of 39 credits of coursework.
  - The remaining 3 credits are divided between coursework and dissertation hours based on the recommendation of the Graduate Advisory Committee.

Additional degree program requirements and procedures for Ph.D. students in Biosystems Engineering can be found on the EEES Department website. Work in a minor field, if declared, normally requires 12 to 24 hours in graduate-level coursework.

Ph.D. Advisory Committee

Each Ph.D. student must have a major advisor who acts as chair of their Graduate Advisory Committee. The major advisor/committee chair must be a Graduate Directing Faculty (see the

Graduate School Policies and Procedures Handbook) and must be assigned to the EEES Department. The Ph.D. student, in consultation with their major/research advisor, selects the other members of their Advisory Committee. If desired, an Advisory Committee co-chair may be selected. Faculty holding Graduate Advising or Graduate Directing Faculty status are eligible to serve as co-chair of the committee.

The Ph.D. Advisory Committee must consist of a minimum of four members, all of whom must hold a Ph.D. degree and must be Graduate Advising or Graduate Directing Faculty. The majority of the Ph.D. Advisory Committee, including the chair, must be comprised of full-time Clemson University tenured or tenure-track faculty. At least two committee members (including the Chair) must be assigned to the EEES Department and at least 50% of the members must be from SCEEES. If a student declares a minor, this area must be represented on the Advisory Committee. Additional requirements for Ph.D. Advisory Committees in Biosystems Engineering can be found on the EEES Department website.

If appropriate, an external Advisory Committee member (non-Clemson University faculty) may be selected as described in the next section, subject to the parameters listed above.

External Advisory Committee Members

The appointment process for an external member (an individual not employed by Clemson University) to serve on a student's Ph.D. Advisory Committee must be initiated by the submission of a formal request from the student's major advisor/committee chair. External committee members are required to meet certain standards and must be approved well before the student's qualifying exam. Students should contact the Graduate Student Services Coordinator to begin the approval process for an external committee member.

External committee member candidates must have an earned Ph.D. in a pertinent field to be approved for serving on a Ph.D. Advisory Committee. Additional requirements and procedures for external advisory committee member appointments for Ph.D. students in Biosystems Engineering can be found on the EEES Department website.

Previously, individuals not employed by Clemson University were required to seek approval for appointment as an adjunct professor before they could serve on Advisory Committees. The external committee member procedure described above simplifies this process. Nevertheless, the EEES Department maintains an active list of adjunct faculty members who continue to be available for serving as external members of graduate student Advisory Committees.

Role of the Ph.D. Advisory Committee

The Ph.D. Advisory Committee will perform the following functions for students:

- Specify required co-requisite/remedial courses, if deemed necessary,
- Approve their Plan of Study (GS-2 Form),
- Supervise their graduate program and dissertation research,
- Administer/evaluate required exam(s), and
- Make a recommendation to the Graduate School for awarding of the Ph.D. degree.

Advisory Committee Selection and Plan of Study (GS-2 Form)

All graduate students will submit a Committee Selection and Plan of Study (called the GS-2 Form) to the Graduate School. This is a two-step process in iRoar, which serves the following purposes:

- Committee Selection – The official process of selecting individuals to serve on the Graduate Advisory Committee (Step 1 of the GS-2 Form)
- Plan of Study – The official documentation of courses/research credits utilized to satisfy degree requirements (Step 2 of the GS-2 Form).

Contact the Graduate Student Services Coordinator before starting the Committee Selection if a committee member is external to Clemson University (see previous section) or a faculty member in another Department at Clemson University. Additional requirements, procedures, and timing for the GS-2 can be found on the EEES Department website.

Qualifying Examination

The Qualifying Exam will serve to examine the ability of a student to apply the knowledge of Biosystems Engineering, with an emphasis in the student's area of specialization, to contemporary problems encountered during Ph.D. level work. The exam is intended to be a "gateway" to the Ph.D. program in which a student demonstrates that they have the necessary critical thinking skills required to complete the Ph.D. degree and provide convincing evidence of a student's intellectual mastery of their Ph.D. coursework. Additional requirements and procedures for the Qualifying Exam for Ph.D. students in Biosystems Engineering can be found on the EEES Department website.

Once the Qualifying Exam dates are confirmed, students must notify the Graduate Student Services Coordinator of their exam dates by completing the Department Exam Form. The Graduate Student Services Coordinator will prepare the Department Form to record the results of the Qualifying Exam.

Comprehensive Exam and Research Proposal Defense

Students who have successfully passed the Qualifying Exam are eligible to take the Comprehensive Exam. The purpose of the Comprehensive Exam is to obtain convincing evidence of a student's preparedness for performing research at the Ph.D. level. The Comprehensive Exam and Proposal Defense must be completed no less than six months prior to a student's anticipated graduation. Refer to the Graduate School's Graduation Deadlines for relevant deadlines for upcoming graduation cycles. Additional requirements and procedures for the Comprehensive Exam, including guidance on preparation of the research proposal, can be found on the EEES Department website.

Once the Comprehensive Exam dates are confirmed with the student's committee, the student must notify the Graduate Student Services Coordinator of their exam dates by completing the Department Exam Form.

Satisfactory performance on the Comprehensive Exam will result in a recommendation to the Graduate School of acceptance of a student's application for admission to Ph.D. Candidacy. This is done by submission of forms GS-5D and GS-Research Approval to the Graduate Student Services Coordinator.

Master's en route to Ph.D.

Students who are accepted directly into the Ph.D. program in Biosystems Engineering without having first obtained an M.S. degree may be eligible to complete an *M.S. en route to Ph.D.* during the course of their Ph.D. program. Qualified students must discuss this option first with their major advisor and the Biosystems Engineering Graduate Program Coordinator. All requirements of the M.S. degree must be satisfied. Additional requirements and procedures for the *M.S. en route to Ph.D.* can be found on the EEES Department website.

Application for Graduation

Students will apply for graduation in iRoar early in the semester that they plan to graduate (Student Record > Apply to Graduate). Graduation deadlines can be found on the Graduate School website. The student must also notify the Graduate Student Services Coordinator by completing the Defense Request Form. Students who apply to graduate but later determine that they need to postpone graduation should notify the Graduate Student Services Coordinator by email (copying their Advisory Committee Chair) asking to be removed from the graduation list.

Dissertation Defense

An oral examination given at least three weeks before graduation will serve to examine the students on their dissertation research. (See deadlines set by the Graduate School for the specific date for each semester). The student is responsible for scheduling the defense in coordination with the Major Advisor and Advisory Committee. Once the date is set, the Graduate Student Services Coordinator must be notified by submitting the Defense Request Form.

Successful completion of this examination will result in a recommendation (GS-7D Form) by the Advisory Committee to the Graduate School that the PhD degree be awarded. The Graduate Student Services Coordinator will prepare the GS-7D Form for the Advisory Committee. The completed GS-7D must be returned to the Graduate Student Services Coordinator; do not send the form directly to the Graduate School.

Additional requirements and procedures for the dissertation defense can be found on the EEES Department website.

Dissertation Approval

After the dissertation has been approved by the Advisory Committee, the dissertation must be submitted electronically to the Manuscript Review Office for approval (manuscriptreview-l@clemson.edu). Information about formatting can be found here.

After format approval, the student is responsible for submitting an electronic copy of the dissertation to the Graduate School. An electronic copy is also required by the EEES Department.

Checkout and Exit Interview

Before graduation, students must complete a Checkout Form and an Exit Interview Form. When the form is completed, the student should contact their department's Graduate Student Services Coordinator and schedule an exit interview. The checkout form ensures that all research materials are provided to the advisor, labs are clean, and samples are archived or disposed of properly, etc.

The exit interview is part of the assessment process for the faculty to continuously improve the curriculum and graduate experience for the students.

SECTION 3.2.2 – DOCTOR OF PHILOSOPHY IN ENVIRONMENTAL ENGINEERING AND EARTH SCIENCES

The Ph.D. program in Environmental Engineering and Earth Sciences provides students with a comprehensive background in one or more fundamental aspects of environmental engineering, environmental science, and/or the Earth sciences. The major field of study is generally interdisciplinary in nature, consisting of coursework and research in several areas of the basic and applied sciences, as well as the engineering sciences, so that a better understanding of our Earth and environment is obtained and to develop better solutions for the critical problems that we face now and in the future.

Requirements for the Ph.D. Degree in Environmental Engineering and Earth Sciences

Ph.D. students with an M.S. Degree:

- Minimum of 31 credits beyond the M.S. degree.
  - Minimum of 18 credits dissertation research (EES 9910).
  - Minimum of 12 credits of non-research, non-seminar coursework.
  - Minimum of 1 credit hour of Ph.D. seminar (EES 9610).

Ph.D. students without an M.S. Degree:

- Minimum of 61 credits beyond the B.S. degree.
  - Minimum of 18 credits dissertation research (EES 9910).
  - Minimum of 12 credits of non-research, non-seminar coursework.
  - Minimum of 1 credit hour of Ph.D. seminar (EES 9610).
  - Remaining minimum required credit hours can be divided among non-research, non-seminar coursework, and dissertation hours, based on the recommendation of the Graduate Advisory Committee.

Additional degree program requirements and procedures for Ph.D. students in Environmental Engineering and Earth Sciences can be found on the EEES Department website. Work in a minor field, if declared, normally requires 12 to 24 hours in graduate-level coursework.

Alternative Residency Program

The Ph.D. degree program in Environmental Engineering and Earth Sciences has designed an alternative residency program for off-campus students who are working professionals, employed at national laboratories or in industry. This alternative residency program satisfies the Graduate School requirement for residency by replacing certain engagement options available for typical Ph.D. students at Clemson University with alternative options available as a result of their employment.

The alternative residency program ensures that the Ph.D. student is exposed to the disciplinary depth and breadth, scholarly immersion, professional socialization, and professional practice that is equivalent to what one would expect for a traditional, on-campus Ph.D. student. Additional information about the alternative residency program for Ph.D. students in Environmental Engineering and Earth Sciences can be found on the EEES Department website.

Ph.D. Advisory Committee

Each Ph.D. student must have a major advisor who acts as chair of their Graduate Advisory Committee. The major advisor/committee chair must be a Graduate Directing Faculty (see the Graduate School Policies and Procedures Handbook) and must be assigned to the EEES Department. The Ph.D. student, in consultation with their major/research advisor, selects the other members of their Advisory Committee. If desired, an Advisory Committee co-chair may be selected. Faculty holding Graduate Advising or Graduate Directing Faculty status are eligible to serve as co-chairs of the committee.

The Ph.D. Advisory Committee must consist of a minimum of four members, all of whom must hold a Ph.D. degree and must be Graduate Advising or Graduate Directing Faculty. The majority of the Ph.D. Advisory Committee, including the chair, must be comprised of full-time Clemson University tenured or tenure-track faculty. At least two committee members (including the Chair) must be assigned to the EEES Department, and at least 50% of the members must be from SCEEES. If a student declares a minor, this area must be represented on the Advisory Committee. Additional requirements for Ph.D. Advisory Committees in Environmental Engineering and Earth Sciences can be found on the EEES Department website.

If appropriate, an external Advisory Committee member (non-Clemson University faculty) may be selected as described in the next section, subject to the parameters listed above.

External Advisory Committee Members

The appointment process for an external member (an individual not employed by Clemson University) to serve on a student's Ph.D. Advisory Committee must be initiated by the submission of a formal request from the student's major advisor/committee chair. External committee members are required to meet certain standards and must be approved well before the student's qualifying exam. Students should contact the Graduate Student Services Coordinator to begin the approval process for an external committee member.

External committee member candidates must have an earned Ph.D. in a pertinent field to be approved for serving on a Ph.D. Advisory Committee. Additional requirements and procedures for external advisory committee member appointments for Ph.D. students in Environmental Engineering and Earth Sciences can be found on the EEES Department website. Previously, individuals not employed by Clemson University were required to seek approval for appointment as an adjunct professor before they could serve on Advisory Committees. The external committee member procedure described above simplifies this process. Nevertheless, the EEES Department maintains an active list of adjunct faculty members who continue to be available for serving as external members of graduate student Advisory Committees.

Role of the Ph.D. Advisory Committee

The Ph.D. Advisory Committee will perform the following functions for students:

- Specify required co-requisite/remedial courses, if deemed necessary,
- Approve their Plan of Study (GS-2 Form),
- Supervise their graduate program and dissertation research,
- Administer/evaluate required exam(s), and
- Make a recommendation to the Graduate School for awarding of the Ph.D. degree.

Advisory Committee Selection and Plan of Study (GS-2 Form)

All graduate students will submit a Committee Selection and Plan of Study (called the GS-2 Form) to the Graduate School. This is a two-step process in iRoar, which serves the following purposes:

- Committee Selection – The official process of selecting individuals to serve on the Graduate Advisory Committee (Step 1 of the GS-2 Form)
- Plan of Study – The official documentation of courses/research credits utilized to satisfy degree requirements (Step 2 of the GS-2 Form).

Contact the Graduate Student Services Coordinator before starting the Committee Selection if a committee member is external to Clemson University (see previous section) or a faculty member in another Department at Clemson University. Additional requirements and procedures for the GS-2 can be found on the EEES Department website.

Qualifying Examination

The Qualifying Exam will serve to examine the ability of a student to apply the knowledge of Environmental Engineering and Earth Sciences, with an emphasis in the student's area of specialization, to contemporary problems encountered during Ph.D. level work. The exam is intended to be a "gateway" to the Ph.D. program in which a student demonstrates that they have the necessary critical thinking skills required to complete the Ph.D. degree and provide convincing evidence of a student's intellectual mastery of their Ph.D. coursework. Additional requirements and procedures for the Qualifying Exam for Ph.D. students in Environmental Engineering and Earth Sciences can be found on the EEES Department website.

Once the Qualifying Exam dates are confirmed, students must notify the Graduate Student Services Coordinator of their exam dates by completing the Department Exam Form. The Graduate Student Services Coordinator will prepare the Department Form to record the results of the Qualifying Exam.

Comprehensive Exam and Research Proposal Defense

Students who have successfully passed the Qualifying Exam are eligible to take the Comprehensive Exam. The purpose of the Comprehensive Exam is to obtain convincing evidence of a student's preparedness for performing research at the Ph.D. level. The Comprehensive Exam and Proposal Defense must be completed no less than six months prior to a student's anticipated graduation. Refer to the Graduate School's Graduation Deadlines for relevant deadlines for upcoming graduation cycles. Additional requirements and procedures for the Comprehensive Exam, including guidance on preparation of the research proposal, can be found on the EEES Department website.

Once the Comprehensive Exam dates are confirmed with the student's committee, the student must notify the Graduate Student Services Coordinator of their exam dates by completing the Department Exam Form.

Satisfactory performance on the Comprehensive Exam will result in a recommendation to the Graduate School of acceptance of a student's application for admission to Ph.D. Candidacy. This is done by submission of forms GS-5D and GS-Research Approval to the Graduate Student Services Coordinator.

Master's en Route to Ph.D.

Students who are accepted directly into the Ph.D. program in Environmental Engineering and Earth Sciences without having first obtained an M.S. degree may be eligible to complete an *M.S. en route to Ph.D.* during the course of their Ph.D. program. Qualified students must discuss this option first with their major advisor and the Environmental Engineering and Earth Sciences Graduate Program Coordinator. All requirements of the M.S. degree must be satisfied. Additional requirements and procedures for the *M.S. en route to Ph.D.* can be found on the EEES Department website.

Application for Graduation

Students will apply for graduation in iRoar early in the semester that they plan to graduate (Student Record > Apply to Graduate). Graduation deadlines can be found on the Graduate School website. The student must also notify the Graduate Student Services Coordinator by completing the Defense Request Form. Students who apply to graduate but later determine that they need to postpone graduation should notify the Graduate Student Services Coordinator by email (copying their Advisory Committee Chair) asking to be removed from the graduation list.

Dissertation Defense

An oral examination given at least three weeks before graduation will serve to examine the students on their dissertation research. (See deadlines set by the Graduate School for the specific date for each semester). The student is responsible for scheduling the defense in coordination with the Major Advisor and Graduate Advisory Committee. Once the date is set, the Graduate Student Services Coordinator must be notified by submitting the Defense Request Form.

Successful completion of this examination will result in a recommendation (GS-7D Form) by the Advisory Committee to the Graduate School that the Ph.D. degree be awarded. The Graduate Student Services Coordinator will prepare the GS-7D form for the Advisory Committee. The completed GS-7D must be returned to the Graduate Student Services Coordinator; students should not send the form directly to the Graduate School.

Additional requirements and procedures for the dissertation defense can be found on the EEES Department website.

Dissertation Approval

After the dissertation has been approved by the Advisory Committee, the dissertation must be submitted electronically to the Manuscript Review Office for approval (manuscriptreview-l@clemson.edu). Information about formatting can be found here.

After format approval, the student is responsible for submitting an electronic copy of the dissertation to the Graduate School. An electronic copy is also required by the EEES Department.

Checkout and Exit Interview

Before graduation, students must complete a Checkout Form and an Exit Interview Form. When the form is completed, the student should contact the Graduate Student Services Coordinator and schedule an exit interview. The checkout form ensures that all research materials are provided to the

advisor, labs are clean, and samples are archived or disposed of properly, etc. The exit interview is part of the assessment process for the faculty to continuously improve the curriculum and graduate experience for the students.

SECTION 4 – MASTER OF SCIENCE (THESIS) DEGREES OFFERED IN THE SCHOOL OF CIVIL AND ENVIRONMENTAL ENGINEERING AND EARTH SCIENCES

Master of Science degrees with a thesis option that are offered in the School of Civil and Environmental Engineering and Earth Sciences are:

- M.S. in Civil Engineering
- M.S. in Biosystems Engineering
- M.S. in Environmental Engineering and Science
- M.S. in Environmental Engineering and Science -- Environmental Health Physics[†]
- M.S. in Hydrogeology

The following pages outline requirements and other relevant information for each M.S. program with a thesis option within the School. It is the responsibility of each student to be familiar with the degree requirements and pertinent information for their specific program. Additional information related to Graduate School policies and procedures can be found in the Graduate School Policies and Procedures Handbook. If there are minor discrepancies with the information in this Section versus official Graduate School policies, then Graduate School policies take precedence *unless* the graduate degree program requirements in question are more stringent than the Graduate School's minimum requirements.

This Handbook is subject to periodic review and revision by the faculty of the School of Civil and Environmental Engineering and Earth Sciences. Each M.S. student is subject to the policies in effect at the time of enrollment in their degree program. If policies change, a student may petition in writing for approval, or disapproval, of changing to the new policies.

SECTION 4.1 MASTER OF SCIENCE IN THE GLENN DEPARTMENT OF CIVIL ENGINEERING (THESIS OPTION)

Specialty Areas in Civil Engineering

Students entering the M.S. program in civil engineering will follow the course requirements of the Specialty Area that they indicated on their graduate application:

- Construction Engineering and Management
- Construction Materials
- Geotechnical Engineering
- Structural Engineering
- Transportation Systems
- Water Resources

[†] The Master of Science degree in Environmental Engineering and Science (Environmental Health Physics) is accredited by the Applied and Natural Science Accreditation Commission(s) of ABET, https://www.abet.org, under the General Criteria and the Health Physics Program Criteria.

Each Specialty Area has developed a resource guide for its students, which includes course information and other requirements. Specialty Area guides are located on the CE Website. Faculty advisors can answer specific questions about core area requirements. While there are no departmental requirements (e.g., no common courses that all students take), students are also responsible for ensuring that Graduate School requirements are satisfied.

Requirements for the M.S. Thesis Degree in Civil Engineering

Consistent with the Graduate School Policies and Procedures, all M.S. Thesis students are required to satisfy the following requirements:

- Complete a minimum of 30 total graduate-level credit hours beyond the undergraduate degree:
  - At least 24 credits of approved graduate coursework, none of which satisfied requirements for a previous degree, except for approved Bachelors-to-Grad courses.
  - At least 6 credits of M.S. Thesis Research (CE 8910).
- At least half of the coursework must be approved 8000-level courses.

Students should refer to the CE Website for required core courses specific to their Specialty Area.

M.S. Thesis Advisory Committee

All M.S. Thesis students must have a major advisor who acts as the chair of their Graduate Advisory Committee. In addition to a Chair, a Co-Chair may also be selected. The student, in consultation with the major advisor, selects the other members of the Advisory Committee. The minimum number of the Committee members (including Chair and Co-Chair) must be three. The majority of the Advisory Committee members, including the major advisor, must be Graduate Directing Faculty (see the Graduate School Policies and Procedures Manual for appropriate definitions).

At least two committee members (including the Chair) must be assigned to the Civil Engineering Department and at least 50% of the members must be from SCEEES. Part-time, visiting, and other nontenure track faculty employed by Clemson University may serve on an M.S. Thesis Advisory Committee but cannot be the committee chair. Additionally, requests for external committee members (non-Clemson University faculty) must be approved by the department.

External Advisory Committee Members

External committee members (individuals not employed by Clemson University) are required to meet certain standards and must be approved by the department. Students should contact the Graduate Student Services Manager to begin the approval process for an external committee member. External committee members must be approved before the Comprehensive Exam/Proposal Defense.

Role of the M.S. Thesis Advisory Committee

The M.S. Thesis Advisory Committee will fulfill the following functions:

- Recommend classes,
- Provide guidance on research, and
- Evaluate the thesis/thesis defense in the final semester.

Advisory Committee Selection and Plan of Study (GS-2 Form)

All graduate students will submit a Committee Selection and Plan of Study (called the GS-2 Form) to the Graduate School. This is a two-step process in iRoar, which serves the following purposes:

- Committee Selection – The official process of selecting individuals to serve on the Graduate Advisory Committee.
- Plan of Study – The official documentation of courses/research credits utilized to satisfy degree requirements.

All M.S. Thesis students are required to submit their Committee Selection and Plan of Study by the end of their first semester of graduate school (later edits are allowed, if necessary). Contact the Graduate Student Services Manager before starting the Committee Selection if a committee member is external to Clemson University (see previous section) or a faculty member in another Department at Clemson University.

Application for Graduation

Students will apply for graduation in iRoar early in the semester that they plan to graduate. (Student Record > Apply to Graduate). Graduation deadlines can be found on the Graduate School website. Students who apply to graduate but later determine that they need to postpone graduation should notify the Graduate Student Services Manager by email (copying their Committee Chair) asking to be removed from the graduation list.

Completion of M.S. Thesis and Thesis Defense

M.S. Thesis students will defend and submit their thesis during the final semester. Students who are pursuing the thesis option should make sure that they are aware of all relevant deadlines related to their thesis defense and manuscript submission. The Advisory Committee will review a student's final thesis prior to their defense. Students should work with their committee chair to determine the deadline for submitting their manuscript to the Committee.

After a student presents their thesis defense, the Advisory Committee will submit the GS-7M – Final Exam and Master's Thesis Approval Form to Graduate Enrolled Student Services to report results. Students should notify the Graduate Student Services Manager at least 3 days prior to their defense to request a GS-7M Form.

SECTION 4.2 MASTER OF SCIENCE DEGREES IN THE DEPARTMENT OF ENVIRONMENTAL ENGINEERING AND EARTH SCIENCES (THESIS OPTION)

SECTION 4.2.1 – M.S. IN BIOSYSTEMS ENGINEERING (THESIS OPTION)

Requirements for the M.S. Thesis Degree in Biosystems Engineering

Consistent with the Graduate School Policies and Procedures, all M.S. Thesis students must satisfy the following requirements:

- Complete a minimum of 30 total graduate-level credit hours beyond the undergraduate degree:
    - At least 24 credits of approved graduate coursework, none of which satisfied requirements for a previous degree, except for approved Bachelors-to-Graduate courses.

- At least 6 credits of M.S. Thesis Research (BE 8910).
- At least half of the coursework must be approved 8000-level courses.

Additional degree program requirements and procedures for M.S. students pursuing the thesis option in Biosystems Engineering can be found on the EEES Department website.

M.S. Thesis Advisory Committee

Each M.S. thesis student must have a major advisor who acts as chair of their Graduate Advisory Committee. The major advisor/committee chair must be a Graduate Directing Faculty (see the Graduate School Policies and Procedures Handbook) and must be assigned to the EEES Department. The M.S. thesis student, in consultation with their major/research advisor, selects the other members of their Advisory Committee. If desired, an Advisory Committee co-chair may be selected. Faculty holding Graduate Advising or Graduate Directing Faculty status are eligible to serve as co-chair of the committee.

The M.S. Thesis Advisory Committee must consist of a minimum of three members, a majority of whom must hold a Ph.D. degree. All Advisory Committee members must be Graduate Advising or Graduate Directing Faculty. At least two committee members (including the chair) must be assigned to the EEES Department and at least 50% of the members must be from SCEEES. The majority of the M.S. Thesis Advisory Committee, including the chair, must be comprised of full-time Clemson University tenured or tenure-track faculty. Additional requirements for M.S. Thesis Advisory Committees in Biosystems Engineering can be found on the EEES Department website.

If appropriate, an external Advisory Committee member (non-Clemson University faculty) may be selected as described in the next section, subject to the parameters listed above.

External Advisory Committee Members

The appointment process for an external member (an individual not employed by Clemson University) to serve on a student's M.S. Advisory Committee must be initiated by the submission of a formal request from the student's major advisor/committee chair. External committee members are required to meet certain standards and must be approved well before the student's final exam. Students should contact the Graduate Student Services Coordinator to begin the approval process for an external committee member.

External committee member candidates must have, at minimum, an earned M.S. degree in a pertinent field and sufficient qualifications to be approved for serving on a M.S. Thesis Advisory Committee. Additional requirements and procedures for external advisory committee member appointments for M.S. students in Biosystems Engineering can be found on the EEES Department website.

Previously, individuals not employed by Clemson University were required to seek approval for appointment as an adjunct professor before they can serve on Advisory Committees. The external committee member procedure described above simplifies this process. Nevertheless, the EEES Department maintains an active list of adjunct faculty members who continue to be available for serving as external members of graduate student Advisory Committees.

Role of the M.S. Thesis Advisory Committee

The M.S. Thesis Advisory Committee will perform the following functions:

- Specify required co-requisite/remedial courses, if deemed necessary,
- Approve course work/GS-2 Plan of Study,
- Supervise the research program,
- Administer the final oral examination,
- Approve the M.S. thesis, and
- Make a recommendation to the Graduate School for awarding the degree.

Note: Co-requisite/remedial courses are specified by the advisory committee to resolve deficiencies in a student's educational background and must be completed before receipt of the M.S. degree.

Advisory Committee Selection and Plan of Study (GS-2 Form)

All graduate students will submit a Committee Selection and Plan of Study (called the GS-2 Form) to the Graduate School. This is a two-step process in iRoar, which serves the following purposes:

- Committee Selection – The official process of selecting individuals to serve on the Graduate Advisory Committee (Step 1 of the GS-2 Form)
- Plan of Study – The official documentation of courses/research credits utilized to satisfy degree requirements (Step 2 of the GS-2 Form).

The GS-2 Form should be completed as soon as the M.S. student and their advisor identify appropriate Advisory Committee members and determine the course of study that the student will pursue, but no later than the end of the second semester for M.S. students. Contact the Graduate Student Services Coordinator before starting the Committee Selection if a committee member is external to Clemson University (see previous section) or a faculty member in another Department at Clemson University. Additional requirements and procedures for the GS-2 for M.S. Thesis students in Biosystems Engineering can be found on the EEES Department website.

M.S. Thesis Proposal

Students pursuing the M.S. thesis option must complete the final draft of their thesis proposal by the end of their second semester. The purpose of the proposal is to create a research plan. Actual activities may vary as conditions and initial results dictate. The M.S. thesis proposal is a persuasive document intended to describe the worthiness of the proposed research. The proposal is developed with the help of the major advisor and Advisory Committee. The approach and procedure will vary somewhat from student to student, so students should discuss the process with their research advisor early.

Detailed instructions and procedures for the M.S. thesis proposal can be found on the EEES Department website. Upon approval of the thesis proposal, complete the M.S. Submission Proposal form found here so that the GS-Research Approval Form can be submitted to your committee by the Graduate Student Services Coordinator.

Application for Graduation

Students will apply for graduation in iRoar early in the semester that they plan to graduate (Student

Record > Apply to Graduate). Graduation deadlines can be found on the Graduate School website. The student must also notify the Graduate Student Services Coordinator by completing the Defense Request Form. Students who apply to graduate but later determine that they need to postpone graduation should notify the Graduate Student Services Coordinator by email (copying their Advisory Committee Chair) asking to be removed from the graduation list.

Completion of M.S. Thesis and Thesis Defense

An oral examination given at least three weeks before graduation will serve to examine the students on their thesis research. (See deadlines set by the Graduate School for the specific date for each semester.) During the examination, M.S. thesis students will be expected to orally present the findings of the research, support various aspects thereof, and be questioned on integrated knowledge of related coursework. The examination will be conducted under the authority of the M.S. Advisory Committee.

The student is responsible for scheduling the thesis defense in coordination with the Major Advisor and Graduate Advisory Committee. Once the date is set, the Graduate Student Services Coordinator must be notified by submitting the Defense Request Form. The committee members should receive a final draft copy of the thesis at least 10 working days before the examination.

Successful completion of the examination will result in a recommendation (GS-7M Form) by the Advisory Committee to the Graduate School that the M.S. degree be awarded. The Graduate Student Services Coordinator will prepare the GS-7M form for the Advisory Committee. The completed GS-7M must be returned to the Graduate Student Services Coordinator; students should not send the form directly to the Graduate School.

Additional requirements and procedures for the M.S. thesis defense can be found on the EEES Department website.

Checkout and Exit Interview

Before graduation, students must complete a Checkout Form and an Exit Interview Form. When the form is completed, the student should contact the Graduate Student Services Coordinator and schedule an exit interview. The checkout form ensures that all research materials are provided to the advisor, labs are clean, and samples are archived or disposed of properly, etc. The exit interview is part of the assessment process for the faculty to continuously improve the curriculum and graduate experience for the students.

SECTION 4.2.2 – M.S. IN ENVIRONMENTAL ENGINEERING AND SCIENCE (THESIS OPTION)

The M.S. program in Environmental Engineering and Science provides students a quantitative approach to investigating and solving environmental problems -- examples include contamination of natural systems, remediation of damaged soils or sediments, treatment for drinking water or wastewater, monitoring of air pollution and emissions, disposal of radioactive wastes, and design of sustainable human systems such as for bioenergy or water supply.

Focus Areas for the M.S. Thesis Degree in Environmental Engineering and Science

Each student pursuing an M.S. in Environmental Engineering and Science must select one of the following focus areas and meet the associated course requirements of that focus area:

- Process Engineering
- Environmental Chemistry
- Subsurface and Surface Processes
- Sustainable Systems and Environmental Assessment
- Environmental Health Physics[†]

More information about the focus area requirements for M.S. EES students can be found on the EEES Department website.

Requirements for the M.S. Thesis Degree in Environmental Engineering and Science

Students pursuing the M.S. in Environmental Engineering and Science (Thesis) must satisfy the following requirements:

- Minimum of 31 credit hours beyond the B.S. degree.
  - Minimum of 24 credit hours of non-research, non-seminar coursework, none of which has been used to satisfy requirements for a previous degree, except for approved Bachelors-to-Graduate courses.
  - Minimum of 6 credit hours of thesis research (EES 8910).
  - Minimum of 1 credit hour of EES seminar (EES 8610).
- At least half of the non-research, non-seminar coursework must be approved 8000-level courses.

Additional degree program requirements and procedures for M.S. students pursuing the thesis option in Environmental Engineering and Science can be found on the EEES Department website.

M.S. Thesis Advisory Committee

Each M.S. thesis student must have a major advisor who acts as chair of their Graduate Advisory Committee. The major advisor/committee chair must be a Graduate Directing Faculty (see the Graduate School Policies and Procedures Handbook) and must be assigned to the EEES Department. The M.S. thesis student, in consultation with their major/research advisor, selects the other members of their Advisory Committee. If desired, an Advisory Committee co-chair may be selected. Faculty holding Graduate Advising or Graduate Directing Faculty status are eligible to serve as co-chair of the committee.

The M.S. Thesis Advisory Committee must consist of a minimum of three members, a majority of whom must hold a Ph.D. degree. All Advisory Committee members must be Graduate Advising or Graduate Directing Faculty. At least two committee members (including the Chair) must be assigned to the EEES Department and at least 50% of the members must be from SCEEES. The majority of the M.S. Thesis Advisory Committee, including the chair, must be comprised of full-time Clemson University tenured or tenure-track faculty. Additional requirements for M.S. Thesis Advisory Committees in Environmental Engineering and Science can be found on the EEES Department website.

[†] The Master of Science degree in Environmental Engineering and Science (Environmental Health Physics) is accredited by the Applied and Natural Science Accreditation Commission(s) of ABET, https://www.abet.org, under the General Criteria and the Health Physics Program Criteria.

If appropriate, an external Advisory Committee member (non-Clemson University faculty) may be selected as described in the next section, subject to the parameters listed above.

External Advisory Committee Members

The appointment process for an external member (an individual not employed by Clemson University) to serve on a student's M.S. Advisory Committee must be initiated by the submission of a formal request from the student's major advisor/committee chair. External committee members are required to meet certain standards and must be approved well before the student's final exam. Students should contact the Graduate Student Services Coordinator to begin the approval process for an external committee member.

External committee member candidates must have, at minimum, an earned M.S. degree in a pertinent field and sufficient qualifications to be approved for serving on a M.S. Thesis Advisory Committee. Additional requirements and procedures for external advisory committee member appointments for M.S. students in Environmental Engineering and Science can be found on the EEES Department website.

Previously, individuals not employed by Clemson University were required to seek approval for appointment as an adjunct professor before they could serve on Advisory Committees. The external committee member procedure described above simplifies this process. Nevertheless, the EEES Department maintains an active list of adjunct faculty members who continue to be available for serving as external members of graduate student Advisory Committees.

Role of the M.S. Thesis Advisory Committee

The M.S. Thesis Advisory Committee will perform the following functions:

- Specify required co-requisite/remedial courses, if deemed necessary,
- Approve course work/GS-2 Plan of Study,
- Supervise the research program,
- Administer the final oral examination,
- Approve the M.S. thesis, and
- Make a recommendation to the Graduate School for awarding the degree.

Note: Co-requisite/remedial courses are specified by the advisory committee to resolve deficiencies in a student's educational background and must be completed before receipt of the M.S. degree.

Advisory Committee Selection and Plan of Study (GS-2 Form)

All graduate students will submit a Committee Selection and Plan of Study (sometimes called the GS-2 Form) to the Graduate School. This is a two-step process in iRoar, which serves the following purposes:

- Committee Selection – The official process of selecting individuals to serve on the Graduate Advisory Committee (Step 1 of the GS-2 Form).
- Plan of Study – The official documentation of courses/research credits utilized to satisfy degree requirements (Step 2 of the GS-2 Form).

The GS-2 Form should be completed as soon as the M.S. student and their advisor identify appropriate Advisory Committee members and determine the course of study that the student will pursue, but no later than the end of the second semester for M.S. students. Contact the Graduate Student Services Coordinator before starting the Committee Selection if a committee member is external to Clemson University (see previous section) or a faculty member in another Department at Clemson University. Additional requirements and procedures for the GS-2 for M.S. Thesis students in Environmental Engineering and Science can be found on the EEES Department website.

M.S. Thesis Proposal

Students pursuing the M.S. thesis option must complete the final draft of their thesis proposal by the end of their second semester. The purpose of the proposal is to create a research plan. Actual activities may vary as conditions and initial results dictate. The M.S. thesis proposal is a persuasive document intended to describe the worthiness of the proposed research. The proposal is developed with the help of the major advisor and Advisory Committee. The approach and procedure will vary somewhat from student to student, so students should discuss the process with their research advisor early.

Detailed instructions and procedures for the M.S. thesis proposal can be found on the EEES Department website. Upon approval of the thesis proposal, complete the M.S. Submission Proposal form found here so that the GS-Research Approval Form can be submitted to your committee by the Graduate Student Services Coordinator.

Application for Graduation

Students will apply for graduation in iRoar early in the semester that they plan to graduate (Student Record > Apply to Graduate). Graduation deadlines can be found on the Graduate School website. The student must also notify the Graduate Student Services Coordinator by completing the Defense Request Form. Students who apply to graduate but later determine that they need to postpone graduation should notify the Graduate Student Services Coordinator by email (copying their Advisory Committee Chair) asking to be removed from the graduation list.

Completion of M.S. Thesis and Thesis Defense

An oral examination given at least three weeks before graduation will serve to examine the students on their thesis research. (See deadlines set by the Graduate School for the specific date for each semester.) During the examination, M.S. thesis students will be expected to orally present the findings of the research, support various aspects thereof, and be questioned on integrated knowledge of related coursework. The examination will be conducted under the authority of the M.S. Advisory Committee.

The student is responsible for scheduling the thesis defense in coordination with the Major Advisor and Graduate Advisory Committee. Once the date is set, the Graduate Student Services Coordinator must be notified by submitting the Defense Request Form. The committee members should receive a final draft copy of the thesis at least 10 working days before the examination.

Successful completion of the examination will result in a recommendation (GS-7M Form) by the Advisory Committee to the Graduate School that the M.S. degree be awarded. The Graduate Student Services Coordinator will prepare the GS-7M form for the Advisory Committee. The completed GS-

7M must be returned to the Graduate Student Services Coordinator; students should not send the form directly to the Graduate School.

Additional requirements and procedures for the M.S. thesis defense can be found on the EEES Department website.

Checkout and Exit Interview

Before graduation, students must complete a Checkout Form and an Exit Interview Form. When the form is completed, the student should contact the Graduate Student Services Coordinator and schedule an exit interview. The checkout form ensures that all research materials are provided to the advisor, labs are clean, and samples are archived or disposed of properly, etc. The exit interview is part of the assessment process for the faculty to continuously improve the curriculum and graduate experience for the students.

SECTION 4.2.3 – M.S. IN HYDROGEOLOGY (THESIS OPTION)

The Master of Science in Hydrogeology allows students to investigate a wide range of problems focusing on groundwater geology and subsurface remediation. The curriculum is structured to give students a strong background that integrates field methods with quantitative analyses. This makes them highly competitive for careers in industry and government while preparing them as outstanding candidates for continuing studies in a Ph.D. program.

Requirements for the M.S. Thesis Degree in Hydrogeology

Students pursuing the M.S. in Hydrogeology (Thesis) must satisfy the following requirements:

- Minimum of 31 credit hours beyond the B.S. degree.
    - Minimum of 24 credit hours of non-research, non-seminar coursework, none of which has been used to satisfy requirements for a previous degree, except for approved Bachelors-to-Graduate courses.
    - Minimum of 6 credit hours of thesis research (GEOL 8910).
    - Minimum of 1 credit hour of Hydrogeology seminar (GEOL 8610).
- At least half of the non-research, non-seminar coursework must be approved 8000-level courses.

Additional degree program requirements and procedures for M.S. students pursuing the thesis option in Hydrogeology can be found on the EEES Department website.

M.S. Thesis Advisory Committee

Each M.S. thesis student must have a major advisor who acts as chair of their Graduate Advisory Committee. The major advisor/committee chair must be a Graduate Directing Faculty (see the Graduate School Policies and Procedures Handbook) and must be assigned to the EEES Department. The M.S. thesis student, in consultation with their major/research advisor, selects the other members of their Advisory Committee. If desired, an Advisory Committee co-chair may be selected. Faculty holding Graduate Advising or Graduate Directing Faculty status are eligible to serve as co-chair of the committee.

The M.S. Thesis Advisory Committee must consist of a minimum of three members, a majority of

whom must hold a Ph.D. degree. All Advisory Committee members must be Graduate Advising or Graduate Directing Faculty. At least two committee members (including the Chair) must be assigned to the EEES Department and at least 50% of the members must be from SCEEES. The majority of the M.S. Thesis Advisory Committee, including the chair, must be comprised of full-time Clemson University tenured or tenure-track faculty. Additional requirements for M.S. Thesis Advisory Committees in Hydrogeology can be found on the EEES Department website.

If appropriate, an external Advisory Committee member (non-Clemson University faculty) may be selected as described in the next section, subject to the parameters listed above.

External Advisory Committee Members

The appointment process for an external member (an individual not employed by Clemson University) to serve on a student's M.S. Advisory Committee must be initiated by the submission of a formal request from the student's major advisor/committee chair. External committee members are required to meet certain standards and must be approved well before the student's final exam. Students should contact the Graduate Student Services Coordinator to begin the approval process for an external committee member.

External committee member candidates must have, at minimum, an earned M.S. degree in a pertinent field and sufficient qualifications to be approved for serving on a M.S. Thesis Advisory Committee. Additional requirements and procedures for external advisory committee member appointments for M.S. students in Hydrogeology can be found on the EEES Department website.

Previously, individuals not employed by Clemson University were required to seek approval for appointment as an adjunct professor before they could serve on Advisory Committees. The external committee member procedure described above simplifies this process. Nevertheless, the EEES Department maintains an active list of adjunct faculty members who continue to be available for serving as external members of graduate student Advisory Committees.

Role of the M.S. Thesis Advisory Committee

The M.S. Thesis Advisory Committee will perform the following functions:

- Specify required co-requisite/remedial courses, if deemed necessary,
- Approve course work/GS-2 Plan of Study,
- Supervise the research program,
- Administer the final oral examination,
- Approve the M.S. thesis, and
- Make a recommendation to the Graduate School for awarding the degree.

Note: Co-requisite/remedial courses are specified by the advisory committee to resolve deficiencies in a student's educational background and must be completed before receipt of the M.S. degree.

Advisory Committee Selection and Plan of Study (GS-2 Form)

All graduate students will submit a Committee Selection and Plan of Study (called the GS-2 Form) to the Graduate School. This is a two-step process in iRoar, which serves the following purposes:

- Committee Selection – The official process of selecting individuals to serve on the Graduate

Advisory Committee (Step 1 of the GS-2 Form).
- Plan of Study – The official documentation of courses/research credits utilized to satisfy degree requirements (Step 2 of the GS-2 Form).

The GS-2 Form should be completed as soon as the M.S. student and their advisor identify appropriate Advisory Committee members and determine the course of study that the student will pursue, but no later than the end of the second semester for M.S. students. Contact the Graduate Student Services Coordinator before starting the Committee Selection if a committee member is external to Clemson University (see previous section) or a faculty member in another Department at Clemson University. Additional requirements and procedures for the GS-2 for M.S. Thesis students in Hydrogeology can be found on the EEES Department website.

M.S. Thesis Proposal

Students pursuing the M.S. thesis option must complete the final draft of their thesis proposal by the end of their second semester. The purpose of the proposal is to create a research plan. Actual activities may vary as conditions and initial results dictate. The M.S. thesis proposal is a persuasive document intended to describe the worthiness of the proposed research. The proposal is developed with the help of the major advisor and Advisory Committee. The approach and procedure will vary somewhat from student to student, so students should discuss the process with their research advisor early.

Detailed instructions and procedures for the M.S. thesis proposal can be found on the EEES Department website. Upon approval of the thesis proposal, complete the M.S. Submission Proposal form found here so that the GS-Research Approval Form can be submitted to your committee by the Graduate Student Services Coordinator.

Application for Graduation

Students will apply for graduation in iRoar early in the semester that they plan to graduate (Student Record > Apply to Graduate). Graduation deadlines can be found on the Graduate School website. The student must also notify the Graduate Student Services Coordinator by completing the Defense Request Form. Students who apply to graduate but later determine that they need to postpone graduation should notify the Graduate Student Services Coordinator by email (copying their Advisory Committee Chair) asking to be removed from the graduation list.

Completion of M.S. Thesis and Thesis Defense

An oral examination given at least three weeks before graduation will serve to examine the students on their thesis research. (See deadlines set by the Graduate School for the specific date for each semester.) During the examination, M.S. thesis students will be expected to orally present the findings of the research, support various aspects thereof, and be questioned on integrated knowledge of related coursework. The examination will be conducted under the authority of the M.S. Advisory Committee.

The student is responsible for scheduling the thesis defense in coordination with the Major Advisor and Graduate Advisory Committee. Once the date is set, the Graduate Student Services Coordinator must be notified by submitting the Defense Request Form. The committee members should receive a final draft copy of the thesis at least 10 working days before the examination.

Successful completion of the examination will result in a recommendation (GS-7M Form) by the Advisory Committee to the Graduate School that the M.S. degree be awarded. The Graduate Student Services Coordinator will prepare the GS-7M form for the Advisory Committee. The completed GS-7M must be returned to the Graduate Student Services Coordinator; students should not send the form directly to the Graduate School.

Additional requirements and procedures for the M.S. thesis defense can be found on the EEES Department website.

Checkout and Exit Interview

Before graduation, students must complete a Checkout Form and an Exit Interview Form. When the form is completed, the student should contact the Graduate Student Services Coordinator and schedule an exit interview. The checkout form ensures that all research materials are provided to the advisor, labs are clean, and samples are archived or disposed of properly, etc. The exit interview is part of the assessment process for the faculty to continuously improve the curriculum and graduate experience for the students.

SECTION 5 – MASTER OF SCIENCE (NON-THESIS) DEGREES OFFERED IN THE SCHOOL OF CIVIL AND ENVIRONMENTAL ENGINEERING AND EARTH SCIENCES

Master of Science degrees with a non-thesis option that are offered in the School of Civil and Environmental Engineering and Earth Sciences are:

- M.S. in Civil Engineering
- M.S. in Biosystems Engineering
- M.S. in Environmental Engineering and Science
- M.S. in Environmental Engineering and Science -- Environmental Health Physics[†]
- M.S. in Hydrogeology

The following pages outline requirements and other relevant information for each M.S. program with a non-thesis option within the School. It is the responsibility of each student to be familiar with the degree requirements and pertinent information for their specific program. Additional information related to Graduate School policies and procedures can be found in the Graduate School Policies and Procedures Handbook. If there are minor discrepancies with the information in this Section versus official Graduate School policies, then Graduate School policies take precedence *unless* the graduate degree program requirements in question are more stringent than the Graduate School's minimum requirements.

This Handbook is subject to periodic review and revision by the faculty of the School of Civil and Environmental Engineering and Earth Sciences. Each M.S. student is subject to the policies in effect at the time of enrollment in their degree program. If policies change, a student may petition in writing for approval, or disapproval, of changing to the new policies.

[†] The Master of Science degree in Environmental Engineering and Science (Environmental Health Physics) is accredited by the Applied and Natural Science Accreditation Commission(s) of ABET, https://www.abet.org, under the General Criteria and the Health Physics Program Criteria.

SECTION 5.1 – MASTER OF SCIENCE IN THE GLENN DEPARTMENT OF CIVIL ENGINEERING (NON-THESIS OPTION)

Specialty Areas in Civil Engineering

Students entering the M.S. program in civil engineering will follow the course requirements of the Specialty Area that they indicated on their graduate application:

- Construction Engineering and Management
- Construction Materials
- Geotechnical Engineering
- Structural Engineering
- Transportation Systems
- Water Resources

Each Specialty Area has developed a resource guide for its students, which includes course information and other requirements. Specialty Area guides are located on the CE Website. Faculty advisors can answer specific questions about core area requirements. While there are no departmental requirements (e.g., no common courses that all students take), students are also responsible for ensuring that Graduate School requirements are satisfied. For more information, see the Graduate School Policies and Procedures Handbook.

Requirements for the M.S. Non-Thesis Degree in Civil Engineering

Consistent with the Graduate School Policies and Procedures, all M.S. Non-Thesis students are required to satisfy the following requirements:

- Complete a minimum of 30 total graduate-level coursework beyond the undergraduate degree, none of which satisfied requirements for a previous degree, except for approved Bachelors-to-Graduate courses,
- At least half of the coursework must be approved 8000-level courses.

Non-Thesis students must follow the core course requirements for their Specialty Area. Specialty Area guides are located on the CE Department website.

M.S. Non-Thesis Advisory Committee

All M.S. Thesis students must have a major advisor who acts as the chair of their Graduate Advisory Committee. The committee chair is usually the faculty coordinator for a student's Specialty Area. The major advisor also selects the other members of the Advisory Committee with input from the student. The minimum number of the Committee members (including Chair) must be three. The majority of the Advisory Committee members, including the major advisor, must be Graduate Directing Faculty (see the Graduate School Policies and Procedures Manual for appropriate definitions). At least two committee members (including the Chair) must be assigned to the Civil Engineering Department and at least 50% of the members must be from SCEEES. Part-time, visiting, and other nontenure track faculty employed by Clemson University may serve on an M.S. Thesis Advisory Committee but cannot be committee chair.

Additionally, requests for external committee members (non-Clemson University faculty) must be approved by the department. The majority of the advisory Committee members, including the major advisor, must be Graduate Directing Faculty (see the Graduate School Policies and Procedures Manual for appropriate definitions).

External Advisory Committee Members

External committee members (individuals not employed by Clemson University) are required to meet certain standards and must be approved by the department. Students should contact the Graduate Student Services Manager to begin the approval process for an external committee member. External committee members must be approved before the Comprehensive Exam/Proposal Defense.

Role of the M.S. Non-Thesis Advisory Committee

The M.S. Non-Thesis Advisory Committee will fulfill the following functions:

- Recommend classes,
- Provide guidance on special projects (if applicable),
- Evaluate final special projects (if applicable), and
- Administer and evaluate final comprehensive exam (if applicable).

Advisory Committee Selection and Plan of Study (GS-2 Form)

All graduate students will submit a Committee Selection and Plan of Study (called the GS-2) to the Graduate School. This is a two-step process in iRoar, which serves the following purposes:

- Committee Selection – The official process of selecting individuals to serve on the Graduate Advisory Committee.
- Plan of Study – The official documentation of courses/research credits utilized to satisfy degree requirements.

All Master's students are required to submit their Committee Selection and Plan of Study by the end of their first semester of graduate school (later edits are allowed, if necessary). Contact the Graduate Student Services Manager before starting the Committee Selection if a committee member is external to Clemson University (see previous section) or a faculty member in another department at Clemson University.

Application for Graduation

Students will apply for graduation in iRoar early in the semester that they plan to graduate. (Student Record > Apply to Graduate). Graduation deadlines can be found on the Graduate School website. Students who apply to graduate, but later determine that they need to postpone graduation, should notify the Graduate Student Services Manager by email (copying their committee chair).

M.S. Non-Thesis Comprehensive Exam/Final Project

Non-Thesis students should check with their Advisory Committee Chair to determine if a final project or comprehensive exam is required for their Specialty Area. Students who are required to take a comprehensive exam or give a presentation on a project will follow the same graduation deadline that are required for M.S. Thesis students. For students who are required to take a final exam or present a final project, the Graduate Committee will submit the GS-7M – Final Exam and Master's Thesis Approval Form to the Graduate School to report results. Students should notify the Graduate Student Services Manager at least 3 days prior to their exam/presentation to request a GS-7M form.

SECTION 5.2 – MASTER OF SCIENCE DEGREES IN THE DEPARTMENT OF ENVIRONMENTAL ENGINEERING AND EARTH SCIENCES (NON-THESIS OPTION)

SECTION 5.2.1 – M.S. IN BIOSYSTEMS ENGINEERING (NON-THESIS)

Requirements for the M.S. Non-Thesis Degree in Biosystems Engineering

Students pursuing the M.S. in Biosystems Engineering (Non-Thesis) must satisfy the following requirements:

- Complete a minimum of 30 total graduate-level credit hours beyond the undergraduate degree, none of which satisfied requirements for a previous degree, except for approved Bachelors-to-Graduate courses.
- None of the credit hours can be M.S. Thesis Research.
- A minimum of 21 credit hours of the coursework must be approved 8000-level courses.
- Three credit hours of a Special Problems course (BE 8810) can count toward the 30 total hours required.

Additional degree program requirements and procedures for M.S. students pursuing the non-thesis option in Biosystems Engineering can be found on the EEES Department website.

Students in the non-thesis option are not eligible for research or teaching assistantship appointments but are eligible for graduate internships or other sources of support. A student who has received assistantship support at any time while a graduate student is not eligible for the non-thesis option except under rare circumstances that must be approved by the Graduate Student Services Coordinator and the EEES Department Chair.

M.S. Non-Thesis Advisory Committee

Each M.S. non-thesis student must have a major advisor who acts as chair of their Graduate Advisory Committee. The major advisor/committee chair must be a Graduate Directing Faculty (see the Graduate School Policies and Procedures Handbook) and must be assigned to the EEES Department. The M.S. non-thesis student, in consultation with their major/research advisor, selects the other members of their Advisory Committee. If desired, an Advisory Committee co-chair may be selected. Faculty holding Graduate Advising or Graduate Directing Faculty status are eligible to serve as co-chair of the committee.

The M.S. Non-Thesis Advisory Committee must consist of a minimum of three members, a majority of whom must hold a Ph.D. degree. All Advisory Committee members must be Graduate Advising or Graduate Directing Faculty. At least two committee members (including the Chair) must be assigned to the EEES Department and at least 50% of the members must be from SCEEES. The majority of the M.S. Non-Thesis Advisory Committee, including the chair, must be comprised of full-time Clemson University tenured or tenure-track faculty. Additional requirements for M.S. Non-Thesis Advisory Committees in Biosystems Engineering can be found on the EEES Department website.

If appropriate, an external Advisory Committee member (non-Clemson University faculty) may be selected as described in the next section, subject to the parameters listed above.

External Advisory Committee Members

The appointment process for an external member (an individual not employed by Clemson

University) to serve on a student's M.S. Advisory Committee must be initiated by the submission of a formal request from the student's major advisor/committee chair. External committee members are required to meet certain standards and must be approved well before the student's final exam. Students should contact the Graduate Student Services Coordinator to begin the approval process for an external committee member.

External committee member candidates must have, at minimum, an earned M.S. degree in a pertinent field and sufficient qualifications to be approved for serving on a M.S. Advisory Committee. Additional requirements and procedures for external advisory committee member appointments for M.S. students in Biosystems Engineering can be found on the EEES Department website.

Previously, individuals not employed by Clemson University were required to seek approval for appointment as an adjunct professor before they could serve on Advisory Committees. The external committee member procedure described above simplifies this process. Nevertheless, the EEES Department maintains an active list of adjunct faculty members who continue to be available for serving as external members of graduate student Advisory Committees.

Role of the M.S. Non-Thesis Advisory Committee

The M.S. Non-Thesis Advisory Committee will perform the following functions:

- Specify required co-requisite/remedial courses, if deemed necessary,
- Approve course work/GS-2 Plan of Study,
- Administer the final oral examination, and
- Make a recommendation to the Graduate School for awarding the degree.

Note: Co-requisite/remedial courses are specified by the Advisory Committee to resolve deficiencies in a student's educational background and must be completed before receipt of the M.S. degree.

Advisory Committee Selection and Plan of Study (GS-2 Form)

All graduate students will submit a Committee Selection and Plan of Study (sometimes called the GS-2 Form) to the Graduate School. This is a two-step process in iRoar, which serves the following purposes:

- Committee Selection – The official process of selecting individuals to serve on the Graduate Advisory Committee (Step 1 of the GS-2 Form)
- Plan of Study – The official documentation of courses/research credits utilized to satisfy degree requirements (Step 2 of the GS-2 Form).

The GS-2 Form should be completed as soon as the M.S. student and their advisor identify appropriate Advisory Committee members and determine the course of study that the student will pursue, but no later than the end of the second semester for M.S. students.

Contact the Graduate Student Services Coordinator before starting the Committee Selection if a committee member is external to Clemson University (see previous section) or a faculty member in another Department at Clemson University. Additional requirements and procedures for the GS-2 for M.S. Non-Thesis students in Biosystems Engineering can be found on the EEES Department website.

Application for Graduation

Students will apply for graduation in iRoar early in the semester that they plan to graduate. (Student Record > Apply to Graduate). Graduation deadlines can be found on the Graduate School website. Students who apply to graduate, but later determine that they need to postpone graduation, should notify the Graduate Student Services Coordinator by email (copying their committee chair).

M.S. Non-Thesis Oral Examination

The final oral examination for M.S. Non-Thesis students consists of a short (15-20 minute) technical presentation based on the special project and questions on material from five courses that are selected by the student and the Advisory Committee chair. The examining committee is the same as the Advisory Committee listed on the student's GS-2 Form. The Non-Thesis exam takes place in a closed session.

Checkout and Exit Interview

Before graduation, students must complete a Checkout Form and an Exit Interview Form. When the form is completed, the student should contact the Graduate Student Services Coordinator and schedule an exit interview. The checkout form ensures that all research materials are provided to the advisor, labs are clean, and samples are archived or disposed of properly, etc. The exit interview is part of the assessment process for the faculty to continuously improve the curriculum and graduate experience for the students.

SECTION 5.2.2 – M.S. IN ENVIRONMENTAL ENGINEERING AND SCIENCE (NON-THESIS OPTION)

The M.S. program in Environmental Engineering and Science provides students a quantitative approach to investigating and solving environmental problems -- examples include contamination of natural systems, remediation of damaged soils or sediments, treatment for drinking water or wastewater, monitoring of air pollution and emissions, disposal of radioactive wastes, and design of sustainable human systems such as for bioenergy or water supply.

Focus Areas for the M.S. Non-Thesis Degree in Environmental Engineering and Science

Each student pursuing an M.S. in Environmental Engineering and Science must select one of the following focus areas and meet the associated course requirements of that focus area:

- Process Engineering
- Environmental Chemistry
- Subsurface and Surface Processes
- Sustainable Systems and Environmental Assessment
- Environmental Health Physics[†]

More information about the focus area requirements for M.S. EES students can be found on the EEES Department website.

[†] The Master of Science degree in Environmental Engineering and Science (Environmental Health Physics) is accredited by the Applied and Natural Science Accreditation Commission(s) of ABET, https://www.abet.org, under the General Criteria and the Health Physics Program Criteria.

Requirements for the M.S. Non-Thesis Degree in Environmental Engineering and Science

Students pursuing the M.S. in Environmental Engineering and Science (Non-Thesis) must satisfy the following requirements:

- Minimum of 31 credit hours beyond the B.S. degree, none of which has been used to satisfy requirements for a previous degree, except for approved Bachelors-to-Graduate courses.
- None of the credit hours can be M.S. Thesis Research.
- Minimum of 1 credit hour of EES seminar (EES 8610).
- Three credit hours of a Special Problems course (EES 8810) can count toward the 31 credit hours required.
- A minimum of 21 credit hours of the coursework must be approved 8000-level courses.

Additional degree program requirements and procedures for M.S. students pursuing the non-thesis option in Environmental Engineering and Science can be found on the EEES Department website.

Students in the non-thesis option are not eligible for research or teaching assistantship appointments but are eligible for graduate internships or other sources of support. A student who has received assistantship support at any time while a graduate student is not eligible for the non-thesis option except under rare circumstances that must be approved by the Graduate Student Services Coordinator and the EEES Department Chair.

M.S. Non-Thesis Advisory Committee

Each M.S. non-thesis student must have a major advisor who acts as chair of their Graduate Advisory Committee. The major advisor/committee chair must be a Graduate Directing Faculty (see the Graduate School Policies and Procedures Handbook) and must be assigned to the EEES Department. The M.S. non-thesis student, in consultation with their major/research advisor, selects the other members of their Advisory Committee. If desired, an Advisory Committee co-chair may be selected. Faculty holding Graduate Advising or Graduate Directing Faculty status are eligible to serve as co-chair of the committee.

The M.S. Non-Thesis Advisory Committee must consist of a minimum of three members, a majority of whom must hold a Ph.D. degree. All Advisory Committee members must be Graduate Advising or Graduate Directing Faculty. At least two committee members (including the Chair) must be assigned to the EEES Department and at least 50% of the members must be from SCEEES. The majority of the M.S. Non-Thesis Advisory Committee, including the chair, must be comprised of full-time Clemson University tenured or tenure-track faculty. Additional requirements for M.S. Non-Thesis Advisory Committees in Environmental Engineering and Science can be found on the EEES Department website.

If appropriate, an external Advisory Committee member (non-Clemson University faculty) may be selected as described in the next section, subject to the parameters listed above.

External Advisory Committee Members

The appointment process for an external member (an individual not employed by Clemson University) to serve on a student's M.S. Advisory Committee must be initiated by the submission of a formal request from the student's major advisor/committee chair. External committee members are required to meet certain standards and must be approved well before the student's final exam. Students should contact the Graduate Student Services Coordinator to begin the approval process for an external committee member.

External committee member candidates must have, at minimum, an earned M.S. degree in a pertinent field and sufficient qualifications to be approved for serving on a M.S. Advisory Committee. Additional requirements and procedures for external advisory committee member appointments for M.S. students in Environmental Engineering and Science can be found on the EEES Department website.

Previously, individuals not employed by Clemson University were required to seek approval for appointment as an adjunct professor before they could serve on Advisory Committees. The external committee member procedure described above simplifies this process. Nevertheless, the EEES Department maintains an active list of adjunct faculty members who continue to be available for serving as external members of graduate student Advisory Committees.

Role of the Non-Thesis Advisory Committee

The M.S. Non-Thesis Advisory Committee will perform the following functions:

- Specify required co-requisite/remedial courses, if deemed necessary,
- Approve course work/GS-2 Plan of Study,
- Administer the final oral examination, and
- Make a recommendation to the Graduate School for awarding the degree.

Note: Co-requisite/remedial courses are specified by the advisory committee to resolve deficiencies in a student's educational background and must be completed before receipt of the M.S. degree.

Advisory Committee Selection and Plan of Study (GS-2 Form)

All graduate students will submit a Committee Selection and Plan of Study (sometimes called the GS-2 Form) to the Graduate School. This is a two-step process in iRoar, which serves the following purposes:

- Committee Selection – The official process of selecting individuals to serve on the Graduate Advisory Committee (Step 1 of the GS-2 Form)
- Plan of Study – The official documentation of courses/research credits utilized to satisfy degree requirements (Step 2 of the GS-2 Form).

The GS-2 Form should be completed as soon as the M.S. student and their advisor identify appropriate Advisory Committee members and determine the course of study that the student will pursue, but no later than the end of the second semester for M.S. students. Contact the Graduate Student Services Coordinator before starting the Committee Selection if a committee member is external to Clemson University (see previous section) or a faculty member in another Department at Clemson University. Additional requirements and procedures for the GS-2 for M.S. Non-Thesis students in Environmental Engineering and Science can be found on the EEES Department website.

Application for Graduation

Students will apply for graduation in iRoar early in the semester that they plan to graduate. (Student Record > Apply to Graduate). Graduation deadlines can be found on the Graduate School website. Students who apply to graduate but later determine that they need to postpone graduation should notify the Graduate Student Services Coordinator by email (copying their committee chair).

M.S. Non-Thesis Oral Examination

The final oral examination for M.S. Non-Thesis students consists of a short (15-20 minute) technical presentation based on the special project and questions on material from five courses that are selected by the student and the Advisory Committee chair. The examining committee is the same as the Advisory Committee listed on the student's GS-2 Form. The Non-Thesis exam takes place in a closed session.

Checkout and Exit Interview

Before graduation, students must complete a Checkout Form and an Exit Interview Form. When the form is completed, the student should contact the Graduate Student Services Coordinator and schedule an exit interview. The checkout form ensures that all research materials are provided to the advisor, labs are clean, and samples are archived or disposed of properly, etc. The exit interview is part of the assessment process for the faculty to continuously improve the curriculum and graduate experience for the students.

SECTION 5.2.3 – M.S. IN HYDROGEOLOGY (NON-THESIS OPTION)

The Master of Science in Hydrogeology allows students to investigate a wide range of problems focusing on groundwater geology and subsurface remediation. The curriculum is structured to give students a strong background that integrates field methods with quantitative analyses. This makes them highly competitive for careers in industry and government while preparing them as outstanding candidates for continuing studies in a Ph.D. program.

Requirements for the M.S. Non-Thesis Degree in Hydrogeology

Students pursuing the M.S. in Hydrogeology (Non-Thesis) must satisfy the following requirements:

- Minimum of 31 credit hours beyond the B.S. degree, none of which has been used to satisfy requirements for a previous degree, except for approved Bachelors-to-Graduate courses.
- None of the credit hours can be M.S. Thesis Research.
- Minimum of 1 credit hour of Hydrogeology seminar (GEOL 8610).
- Three credit hours of a Special Problems course (GEOL 8810) can count toward the 31 credit hours required.
- A minimum of 21 credit hours of the coursework must be approved 8000-level courses.

Additional degree program requirements and procedures for M.S. students pursuing the non-thesis option in Hydrogeology can be found on the EEES Department website.

Students in the non-thesis option are not eligible for research or teaching assistantship appointments but are eligible for graduate internships or other sources of support. A student who has received assistantship support at any time while a graduate student is not eligible for the non-thesis option except under rare circumstances that must be approved by the Graduate Student Services Coordinator and the EEES Department Chair.

M.S. Non-Thesis Advisory Committee

Each M.S. non-thesis student must have a major advisor who acts as chair of their Graduate Advisory Committee. The major advisor/committee chair must be a Graduate Directing Faculty (see the

Graduate School Policies and Procedures Handbook) and must be assigned to the EEES Department. The M.S. non-thesis student, in consultation with their major/research advisor, selects the other members of their Advisory Committee. If desired, an Advisory Committee co-chair may be selected. Faculty holding Graduate Advising or Graduate Directing Faculty status are eligible to serve as co-chair of the committee.

The M.S. Non-Thesis Advisory Committee must consist of a minimum of three members, a majority of whom must hold a Ph.D. degree. All Advisory Committee members must be Graduate Advising or Graduate Directing Faculty. At least two committee members (including the Chair) must be assigned to the EEES Department and at least 50% of the members must be from SCEEES. The majority of the M.S. Non-Thesis Advisory Committee, including the chair, must be comprised of full-time Clemson University tenured or tenure-track faculty. Additional requirements for M.S. Non-Thesis Advisory Committees in Hydrogeology can be found on the EEES Department website.

If appropriate, an external Advisory Committee member (non-Clemson University faculty) may be selected as described in the next section, subject to the parameters listed above.

External Advisory Committee Members

The appointment process for an external member (an individual not employed by Clemson University) to serve on a student's M.S. Advisory Committee must be initiated by the submission of a formal request from the student's major advisor/committee chair. External committee members are required to meet certain standards and must be approved well before the student's final exam. Students should contact the Graduate Student Services Coordinator to begin the approval process for an external committee member.

External committee member candidates must have, at minimum, an earned M.S. degree in a pertinent field and sufficient qualifications to be approved for serving on a M.S. Advisory Committee. Additional requirements and procedures for external advisory committee member appointments for M.S. students in Hydrology can be found on the EEES Department website.

Previously, individuals not employed by Clemson University were required to seek approval for appointment as an adjunct professor before they could serve on Advisory Committees. The external committee member procedure described above simplifies this process. Nevertheless, the EEES Department maintains an active list of adjunct faculty members who continue to be available for serving as external members of graduate student Advisory Committees.

Role of the Non-Thesis Advisory Committee

The M.S. Non-Thesis Advisory Committee will perform the following functions:

- Specify required co-requisite/remedial courses, if deemed necessary,
- Approve course work/GS-2 Plan of Study,
- Administer the final oral examination, and
- Make a recommendation to the Graduate School for awarding the degree.

Note: Co-requisite/remedial courses are specified by the Advisory Committee to resolve deficiencies in a student's educational background and must be completed before receipt of the M.S. degree.

Advisory Committee Selection and Plan of Study (GS-2 Form)

All graduate students will submit a Committee Selection and Plan of Study (sometimes called the GS-2 Form) to the Graduate School. This is a two-step process in iRoar, which serves the following purposes:

- Committee Selection – The official process of selecting individuals to serve on the Graduate Advisory Committee (Step 1 of the GS-2 Form)
- Plan of Study – The official documentation of courses/research credits utilized to satisfy degree requirements (Step 2 of the GS-2 Form).

The GS-2 Form should be completed as soon as the M.S. student and their advisor identify appropriate Advisory Committee members and determine the course of study that the student will pursue, but no later than the end of the second semester for M.S. students. Contact the Graduate Student Services Coordinator before starting the Committee Selection if a committee member is external to Clemson University (see previous section) or a faculty member in another Department at Clemson University. Additional requirements and procedures for the GS-2 for M.S. Non-Thesis students in Hydrogeology can be found on the EEES Department website.

Application for Graduation

Students will apply for graduation in iRoar early in the semester that they plan to graduate. (Student Record > Apply to Graduate). Graduation deadlines can be found on the Graduate School website. Students who apply to graduate but later determine that they need to postpone graduation should notify the Graduate Student Services Coordinator by email (copying their committee chair).

M.S. Non-Thesis Oral Examination

The final oral examination for M.S. Non-Thesis students consists of a short (15-20 minute) technical presentation based on the special project and questions on material from five courses that are selected by the student and the Advisory Committee chair. The examining committee is the same as the Advisory Committee listed on the student's GS-2 Form. The Non-Thesis exam takes place in a closed session.

Checkout and Exit Interview

Before graduation, students must complete a Checkout Form and an Exit Interview Form. When the form is completed, the student should contact the Graduate Student Services Coordinator and schedule an exit interview. The checkout form ensures that all research materials are provided to the advisor, labs are clean, and samples are archived or disposed of properly, etc. The exit interview is part of the assessment process for the faculty to continuously improve the curriculum and graduate experience for the students.

SECTION 6 – ONLINE/REMOTE GRADUATE DEGREE PROGRAMS OFFERED IN THE SCHOOL OF CIVIL AND ENVIRONMENTAL ENGINEERING AND EARTH SCIENCES

SECTION 6.1 – MASTER OF ENGINEERING DEGREE IN THE GLENN DEPARTMENT OF CIVIL ENGINEERING (ONLINE)

SECTION 6.1.1 – M.Eng. IN CIVIL ENGINEERING (ONLINE)

The Risk Management Master's degree program includes stackable certificates, allowing students to earn two certificates while receiving credit toward their advanced degrees. Pairing the Risk Engineering Certificate with the System Analytics Certificate or the Risk Management Certificate followed by a capstone project will meet the graduation requirements for the M.Eng. Risk Engineering and System Analytics degree. A Master's degree may not be the right choice for everyone; some students choose only to pursue one or more certificates. More information can be found on the CE website.

SECTION 6.2 – MASTER OF SCIENCE DEGREES IN THE DEPARTMENT OF ENVIRONMENTAL ENGINEERING AND EARTH SCIENCES (ONLINE)

SECTION 6.2.1 – M.S. IN ENVIRONMENTAL ENGINEERING AND SCIENCE (ONLINE)

The M.S. degree in Environmental Engineering and Science (M.S. EES) may be completed online. Students apply through the normal graduate school application process but must indicate their intent to pursue the online option. The expectation is that online M.S. students will select the non-thesis option and follow those applicable requirements. Online M.S. students who are working full time have the option to select a special project related to their employment. In rare cases, an online M.S. student may opt to follow the thesis option. If so, the online student will need to identify a thesis advisor, prepare a proposal, and write and defend a thesis. Online M.S. students who wish to pursue the thesis option should contact the Graduate Student Services Coordinator and/or the Graduate Program Coordinator.

Information about the focus area requirements for online M.S. EES students can be found on the EEES Department website.

Requirements for the Online M.S. Degree in Environmental Engineering and Science

Students pursuing the online M.S. in Environmental Engineering and Science (Non-Thesis) must satisfy the following requirements:

- Minimum of 31 credit hours beyond the B.S. degree, none of which has been used to satisfy requirements for a previous degree, except for approved Bachelors-to-Graduate courses.
- None of the credit hours can be M.S. Thesis Research.
- Minimum of 1 credit hour of EES seminar (EES 8610).
- Three credit hours of a Special Problems course (EES 8810) can count toward the 31 credit hours required.
- A minimum of 21 credit hours of the coursework must be approved 8000-level courses.

Additional degree program requirements and procedures for online M.S. students pursuing the non-thesis option in Environmental Engineering and Science can be found on the EEES Department website.

M.S. Non-Thesis Advisory Committee

Each online M.S. non-thesis student must have a major advisor who acts as chair of their Graduate Advisory Committee. The major advisor/committee chair must be a Graduate Directing Faculty (see the Graduate School Policies and Procedures Handbook) and must be assigned to the EEES Department. The online M.S. non-thesis student, in consultation with their major/research advisor, selects the other members of their Advisory Committee. If desired, an Advisory Committee co-chair may be selected. Faculty holding Graduate Advising or Graduate Directing Faculty status are eligible to serve as co-chair of the committee.

The M.S. Non-Thesis Advisory Committee must consist of a minimum of three members, a majority of whom must hold a Ph.D. degree. All Advisory Committee members must be Graduate Advising or Graduate Directing Faculty. At least two committee members (including the Chair) must be assigned to the EEES Department and at least 50% of the members must be from SCEEES. The majority of the M.S. Non-Thesis Advisory Committee, including the chair, must be comprised of full-time Clemson University tenured or tenure-track faculty. Additional requirements for online M.S. Non-Thesis Advisory Committees in Environmental Engineering and Science can be found on the EEES Department website.

If appropriate, an external Advisory Committee member (non-Clemson University faculty) may be selected as described in the next section, subject to the parameters listed above.

External Advisory Committee Members

The appointment process for an external member (an individual not employed by Clemson University) to serve on a student's M.S. Advisory Committee must be initiated by the submission of a formal request from the student's major advisor/committee chair. External committee members are required to meet certain standards and must be approved well before the student's final exam. Students should contact the Graduate Student Services Coordinator to begin the approval process for an external committee member.

External committee member candidates must have, at minimum, an earned M.S. degree in a pertinent field and sufficient qualifications to be approved for serving on a M.S. Advisory Committee. Additional requirements and procedures for external advisory committee member appointments for online M.S. students in Environmental Engineering and Science can be found on the EEES Department website.

Previously, individuals not employed by Clemson University were required to seek approval for appointment as an adjunct professor before they could serve on Advisory Committees. The external committee member procedure described above simplifies this process. Nevertheless, the EEES Department maintains an active list of adjunct faculty members who continue to be available for serving as external members of graduate student Advisory Committees.

Role of the M.S. Non-Thesis Advisory Committee

The M.S. Non-Thesis Advisory Committee will perform the following functions:

- Specify required co-requisite/remedial courses, if deemed necessary,
- Approve course work/GS-2 Plan of Study,
- Administer the final oral examination, and
- Make a recommendation to the Graduate School for awarding the degree.

Note: Co-requisite/remedial courses are specified by the advisory committee to resolve deficiencies in a student's educational background and must be completed before receipt of the M.S. degree.

Advisory Committee Selection and Plan of Study (GS-2 Form)

All graduate students will submit a Committee Selection and Plan of Study (sometimes called the GS-2 Form) to the Graduate School. This is a two-step process in iRoar, which serves the following purposes:

- Committee Selection – The official process of selecting individuals to serve on the Graduate Advisory Committee (Step 1 of the GS-2 Form)
- Plan of Study – The official documentation of courses/research credits utilized to satisfy degree requirements (Step 2 of the GS-2 Form).

The GS-2 Form should be completed as soon as the M.S. student and their advisor identify appropriate Advisory Committee members and determine the course of study that the student will pursue, but no later than the end of the second semester for M.S. students. Contact the Graduate Student Services Coordinator before starting the Committee Selection if a committee member is external to Clemson University (see previous section) or a faculty member in another Department at Clemson University. Additional requirements and procedures for the GS-2 for M.S. Non-Thesis students in Environmental Engineering and Science can be found on the EEES Department website.

Application for Graduation

Students will apply for graduation in iRoar early in the semester that they plan to graduate. (Student Record > Apply to Graduate). Graduation deadlines can be found on the Graduate School website. Students who apply to graduate but later determine that they need to postpone graduation should notify the Graduate Student Services Coordinator by email (copying their committee chair).

Online M.S. Non-Thesis Oral Examination

The final oral examination for online M.S. Non-Thesis students consists of a short (15-20 minute) technical presentation based on the special project and questions on material from five courses that are selected by the student and the Advisory Committee chair. The examining committee is the same as the Advisory Committee listed on the student's GS-2 Form. The Non-Thesis exam takes place in a closed session.

Checkout and Exit Interview

Before graduation, students must complete a Checkout Form and an Exit Interview Form. When the form is completed, the student should contact the Graduate Student Services Coordinator and schedule an exit interview. The checkout form ensures that all research materials are provided to the advisor, labs are clean, and samples are archived or disposed of properly, etc. The exit interview is part of the assessment process for the faculty to continuously improve the curriculum and graduate experience for the students.

SECTION 7 – BACHELORS-TO-GRADUATE PROGRAMS IN THE SCHOOL OF CIVIL AND ENVIRONMENTAL ENGINEERING AND EARTH SCIENCES

The Glenn Department of Civil Engineering and the Department of Environmental Engineering and Earth Sciences offer a variety of opportunities for undergraduate students to begin graduate coursework before completing their B.S. degree. Basic requirements for Bachelors-to-Graduate programs include:

- Senior Standing (minimum of 90 credit hours completed),
- Minimum 3.4 GPA, and
- Approval of the GS-6 Bachelors-to-Graduate Form by all required parties (undergraduate advisor, program coordinator of proposed graduate program, Department Chair of proposed graduate program, Graduate School officer).

Students interested in the Bachelors-to-Graduate program should consult with their undergraduate advisors about this option. Faculty Program Coordinators and Department Student Services Staff are also good resources. The following links include information on the different options for pursuing a Bachelors-to-Graduate program within the School of Civil and Environmental Engineering and Earth Sciences:

- B.S. Biosystems Engineering / M.S. Environmental Engineering and Science
- B.S. Civil Engineering / M.S. Civil Engineering
- B.S. Civil Engineering / M.S. Environmental Engineering and Science
- B.S. Chemical Engineering / M.S. Environmental Engineering and Science
- B.S. Environmental Engineering / M.S. Environmental Engineering and Science
- B.S. Mechanical Engineering / M.S. Environmental Engineering and Science
- B.S. Geology / M.S. Hydrogeology
- B.S. Biosystems Engineering / M.S. Biosystems Engineering
- B.S. Environmental Engineering / M.S. Civil Engineering