Glenn Department of

CIVIL ENGINEERING

Graduate Program Manual

Updated Fall 2023

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SECTION I ▪ Introduction

Welcome to the graduate program of the Glenn Department of Civil Engineering at Clemson University! Civil engineering is among the oldest disciplines at Clemson University, taught since the foundation of the University in 1889. Today, the Department is home to more than 450 undergraduate students, 100 graduate students, and 30 faculty. The graduate program focuses on convergent research related to global grand challenges involving infrastructure and the environment. The degree programs emphasize engineering practice and the advancement of engineering knowledge through research.

The Glenn Department of Civil Engineering falls under the umbrella of the College of Engineering, Computing, and Applied Sciences (CECAS), and the newly formed School of Civil and Environmental Engineering and Earth Sciences (SCEEES).

Degrees Offered

The Department offers graduate degree programs leading to the Master of Science and Doctor of Philosophy degrees. The Master of Science program has a thesis and non-thesis track.

Specialty Areas

The Glenn Department of Civil Engineering houses the following academic and research programs:

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

While applicants are required to select a specialty area on their graduate application, there are also opportunities for cross-disciplinary study.

The Civil Engineering Graduate Program Handbook

This document serves the following purposes:

- To provide information about the graduate program in civil engineering.
- To provide guidelines for satisfying graduate degree requirements.
- To supplement (but not override) the information contained in the *Graduate School Policies and Procedures Manual*.

SECTION 2 ▪ Admissions

Applying to the Program

Students who are interested in applying to the graduate program in civil engineering should begin by reviewing the website of the Office of Graduate Admissions. The Frequently Asked Questions link on the Admissions website will answer many questions about the application process. For more information specific to the Department, a list of Frequently Asked Questions is located on the CE website.

Applicants will submit the graduate application and all supporting materials to the Office of Graduate Admissions. Graduate Admissions releases applications to the Department for review when all the supporting material is received. Incomplete applications will not be reviewed. There is no application fee.

Supporting Materials and Required Tests

The Graduate Admissions website includes more information on required supporting material. All material will be submitted electronically to the University (paper documents are not required).

International applicants whose native language is not English are required to submit official language proficiency scores from one of the following tests:

- TOEFL iBT (minimum score of 80)
- TOEFL Essentials (minimum score of 8.5)
- Duolingo English Test (minimum score of 115)
- IELTS (minimum score of 6.5)
- PTE Academic (minimum score of 54)

Information on countries and institutions exempt from language score requirements is located here.

The Glenn Department of Civil Engineering does not require GRE scores but WILL accept them if an applicant wishes to submit them with their application packet.

The institution code for GRE and TOEFL scores is 5111. Applicants do not need to submit a departmental code.

Specialty Areas

Students applying to the Glenn Department of Civil Engineering will select one of the following specialty areas on the application:

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

The faculty in the area indicated on the application will review applications. For instance, the Structural Engineering faculty will only review applications to the Structural Engineering program. Accepted students will complete the course requirements of the specialty area in which they were originally accepted. Any post-admission change from one area to another must be approved by the faculty.

Deadlines and Application Reviews

Below are the deadlines for applying to the graduate program. Review of an application will not begin until all supporting material has been received by Graduate Admissions. Below are deadlines:

- Spring Admission – October 1st
- Fall Admission with full consideration for funding – February 1st
- Fall Admission (final) – April 1st
- Summer Admission – Only granted on a case-by-case basis

International applicants should also follow the deadlines of the International Services office regarding the issuance of I-20 forms. Since obtaining a visa can take up to several months, international students are encouraged to apply as soon as possible. Contact Clemson University's International Services office for questions related to the I-20, visa process, etc.

Applications completed after the final deadlines will be reviewed for the next enrollment cycle. (E.g. – Fall 2024 complete after April 1 will be reviewed for Spring 2025.)

Direct Admission from B.S. to Ph.D.

The decision to admit a student into the Ph.D. program without an M.S. degree is solely at the discretion of the faculty during the application review process. A student accepted directly into the Ph.D. program has demonstrated the following:

- Academic excellence in their undergraduate program
- Top language scores (international students)

- Undergraduate research experience

During application review, the faculty may decide to accept a direct-entry Ph.D. applicant into the M.S. degree program if it is determined to be a more suitable option for the student.

Direct-entry Ph.D. students have the option of completing their M.S. en route to the Ph.D., upon approval of their advisor. The Graduate Student Services Manager can provide more information on the process. (See Section 6 for more information on M.S. en route to Ph.D.)

Transfer Students

Graduate students who are interested in transferring to Clemson from another institution will undergo the same application submission and review process as any other applicant. The *Graduate School Policies and Procedures Manual* provides information about the number of credits allowed to transfer to Clemson from another institution. Acceptance of transfer credits is at the discretion of the faculty in the specialty area in which a student applies.

Transfer applicants should consult with a faculty member in their intended specialty area as early as possible to seek approval for transfer courses. Transfer students will list approved transfer courses on their Plan of Study. (See Sections 4 or 5 for more information.) To ensure accuracy, transfer students are strongly encouraged to submit an initial Plan of Study listing the approved transfer courses during their first semester at Clemson.

Types of Admission

Civil Engineering offers two types of admission into the graduate program:

- Full Status – The application is accepted and the applicant has submitted final official transcripts reflecting graduation from previous intuition(s).
- Conditional – The application is accepted but the applicant has not submitted final official transcripts reflecting graduation from previous institution(s).

The Glenn Department of Civil Engineering awards conditional admission only for the reason stated above. The Department does not admit students conditionally as part of an intensive language program (e.g., ELS). Likewise, Civil Engineering does not offer any type of provisional acceptance, per Graduate School policy.

Non-Degree Applications

Following are some scenarios when a non-degree application is appropriate:

- A Clemson CE undergraduate whose academic background (e.g., GPA, grades in certain courses, etc.) is not as strong as typically accepted applicants into the M.S. program. A student in this situation should

only submit a non-degree application at the recommendation of a faculty member in their intended specialty area. The student and faculty advisor will set academic goals for the student to achieve as a non-degree student before reapplying to the M.S. program.

- A student whose undergraduate degree is not in civil engineering may apply as a non-degree student to satisfy undergraduate prerequisite courses in preparation for a degree-seeking program, with guidance from faculty in their intended specialty area.
- A student who wants to take a course as a transient student (for professional development or to transfer to another university) but does not plan to seek a degree in CE at Clemson.

More information on applying as a non-degree student is located on the Graduate Admissions website. Additionally, non-degree students who intend to pursue a degree in civil engineering should refer to the *Graduate School Policies and Procedures Manual* for information about the number of credits that can transfer to the M.S. program.

Students moving from non-degree to degree-seeking status must reapply for admission to the degree program.

Deferring Admission

Accepted students who are unable to enroll during the semester in which they originally applied can request permission to defer their admission for up to one year. To request permission to defer admission, students should email the Graduate Student Services Manager with their full name, XID number, original start term, and the requested start term. The Graduate Student Services Manager will submit a Change of Term form to Graduate Admissions. The student will receive an updated admission letter with the new start date.

Please note that requests for deferral for accepted Ph.D. students are subject to approval by the academic advisor, depending on several factors. The Glenn Department of Civil Engineering does not guarantee that funding will be available for students who defer their admission.

Bachelors-to-Graduate Program

Clemson Civil Engineering undergraduate students interested in pursuing a graduate degree "in-house" should consider the Bachelors-to-Graduate program, which allows eligible students to use approved 6000-level coursework to satisfy the requirements of their undergraduate degree (Technical Requirements) and future graduate degree. Eligibility requirements are listed below.

- Senior standing during the semester in which they begin taking graduate courses.
- Minimum cumulative GPA of 3.4.
- Approval from an undergraduate advisor that 6000-level course(s) will satisfy undergraduate degree requirements.
- Approval of 6000-level course(s) from a faculty member in the student's proposed graduate specialty area.

To apply for this program, students will complete a GS6 Bachelors-to-Graduate form and submit it by email to the Graduate Student Services Manager. Participants in the Bachelors-to-Graduate program do not need to submit a graduate application.

SECTION 3 ▪ Accepted Students

Checklist for Newly Accepted Students

The Graduate School has created a comprehensive checklist for newly admitted students, which includes information on topics ranging from creating their student account to health insurance information (and much more). Newly accepted students are strongly encouraged to review this checklist before enrolling at Clemson. It answers most questions that new students have about beginning their graduate program.

New International Students

The Glenn Department of Civil Engineering is very pleased to welcome new international students into our graduate program! In addition to the above-referenced checklist for new students, the International Services office has developed an Arrival Guide for new international students, which will help navigate through the process of enrolling at Clemson. Please contact the International Services office for any questions related to the I-20 document, visa process, etc.

Who is my Advisor?

M.S.-Thesis and Ph.D. students who have accepted assistantship positions and will be conducting research with a Civil Engineering faculty member will be advised by their research advisor.

M.S. Non-Thesis students will be advised by the faculty coordinator of their concentration area:

- Construction Engineering and Management – Dr. Kalyan Piratla
- Construction Materials – Dr. Prasad Rangaraju
- Geotechnical Engineering – Dr. Qiushi Chen
- Structural Engineering – Dr. Weichiang Pang
- Transportation Engineering – Dr. Pamela Murray-Tuite
- Water Resources – Dr. Abdul Khan

iRoar, Course Selection, and Registration

iRoar is the course information portal that Clemson University students use to register for classes, pay bills, apply for graduation, etc. New students will be able to access iRoar after they create their Clemson account. Clemson Computing and Information Technology (CCIT) can assist with problems creating accounts. Additionally, the CCIT website is a helpful resource when logging in to iRoar for the first time.

Clemson University uses two-factor authentication application (Duo) for logging into iRoar, Clemson email, etc. More information about setting up Duo on your device(s) is located here. Faculty advisors can provide guidance related to course selection and area requirements. Contact the Graduate Student Services Manager for general information about degree requirements, questions about the schedule, and

registration issues. To prevent problems with billing accuracy (particularly for students on assistantship), students should register for classes before bills post for the upcoming semester.

Canvas

Canvas is the course integration program that many instructors use to share information about their courses, including posting assignments, grades, and class resources. Most classes will have a course page in Canvas, so it is important to be familiar with this program and to "allow notifications" on your device(s). Additionally, some University entities have created Canvas workgroups to share resources and disseminate information. Civil Engineering has the following Canvas workgroups for graduate students:

- CE_GradStudents – For all CE graduate students. Please refer to this resource for almost any information that you need during your graduate program.
- CE_LabAssistants – For Lab TAs.

Tuition and Fees and Bill Pay

The Tuition and Fees Calculator is a helpful tool for determining estimated academic tuition and fees each semester. When using the calculator, be sure to click on the "Graduate" tab at the top of the page before entering any information. Contact Student Financial Services with questions about bills, etc.

Students will use iRoar to view and pay bills or to set up a tuition payment plan.

Arrival and Orientation

Refer to the Clemson University Academic Calendar for the start date of each semester. International students on assistantship should plan to arrive at least two weeks before the beginning of the semester to allow time for all necessary paperwork to be processed. All students should arrive in time to attend all relevant in-person orientation sessions.

The Glenn Department of Civil Engineering holds New Student Orientation each semester on Tuesday before classes begin. All incoming students are required to attend, including those who attended Clemson for their undergraduate degrees. Additionally, the Graduate School and the International Services Office hold orientation sessions and will send out more information on dates, times, and locations.

SECTION 4 ▪ M.S. Degree Requirements

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 Engineering
- Water Resources

Each specialty area has developed a resource guide for its students, which includes course information and other requirements (see Appendix). 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*.

There are two pathways to the M.S. degree in civil engineering: a **research option** (Thesis) and a **coursework option** (Non-Thesis, but some specialty areas may require a special project). The following sections will provide information on each pathway.

M.S.-Thesis Degree Requirements

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.

M.S.-Thesis Graduate Committee

All M.S.-Thesis students will select a three-member Graduate Committee, generally comprised of a Chair and two committee members. (In some cases, a Co-Chair may replace one of the committee members.) The Committee Chair will be a student's research advisor and will provide guidance on selecting other members of the committee. The purpose of a Graduate Committee for M.S.-Thesis students is to recommend classes, provide guidance on research, and evaluate the thesis defense during a student's final semester. The majority of the committee, including the Chair, must be comprised of Clemson University

faculty who hold full-time, tenured, or tenure-track positions. Either the major advisor or at least half of the committee must hold rank in the program offering the degree. Part-time, visiting, and other non-tenure track faculty employed by Clemson University may serve on an M.S.-Thesis graduate committee but cannot be Committee Chair. Additionally, requests for external committee members (not employed by Clemson University) must be approved by the CE Tenure, Promotion, and Review Committee. Contact the Graduate Student Services Manager for more information on the approval process for external committee members (e.g., faculty from other departments/institutions).

M.S.-Thesis and Thesis Defense

M.S.-Thesis students defend and submit their thesis during the final semester. Students who are pursuing the thesis pathway should make sure that they are aware of all relevant deadlines related to their thesis defense and manuscript submission. The Graduate 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.

There are several resources on campus to guide M.S.-Thesis students through the writing process. GRAD 360° offers a variety of professional development opportunities for graduate students, including writing workshops. Additionally, the Subject Librarian for CECAS can provide guidance on reference questions and resources for research. Another helpful resource for guidance on formatting and the thesis submission process is the Manuscript Review Office.

After a student presents their thesis defense, the Graduate 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.

M.S.-Non Thesis Degree Requirements

Most all self-funded M.S. students will follow the non-thesis pathway. 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 coursework beyond the undergraduate degree, none of which satisfied requirements for a previous degree, except for approved Bachelors-to-Grad courses.
- At least half of the coursework must be approved 8000-level courses.

M.S.-Non Thesis Graduate Committee

All M.S.-Non Thesis students will select a three-member Graduate Committee, generally comprised of a Chair and two committee members. The purpose of a Graduate Committee for Non-Thesis students is to approve coursework and give a final comprehensive exam, if applicable (see next section). The Committee Chair is usually the faculty coordinator for a student's specialty area and provides input for selecting the

other two members of the committee. The majority of the Graduate Committee, including the major advisor, must be comprised of Clemson University faculty who hold full-time, tenured or tenure-track positions. Either the major advisor or at least half of the committee must hold rank in the program offering the degree. Part-time, visiting, and other non-tenure track faculty employed by Clemson University may serve on an M.S.-Non Thesis graduate committee but cannot be Committee Chair.

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

Non-Thesis students should check with their Graduate 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 deadlines that are required for M.S.-Thesis and Ph.D. 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 to request a GS-7M form.

M.S. Committee Selection and Plan of Study (GS-2)

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

1) Committee Selection – The official process of selecting individuals who will serve on a student's graduate committee.
2) Plan of Study – Documents courses/research credits used to satisfy degree requirements.

All Masters students (regardless of thesis or non-thesis) 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 1) a committee member is a faculty member in another Department at Clemson or 2) a committee member is not a Clemson University employee.

Time Limit for Completing M.S. Degree

Consult the *Graduate School Policies and Procedures Manual* for information on the time limit for completing the M.S. degree.

M.S. Thesis and M.S. Non-Thesis Checklists

See the Appendix of this document for checklists of M.S.-Thesis and M.S. Non-Thesis degree requirements.

SECTION 5 ▪ Ph.D. Degree Requirements

Students entering the Ph.D. program in civil engineering will follow the requirements of the specialty area that they selected on their graduate application:

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

Faculty advisors will provide guidance on course requirements for Ph.D. students. 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 Manual*.

Requirements for the Ph.D. Degree

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 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. Graduate Committee

Ph.D. students will select a minimum of four-member Graduate Committee, generally comprised of a Chair and three committee members. (In some cases, a Co-Chair may replace one of the committee members.) The Committee Chair will be a student's research advisor and will provide guidance on selecting the other members of the committee. The purpose of a Graduate Committee for Ph.D. students is to provide guidance on research, recommend courses, and evaluate the dissertation defense during a student's final semester. The majority of the Graduate Committee, including the major advisor, must be comprised of Clemson University faculty. The committee chair and at least half of the committee members (including chair) must hold rank in the Department of Civil Engineering. In addition, at least four members of the committee must hold a Ph.D. degree. Additionally, requests for external committee members (not

employed by Clemson University) must be approved by the CE Tenure, Promotion, and Review Committee. Contact the Graduate Student Services Manager for more information on the approval process for external committee members.

Ph.D. Committee Selection and Plan of Study (GS-2)

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

1. Committee Selection – The official process of selecting individuals who will serve on your Graduate Committee.
2. Plan of Study – Documents courses/research credits used to satisfy your 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 1) a committee member is a faculty member in another Department at Clemson or 2) a committee member is not a Clemson University employee.

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 Graduate Committee; students should discuss the format with their Graduate 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 proposal defense/comprehensive exam 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 Graduate Committee will report the results to the Graduate School using the following two forms:

1. GS5D – Results of the Comprehensive Exam and Candidacy Form
2. 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.

Ph.D. Dissertation Defense:

Ph.D. candidates will defend and submit their dissertations during their final semester. Refer to the

Graduate School's Graduation Deadlines for guidance on scheduling the defense and submitting the dissertation to the Manuscript Review Office. The Graduate Committee will review a student's final dissertation prior to the defense – students should work with their Committee Chair to determine the deadline for submitting the dissertation to the Committee.

There are several resources on campus to guide Ph.D. students in the writing process. GRAD 360° offers a variety of professional development opportunities for graduate students, including writing workshops. Additionally, the Subject Librarian for CECAS can provide guidance on reference questions and resources for research. Another helpful resource is the Manuscript Review Office, for guidance on formatting and submitting the dissertation.

At the conclusion of the dissertation defense, the Graduate 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.

Time Limit for Completing Ph.D. Degree

Consult the *Graduate School Policies and Procedures Manual* for information on the time limit for completing the Ph.D. degree.

Ph.D. Checklist

See the Appendix of this document for checklists of Ph.D. requirements.

SECTION 6 ▪ Enrolled Students

Student Services

For general information about the graduate program, information about required forms, policies and procedures, graduation, office space, university resources, etc. contact the Graduate Program Student Services staff for the Glenn Department of Civil Engineering.

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

Ms. Sarah Pruitt
Student Services Coordinator
109 Lowry Hall
shousan@clemson.edu

Changing Specialty Areas

Students will complete the degree requirements for the specialty area in which they were accepted. Any requests to change to a new specialty area after enrolling are subject to approval by the faculty in the desired specialty area. A student seeking to change to a new area may be required to provide transcripts or other supporting materials, and the decision to approve the change is at the discretion of the faculty.

Students on assistantship who request to change concentration areas should not expect to receive funding if they change to a new area.

M.S. en Route to Ph.D.

Students who are accepted directly into the Ph.D. program without an M.S. degree have the option (upon approval of 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:

- First, talk to your advisor to determine if this is a viable plan.
- Consider that courses used for the M.S. Plan of Study cannot be included on the Ph.D. Plan of Study.
- All requirements for each degree (in terms of coursework, research hours and 8000-level M.S. requirements) must be satisfied. There are no shortcuts, double-dips, etc.
- Do not wait until the last minute to decide – this decision should be made before the beginning of the final M.S. semester.

For some students, it makes sense to pursue the M.S.-Thesis pathway while pursuing an M.S. en route to Ph.D. For others, the best option is to pursue the M.S. Non-Thesis pathway – faculty advisors can provide guidance on the best choice for each situation. The table below summarizes

the requirements for each degree offered by the CE Department.

Ph.D. Requirements	M.S. Thesis	M.S. Non-Thesis
12 credits coursework	24 credits of coursework	30 credits of coursework
18 credits of research	6 credits of research	0 credits of research

Direct entry 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. This form should be completed and routed to your Graduate Committee for signatures.

Students accepted into the M.S. program who want to pursue the M.S en route to Ph.D. option should talk to their advisor and the Graduate Student Services Manager for more information.

Graduate Offices

Lowry Hall contains a limited amount of office space for graduate students. The Graduate Student Services Coordinator is responsible for assigning desk space, with Ph.D. students and M.S. Thesis students receiving priority. The graduate offices are keyless – students will receive a door combination to enter their assigned office.

Graduate students assigned to a desk in Lowry will receive a user contract for the year (see Appendix for sample). Failure to abide by the terms of the contract will result in loss of desk assignment.

CE Graduate Student Collaboration Lab

The Graduate Student Collaboration Lab is a space in the graduate office wing of Lowry Hall, which provides space for students to meet, take breaks, have meals, etc. There is a kitchen area and a space for studying. Users are expected to follow the posted rules, most importantly including keeping the space clean and being respectful for other users.

Issues with the Graduate Student Collaboration Lab should be addressed with the Graduate Student Services Manager or the Student Services Coordinator.

SECTION 7 ▪ Registration

Registering for Classes

Refer to the Academic Calendar for the dates related to registration for upcoming semesters. Graduate students are strongly encouraged to register for their classes during the registration period each semester, which will reduce the risk of billing and to ensure that classes are not dropped due to low enrollment.

M.S. and Ph.D. Research Sections (CE 88910 and CE 9910)

Each faculty member in Civil Engineering has a section of CE 8910 and CE 9910 for their M.S.-Thesis and Ph.D. students. The section number for a faculty member does not change from semester to semester – if your advisor is assigned to Section 019 for CE 8910, they are always assigned that section.

Summer M.S. and Ph.D. Research Sections (CE 8910 and CE 9910)

Civil Engineering offers sections of CE 8910 and CE 9910 in the Summer I, Summer II, and Long Summer terms for M.S.-Thesis and Ph.D. students who are on assistantship or graduating in August. As noted below the section numbers indicate if a course will be taught in the Long Summer, Summer I, or Summer I term:

- Long Summer Term – Sections 0XX (mid-May – early August)
- Summer I Term – Sections 1XX (mid-May – end of June)
- Summer II Term – Sections 2XX (end of June – end of July)

Variable Credit Courses

M.S. and Ph.D. Research sections (CE 8910 and CE 9910) and Special Problems I and II (CE 8890 and CE 8900) are known as variable credit courses, meaning that students must specify the intended number of credit hours when they register. Because iRoar automatically defaults to one credit for these courses, students will need to adjust the credit hours when they register.

Students who take CE 8890 or 8900 must get permission from the faculty before enrolling in a section.

Pass/Fail Courses

Graduate students are only allowed to take CE 8910/CE 9910 on a Pass/Fail basis.

CE 6910 and CE 8930

CE 6910 and CE 8930 are selected topics courses that cover a variety of subjects relevant to civil engineering. In most cases, these courses are newer courses with a temporary course number. The CE Department offers multiple sections – covering different topics – of CE 6910 and CE 8930 each semester. Students can take multiple sections of CE 6910 and CE 8930 (upon approval of their advisor) while a graduate student at Clemson University.

While CE 6910 and CE 8930 ARE included on a student's Plan of Study, the individual course topics are not listed. However, academic transcripts will correctly reflect the titles of each selected topic course that a student has taken. Contact the Graduate Student Services Manager if you have problems with registering for a selected topics course.

Maximum Credit Hours Allowable for Graduate Students

Student Category	Semester	6-Week Session	Full Summer (12 weeks)
Full-time students	15	6	12
Grad Assistant 10 hours	15	6	12
Grad Assistant 11+ hours	12	6	12
Full-time employees	9	6	6

Assistance with Registration Issues

For technical assistance related to registration in iRoar, please email ITHELP@clemson.edu. Be sure to provide information as specific as possible. For other registration issues, contact the Graduate Student Services Manager.

Canvas

Many classes use Canvas, which is the course integration platform for posting grades, submitting assignments, viewing class resources, etc. Please set your preferences to receive notifications in Canvas.

For technical issues, email ITHELP@clemson.edu.

Tuition and Fee Calculator

The Tuition and Feel Calculator is a helpful tool for estimating tuition and fees for the upcoming semester. When using this tool, be sure to click the "Graduate" tab before entering any information.

SECTION 8 ▪ Assistantships

Graduate Assistantships

Graduate assistantships are awarded based on several of factors, including availability of funding, previous academic credentials, and compatibility of research interests between a student and faculty member. Applicants who seek an assistantship are not required to submit a separate application. However, it is advisable for students who are interested in research to indicate their specific research interests and background, and how they align with research conducted by faculty in the CE Department, in their personal statement.

Students selected for an assistantship are notified by email, generally within a few weeks after they receive their official acceptance from the Graduate School. Official notification from the Department will include assistantship contract (see Appendix for example) and a cover letter with more information. Contracts are created for a maximum period of 12 months and are renewable based upon annual evaluation feedback, satisfactory progress towards the degree, and availability of funds.

Clemson University abides by the Council of Graduate School's April 15 Resolution, which states that students are not required to respond to an assistantship offer for the upcoming academic year before April 15.

Assistantship Assignments

In all cases, assistantships must be fairly and equitably assigned, and the workload must be realistic, ensuring that students can reasonably complete the duties of the assistantship while maintaining academic responsibilities. The assistantship contract will include expectations of the number of hours a student will work (e.g., 10, 15, or 20 hours) per week.

Types of Assistantships

There are several types of graduate assistantships in the CE Department, and it is possible for a student to have more than one role as a graduate assistant. (e.g., Graduate Research Assistant for 10 hours and Graduate Grading Assistant for 10 hours). Following is a summary of each type of assistantship:

Graduate Laboratory Assistants (GLA)

- Decided upon by the Graduate Program Coordinator, based on the recommendations of faculty in each concentration area.
- Assignment linked to a specific course/lab section.
- Responsibilities may include laboratory preparation, instruction, supervision, and related duties.
- Renewable on a semesterly basis.

Graduate Grading Assistant (GGA)

- Decided upon by the Graduate Program Coordinator, based on the recommendations of faculty in each concentration area.
- Assignment linked to a specific course.

- Responsibilities may include grading homework and assignments, timely return of graded work with appropriate feedback, tracking grades, assisting with proctoring exams, and assisting instructor with other course needs. (Please note – GGAs are not permitted to grade exams.)
- Renewable on a semesterly basis.

Graduate Research Assistantships (GRA)

- Decided upon by faculty; connected with a funded research grant.
- GRA positions can be offered at any time.
- M.S. students who receive GRA positions must be pursuing the thesis pathway.
- Renewable for up to one year.

Graduate Teacher of Record (GTR)

- Awarded to senior Ph.D. students who already have a funding commitment.
- Students assigned as GTR on a semester-to-semester basis.
- Students must have completed at least 18 hours of coursework in the teaching area, have a GS-2 on file with the Graduate School, and be under supervision of a faculty member in the teaching area.

New Graduate Assistants

New graduate assistants will meet with the CE Payroll Coordinator in 110 Lowry Hall as soon as possible after arriving on campus to complete the documents for their assistantship. This should be one of the first steps for new graduate assistants when they arrive on campus. A delay in meeting with the Payroll Coordinator will result in a delay in receiving pay.

Under no circumstances should a student begin working before the hiring process is completed and approval to work is granted.

See Appendix for step-by-step processes for being hired by the Glenn Department of Civil Engineering.

Special Considerations for International Students

The International Hiring Department in Human Resources has some helpful information on the website, which will guide new graduate assistants through the hiring process.

New international graduate students who will be receiving an assistantship should plan to arrive in the United States at least two weeks before classes begin at Clemson University. Arriving early will require additional personal funds for initial living expenses, but it may prevent delays in being paid.

Minimum Enrollment Requirements for Graduate Assistants

Enrollment requirements for graduate assistants are as follows:

- Fall and spring assistantships – Minimum of 9 credits.
- Full summer assistantships (both terms) – Minimum of 6 credits in the Long Summer term.
- Half summer assistantships (one term) – Minimum of 3 credits in the funded term.

Only graduate-level courses (6000-level and higher) will count towards the minimum enrollment requirement for graduate assistants. While graduate students are allowed to enroll in undergraduate courses 4000-level and below), those credits will not count towards minimum enrollment requirements.

Annual Evaluation of Graduate Assistants

Per Graduate School policy, an annual evaluation is required of all continuing graduate students. The evaluation process in Civil Engineering takes place in May each year. A copy of the Graduate Assistant Evaluation Checklist form is located online and in the Appendix of this document.

The evaluation process may vary from person to person. However, it is the student's responsibility to initiate the process. Below are the steps:

Continuing students are not eligible for an assistantship in the upcoming academic year if they do not have an evaluation on file for the previous year. Contact the Graduate Student Services Manager for questions about the evaluation process.

Termination of Assistantships

Graduate Assistantships can be terminated for unsatisfactory performance of assigned duties, by falling below a 3.0 GPA, being placed on academic probation or suspension, by being placed on disciplinary probation or suspension, or any changes to a student's specialty area or advisor.

Hourly Employment

Occasionally, students are hired by faculty to work on an hourly basis. Although some graduate assistants may also be hourly employees, hourly employment is not a part of the assistantship and is not documented in the assistantship contract. Hourly employees are not entitled to any type of tuition waiver/fee reduction.

Hourly students receive a predetermined pay rate for a defined number of hours per week. Under no circumstances should a student exceed their approved number of work hours per week.

SECTION 9 ▪ Graduation

Applying for Graduation

Refer to the Graduate School's Graduation Deadlines for dates relevant to graduation. Be familiar with these dates prior to your final semester.

Students will apply for graduation in iRoar (Student Self Services > Apply to Graduate) at the beginning of their final semester. Applying after the deadline will result in late fees. The most common reason that results in a student applying late is a missing Committee Selection/Plan of Study. Both of these documents are required before a student can apply for graduation – this is just one reason why it is important to submit the documents early rather than later.

Manuscript Information for M.S. – Thesis and Ph.D. Students

All of the information related to submitting a thesis or dissertation is located on the Manuscript Review Office website. Masters Thesis and Ph.D. candidates will schedule their defenses early enough to allow sufficient time for content and formatting editing before the final deadline to submit their manuscript.

The Cooper Library digitally archives all thesis and dissertations, thus students are NOT required to order hardbound copies of their manuscript.

Delaying Graduation

Occasionally, it is necessary for a student to delay their graduation. If you find that you will not be able to graduate during the semester in which you applied, follow the steps below:

- Talk with your advisor to determine a timeline and a plan to move forward.
- Contact the Graduate Student Services Manager to ask to have your name removed from the graduation list.
- Register for the upcoming semester. (International students – remember that International Services requires you to complete a Reduced Course Load Request e-Form if you plan to register for less than 9 credits.)
- Apply for the next graduation ceremony before the deadline.

Graduation Supplies

Refer to the Barnes and Noble Bookstore website to purchase graduation supplies (caps and gowns, graduation announcements, etc.).

Graduation Ceremonies

Clemson University awards degrees at three graduation ceremonies each year, held in May, August, and December. All M.S. students are recognized at ceremonies held at Littlejohn Coliseum, while Ph.D. candidates are recognized at a separate ceremony, the Doctoral Hooding Ceremony, held at the Brooks Center for Performing Arts.

Clemson University will mail diplomas to new graduates in the weeks following their ceremony. Please allow at least one month after your graduation ceremony to receive your diploma. Contact Enrolled Student Services if there are questions about receiving your diploma.

After Graduation

Graduate alumni are encouraged to keep in touch with the Department through social media, including Facebook, Twitter, Instagram, and LinkedIn.

Following are some additional information that may be useful after graduation:

- Visit this link to request official transcripts.
- Alumni have access to the services provided by the Center for Career and Professional Development for one year after graduation. This includes career fairs and all resources.
- Contact the National Council of Examiners for Engineering and Surveying (NCEES) for all things related to FE/PE.

Glenn Department of
CIVIL ENGINEERING

APPENDICES

Glenn Department of
CIVIL ENGINEERING

SPECIALTY AREA GUIDES

Construction Engineering & Management
Construction Materials
Geotechnical Engineering
Structural Engineering
Transportation Systems
Water Resources

Glenn Department of
CIVIL ENGINEERING
Clemson University

Construction Engineering and Management
Program Information for Graduate Students

1. Information for Graduate Students

The Glenn Department of Civil Engineering at Clemson University offers high-quality civil engineering education founded on technical and professional skill development with a global perspective. The program emphasizes creativity, vision, teamwork, and environmental awareness, supporting the changing needs of the students, the state, the engineering profession, and society by generating, disseminating, and applying knowledge in the field of civil engineering.

The department offers graduate programs at the M.S. and Ph.D. levels in Construction Engineering and Management (CEM) in which we have established both educational and research strengths. The CEM group develops efficient decision-making processes to support construction and management of the built environment in a safe and sustainable manner. To achieve this objective, the CEM group offers graduate instruction and research opportunities in the areas of construction project management, construction safety, digital technologies and automation, sustainable and resilient built environment, and human-centered design processes.

2. Apply to Civil Engineering with Specialization in Construction Engineering & Management

More information on applying to the program can be found on the Graduate Admissions website. Admission decisions are made independently of funding decisions; hence, gaining admission does not imply that funding is available or will be offered. The Graduate School officially notifies students of admissions decisions, not the Department of Civil Engineering or the Civil Engineering Graduate Coordinator. The following sections describe various aspects of the application process.

2.1 Admission Requirements

Applicants having engineering degrees from programs that are not accredited by the Engineering Accreditation Commission (EAC) of ABET must demonstrate the following:

A. Thirty-two college semester credit hours of higher mathematics and basic sciences

1. Credits in mathematics must be beyond algebra and trigonometry and must emphasize mathematical concepts and principles rather than computation. Courses in differential and integral calculus are required. Additional courses may include differential equations, linear algebra, numerical analysis, probability and statistics, and advanced calculus.

2. Credits in basic sciences must include at least two courses. These courses must be in general chemistry, general calculus-based physics, or general biological sciences; the two courses may not be in the same area. Additional basic sciences courses may include earth sciences (geology, ecology), advanced biology, advanced chemistry, and advanced physics. Computer skills and/or programming courses may not be used to satisfy mathematics or basic science requirements. Basic engineering science courses or a sequence of courses in this area are acceptable for credit but may not be counted twice.

B. Sixteen college semester credit hours in general education that complements the technical content of the curriculum

1. Examples of traditional humanities/social sciences courses in this area are philosophy, religion, history, literature, fine arts, sociology, psychology, political science, anthropology, economics (micro and macro), professional ethics, and social responsibility. Examples of other general education courses deemed acceptable include management (such as organizational behavior), accounting, written and oral communications, business, and law.
2. No more than 6 credit hours may come from courses in management, accounting, business, or law. Courses in engineering economics, engineering management, systems engineering/analysis, production, and industrial engineering/management will not be counted. Language courses in the applicant's native language are not acceptable for credit; no more than 6 credit hours of foreign language courses are acceptable for credit. Native language courses in literature and civilization may be considered in this area. Courses that instill cultural values are acceptable, while routine exercises of personal craft are not.

C. Forty-eight college semester credit hours of engineering science and/or engineering design courses

1. Courses in engineering science must be taught within the college/faculty of engineering and must have their roots in mathematics and basic sciences but carry knowledge further toward creative application of engineering principles. Examples of approved engineering science courses are mechanics, thermodynamics, heat transfer, electrical and electronic circuits, materials science, transport phenomena, engineering economics, and computer science (other than computer programming skills).
2. Courses in engineering design must stress the establishment of objectives and criteria, synthesis, analysis, construction, testing, and evaluation. Graduate-level engineering courses may be included to fulfill curricular requirements in this area.

Consideration for Prospective Graduate Students with Non-Engineering Bachelor's degrees: For students with non-engineering bachelor's degrees, additional coursework beyond what is required for an M.S.C.E. degree may be required.

3. The Master of Science Degree

3.1 Overview

Students pursuing a Master's degree must submit the Plan of Study (GS-2) by the middle of their second semester following matriculation. The Plan of Study represents your individual curriculum as recommended by your advisory committee. It must adhere to departmental as well as university policies. The total number of graduate credits required for the degree is determined by your advisory committee, consistent with the specific program guidelines and Graduate School policy. These credits constitute the core of your graduate degree curriculum. All transfer courses listed on the GS-2 must

conform to the policies on transfer courses. These documents may evolve, with advisory committee approval, throughout the course of your degree program, and changes should be reviewed and approved by your committee, and a new GS-2 form submitted whenever a change occurs.

Deadlines — Students pursuing a Master's degree must submit the Plan of Study by the middle of their second semester following matriculation. If you don't meet these deadlines, you may be blocked from registering for courses until you submit a Plan of Study.

3.1.1 Master of Science Thesis Option **(30 credits)*:*** A minimum of 24-course credits (not including CE 8910 – Masters Research) is required. Students may take a maximum of 12 credits of 6000-level courses, must take a minimum of 12 credits of courses at the 8000-level, and must take at least 6 credits of CE 8910 (Masters Research). Upon completing the research and documenting it in an M.S. thesis, students will be required to pass a public oral defense. The student's graduate advisory committee is selected by the student after consultation with the student's research advisor.

3.1.2 Master of Science Non-Thesis Option **(30 credits)*:*** Students may take a maximum of 15 credits of 6000-level courses and must take a minimum of 15 credits of courses at the 8000 level, with a minimum of 30 total credits. All M.S. Non-Thesis option students will have committee chairs and committee members assigned by the graduate student coordinator for the M.S. Non-Thesis option degree.

The Plan of Study should include at least ***seven*** 3-credit hour CE courses (21 credits) including at least ***four*** 8000-level CE courses offered by the CEM program. The current offerings from the CEM program are the following:

CE 8930	Schedule Impact Analysis
CE 8930	Sustainable Built Environments
CE 8400	Project Management Applications
CE 8410	Underground Construction
CE 8310	Digital Construction Project Delivery
CE 6840	Design Thinking for Sustainable System Design
CE 6830	Construction Safety & Incident Analysis
CE 6390	Equipment Selection and Maintenance
CE 6350	Infrastructure Planning and Management
CE 6340	Cost Estimating and Project Control
CE 6330	Planning and Scheduling
CE 6310	Building Information Modeling in Construction Management

*When courses are not offered in the Glenn Department of Civil Engineering, seek approval from the graduate program coordinator to substitute the required courses. Students may consider taking elective courses offered by the Nieri Family Department of Construction Science and Management.

3.2 Bachelor's-to-Graduate Options:

The Bachelor-to-Graduate program in Civil Engineering provides eligible undergraduate students the opportunity to "double-dip" graduate courses to satisfy requirements for the B.S. degree and a future graduate degree. Senior students who have an overall Grade Point Average (GPA) of 3.4 or better are eligible to participate in this program. Other considerations include the following:

- Students should talk with an advisor in their intended area of graduate study before taking any graduate-level courses.
- Up to 9 credit hours from approved 6000-level Civil Engineering courses may be used to satisfy the requirements of the B.S. degree. These courses will be counted as technical electives and will also be included in the graduate Plan of Study (GS-2).
- The Plan of Study should comply with the course requirements outlined in Section 3.1.
- Students in the Bachelors-to-Graduate program are conditionally accepted to the graduate program pending the completion of the B.S. degree requirements.
- Bachelors-to-Graduate courses are not transferable to other graduate programs, either at Clemson or other institutions.
- In some situations, students in their final undergraduate semester may choose to take additional 6000-level or 8000-level courses to be used for future graduate credit. These courses will not count towards undergraduate degree requirements.
- The GS-6 Bachelor-to-Graduate form will be considered the student's application to the CE graduate program – no additional application (or supporting material) is needed unless requested. Although Bachelors-to-Graduate students are not required to take the Graduate Record Exam (GRE), some fellowship applications may require GRE scores.
- Interested students who are eligible for the program should contact the Graduate Student Services Manager for more information. Students MUST complete the required forms before taking any courses for dual credit.

4. Ph.D. Program in Construction Engineering and Management

4.1 Overview

The Doctor of Philosophy is the highest academic degree offered by the Glenn Department of Civil Engineering. The Ph.D. program emphasizes scientific and analytical foundations of construction engineering and management as well as the knowledge that is required for practice at the highest professional levels. In addition to formal coursework, a Ph.D. student devotes significant time to independent study, participation in seminars, and preparation of a dissertation based on independent and original research.

It is mandatory for a Ph.D. student to have a Committee Chair within the first year of the beginning of the doctoral program. The Committee Chair must have an appointment in the Construction Engineering and Management emphasis area in the Glenn Department of Civil Engineering at Clemson. If a student wishes to continue in a Ph.D. program after obtaining an M.S. from the Glenn Department at Clemson University or wishes to transition from an M.S. student into a Ph.D. student, the student must complete an application to the Ph.D. program as recommended by the Graduate School. If admitted, the student needs to submit a GS-14 or GS2-14.

Deadlines — Doctoral students must submit their Plan of Study (GS-2) no later than the beginning of their fourth semester of study following matriculation. If you don't meet these deadlines, you may be blocked from registering for courses until you submit a Plan of Study.

Requirements for Completing the Ph.D. Degree:

- Completing at least 18 credits of Doctoral Research (CE 9910) exclusive of any research credits earned at the Master's level.
- Completing at least 12 credits of coursework, exclusive of CE 9910 research credits, with at least one 8000-level course offered by the CEM program.
- Completing a minimum of:
  - 60 semester credit hours of graduate course work (including CE 9910 credits) beyond a Baccalaureate degree
    - The first 30 credit hours, which results in an M.S. en route to Ph.D., should comply with the M.S. course requirements outlined in Section 3.1.
    - The other 30 credit hours should include at least 12 credits of coursework and 18 credits of CE 9910 (Doctoral Research).
  - 30 semester credit hours of graduate course work (including CE 9910 credits) beyond a master's degree.
- Passing all Doctoral Examinations as described in Section 5.2.
- Satisfying the University's degree requirements addressed by the Graduate School Policy and Procedures Handbook.
- Finally, at least one-half of the total graduate credit hours shown on the GS-2, exclusive of any dissertation research, must be selected from courses numbered 8000 or above**.**

4.2 Doctoral Examinations:

Doctoral students are required to successfully complete two examinations: the Comprehensive Examination, and the Doctoral Dissertation Defense.

4.2.1 Comprehensive Examination

The purpose of the Comprehensive Examination is to test the student's ability to convey a deeper level of knowledge on subjects related to their chosen area of expertise, but not necessarily specific to their dissertation topic. The Comprehensive Exam should be attempted for the first time after the breadth requirement is completed, but not later than the student's third fall semester. Students who fail the Comprehensive Exam on the first attempt may be granted a second attempt by the Advisory Committee. The second attempt must occur within six months of the first attempt. Failure of the second attempt will result in dismissal from the program. The Comprehensive Exam consists of a written portion and an oral portion. The student has the following two options to pass the written portion of the comprehensive exam: 1) prepare a research prospectus, or 2) prepare a dissertation proposal. If option 2 is selected, then, the student will submit a dissertation proposal document to their Advisory Committee. The selection of one of these options and the timing of the dissertation proposal submission should be approved by the student's Advisory Committee.

4.2.1.1 Written Portion

The student must submit their research document to the Advisory Committee. The format of the student's research document is flexible and up to the discretion of the student's Advisory Committee. Examples of the research document might be a research prospectus, dissertation proposal, or a paper submitted to a journal, as the Advisory Committee deems it appropriate. However, in all cases, there must be significant, unanswered research questions being proposed for future research. A research prospectus document is typically 10-15 pages in length, single-spaced, in 12-point font. It might include

an abstract, introduction, literature review, and research questions/research significance/potential research contributions. If appropriate, the student may also detail intended research directions along with a proposed timeline, experimental strategy, or analytical development tasks. A dissertation proposal typically contains a few dissertation chapters, which may include the research topic, a description, and citations of prior and recent research in the area that demonstrates an in-depth knowledge of the area, preliminary findings, and a proposed set of research questions.

4.2.1.2 Oral Portion

Within 14 calendar days after the student submits the written portion, the student is required to take an oral examination. The oral exam is designed to take approximately two hours. The student will begin by presenting research ideas contained in their research document, followed by questions from the Advisory Committee regarding advanced book knowledge, components of the research plan, and other topics related to the proposed area of specialization. The committee will provide guidance on the desired scope and duration of the student research presentation that begins this portion of the exam.

4.2.2 Doctoral Dissertation Defense

The final examination is the Doctoral Dissertation Defense, in which the student presents the completed Dissertation to their Advisory Committee. There must be at least six months between receiving notification that the Comprehensive Exam has been passed and the Dissertation Defense. The Dissertation Defense will be open to the University community. Each student must notify the date, time, location, and other details of their defense to the Graduate School. This notification is done by submitting the defense form available on the Graduate School website at least 10 days prior to the defense. At least 10 calendar days prior to the Dissertation Defense, the student must submit their final dissertation to the Advisory Committee. This exam is designed for approximately two hours, whereas the Advisory Committee's examination typically focuses on the dissertation but may include questions related to other components of the student's program as well. In the rare circumstance that a student fails the exam, the Advisory Committee may grant a second attempt; however, failure of the second exam will result in dismissal from the Graduate School. Upon successfully defending your dissertation, your advisor must complete form GS7-D and file it with the Graduate School.

5. Construction Engineering and Management Faculty

1. Dr. Jesus M. de la Garza
   Areas of expertise: Construction Engineering and Management, Construction Safety, Design-Construction Integration, Highway Infrastructure Management, and Information Technology in Construction

2. Dr. Tuyen Le
   Areas of expertise: Digital Project Delivery, Big Data in Construction Management, Civil Infrastructure Management, and Information and Intelligent Systems

3. Dr. Kapil Chalil Madathil
   Areas of expertise: Human Factors Engineering, Human-Computer Interaction, Human-Centered Design

4. Dr. Kalyan R. Piratla
   Areas of expertise: Underground Construction, Construction Planning and Management, Sustainable and Resilient Infrastructure Systems, Asset Management, Infrastructure Monitoring Techniques

5. Dr. Zoraya Rockow[+]
   Areas of expertise: Construction Engineering and Management, Project Management, and Safety

   [+]Dr. Rockow is a teaching faculty member. She is not accepting graduate students to her research program.

Updated on 07.25.23

Glenn Department of
CIVIL ENGINEERING
Clemson University

Construction Materials
Program Information for Graduate Students

The Construction Materials graduate program at Clemson University offers Master of Science and Doctor of Philosophy degrees in Civil Engineering. The objective of the program is to provide a well-balanced education in construction materials and design and theoretical and practical aspects of Civil Engineering. Students learn classical behavior of engineering materials through the graduate-level courses offered within the Civil Engineering department, explore modern computational techniques, recognize the uncertainties and errors in calculations, and gain hands-on experiences through laboratory/field testing to prepare for a consulting or research career path. Students are also encouraged to explore supporting and complementary courses offered in other Civil Engineering disciplines and other departments at Clemson University.

Construction Materials Degree Requirements:

The Plan of Study (GS-2) should include at least 70% of the required classes from the following list: CE4520/6520, CE4530/6530, CE4550/6550, CE4560/6560, CE4910/6910, CE6570, CE8230, CE8240, CE8260, CE8270, and CE8280. It is required that all M.S. students have taken at least two undergraduate-level Construction Materials classes (CE …. or equivalents). For those students that are accepted for admission without having taken these two classes, they should be taken before the end of the second semester of graduate study. These classes do not count towards the hour requirements for the M.S. degree.

Requirements for the degree programs are as follows:

Master of Science Thesis Option: A minimum of 24-course credits (not including CE 8910 Masters Research) is required. Students may take a maximum of 15 credits of 6000-level courses, take a minimum of 9 credits of courses at the 8000-level, and take at least six credits of CE 8910 (Masters Research). The thesis option is required for students with research or teaching assistantships. Upon completing the research and documenting it in an M.S. thesis, students will be required to pass a public oral defense. The student's graduate advisory committee is selected by the student after consultation with the student's research advisor.

Master of Science Non-Thesis Option: Students may take a maximum of 15 credits of 6000-level courses and must take a minimum of 15 credits of courses at the 8000-level, with a minimum of 30 total credits. All M.S. Non-Thesis option students will have committee chairs and committee members assigned by the Materials coordinator for the M.S. Non-Thesis option degree.

Special Consideration for Graduate Students with Non-Engineering Bachelor's degrees: For students with non-engineering Bachelor's degrees (e.g., degrees in Physics, Mathematics, etc.), additional coursework beyond what is required for an M.S. degree may be required to qualify for licensure. Our M.S. program is not accredited, and very few are. It is incumbent on individual students to coordinate their course plan with state examining boards to ensure eligibility for licensure at a later date. To provide some guidance to graduate students with this concern, the following summary of NCEES (National Council of Examiners for Engineering and Surveying) regulations is provided. Each state board determines its own requirements for education, but most use the education standards given below. Please note that the combination of undergraduate and graduate coursework should be evaluated against these regulations.

Applicants having engineering degrees from programs that are not accredited by the Engineering Accreditation Commission (EAC) of ABET must demonstrate the following:

A. 32 college semester credit hours of higher mathematics and basic sciences

1. *Credits in mathematics must be beyond algebra and trigonometry and must emphasize mathematical concepts and principles rather than computation. Courses in differential and integral calculus are required. Additional courses may include differential equations, linear algebra, numerical analysis, probability and statistics, and advanced calculus.*
2. *Credits in basic sciences must include at least two courses. These courses must be in general chemistry, general calculus-based physics, or general biological sciences; the two courses may not be in the same area. Additional basic sciences courses may include earth sciences (geology, ecology), advanced biology, advanced chemistry, and advanced physics. Computer skills and/or programming courses may not be used to satisfy mathematics or basic science requirements. Basic engineering science courses or a sequence of courses in this area are acceptable for credit but may not be counted twice.*

B. 16 college semester credit hours in general education that complements the technical content of the curriculum:

1. *Examples of traditional humanities/social sciences courses in this area are philosophy, religion, history, literature, fine arts, sociology, psychology, political science, anthropology, economics (micro and macro), professional ethics, and social responsibility. Examples of other general education courses deemed acceptable include management (such as organizational behavior), accounting, written and oral communications, business, and law.*
2. *No more than 6 credit hours may come from courses in management, accounting, business, or law. Courses in engineering economics, engineering management, systems engineering/ analysis, production, and industrial engineering/management will not be counted. Language courses in the applicant's native language are not acceptable for credit; no more than 6 credit hours of foreign language courses are acceptable for credit. Native language courses in literature and civilization may be considered in this area. Courses that instill cultural values are acceptable, while routine exercises of personal craft are not.*

C. 48 college semester credit hours of engineering science and/or engineering design courses:

1. *Courses in engineering science must be taught within the college/faculty of engineering and must have their roots in mathematics and basic sciences but carry knowledge further toward creative application of engineering principles. Examples of approved engineering science courses are mechanics, thermodynamics, heat transfer, electrical and electronic circuits, materials science, transport phenomena, engineering economics, and computer science (other than computer programming skills).*
2. *Courses in engineering design must stress the establishment of objectives and criteria, synthesis, analysis, construction, testing, and evaluation. Graduate-level engineering courses may be included to fulfill curricular requirements in this area.*

Ph.D. Program: There are two options for entering the Ph.D. program: directly after completing a B.S. degree and after completing an M.S. degree. Following are course and reporting requirements for each:

- Direct from B.S. program: 60 credits beyond the B.S. degree with a minimum of 30 credit hours of coursework. Also, at least 18 research credits (CE 9910 Doctoral Research) are required.
- Post-M.S. program: 30 credits beyond the M.S. degree with a minimum of 12 credits of coursework. Also, at least 18 research credits (CE 9910 Doctoral Research) are required.
- For both programs, GS2-A (Committee Selection) and GS2-B (Plan of Study) forms should be completed by the end of the first year of study.

Each Ph.D. student is required to pass a *Comprehensive Examination* (also referred to as the "proposal defense") and a *Dissertation Defense*. The Comprehensive Exam consists of an oral defense of the student's proposed research plan and questions by the graduate committee members. Two weeks prior to the Comprehensive Exam, the student must submit a written research proposal to the graduate committee. Graduate School rules should be followed for the timing of this exam. After successfully completing the Comprehensive Exam, the student is admitted to Ph.D. candidacy. The Dissertation Defense consists of an oral defense of the Ph.D. dissertation. Two weeks prior to the exam, the student must submit their dissertation to the graduate committee. Graduate School rules should be followed for the timing of the Dissertation Defense.

Other General Information:

- If a student fails to make satisfactory progress toward their degree (M.S. or Ph.D.), permission may be denied for continuing the program. Students whose cumulative GPA falls below 3.0 are placed on probation and become ineligible for assistantships.
- Duties of students receiving assistantships are described in the letter giving the offer of aid and in the contract signed by the student and the supervising faculty member.
- M.S. theses and Ph.D. dissertations are submitted to the university electronically. Instructions are given on Manuscript Review Office website.
- During the academic year, students who have a fellowship, scholarship, or graduate assistantship, including teaching and research assistantships, must take a minimum of 9 credit hours per semester.
- International students must maintain full-time status (i.e., 9 credits) except for summer and last semester. Unfunded domestic students have no minimum credit hour requirement. Audited courses are not counted toward the minimum.

- Graduate students are not required to enroll during summer sessions unless they take courses (exception: students graduating in August). Students working as teaching or grading assistants during the summer must register for a minimum of 3 credit hours; these hours can be coursework or research.
- Students registered for 12 or more credits may audit one course; students registered for 9-11 credits may audit two courses. Students wishing to audit courses must receive permission from the course instructor.

Construction Materials Faculty:

Dr. Amir Poursaee
Associate Professor, P. Eng., Ph.D., University of Waterloo
Research interests: Corrosion, Metallic Materials

Dr. Prasad Rangaraju
Professor, Ph.D., P.E., Purdue University
Research interests: Cement and Concrete Materials and Pavements

Dr. Fabricio Leiva
Assistant Professor, Ph.D., P.E, Auburn University
Research Interest: asphalt, pavements and construction

Dr. Omar Amer[+]
Lecturer, Ph.D., Clemson University
Research interests: Cement and Concrete Materials and Pavements
[+]Dr. Amer is a teaching faculty member. He is not accepting graduate students to his research program.

Construction Materials Program Course Offerings:

Dr. Leiva:

CE 4560/6560	Pavement Design & Construction
CE 8230	Asphalt Concrete Properties
CE 6570	Material Testing and Inspection

Dr. Poursaee:

CE 4520/6520	Corrosion and Oxidation
CE 4530/6530	Non-Destructive Evaluation (NDE)
CE 8240	Infrastructure Corrosion

Dr. Rangaraju:

CE 4550/6550	Sustainable Construction Materials
CE 4910/6910	Advanced Concrete Technology
CE 8260	Properties of Portland Cement Concrete
CE 8270	Special Cements and Concretes
CE 8280	Repair & Rehabilitation of Concrete Structures

Courses that may be of interest to graduate students in Construction Materials but may not be taught by Construction Materials faculty:

Civil Engineering

CE 4910/6910	Fire & Structures
CE 4080/6080	Structural Loads and System
CE 4040/6040	Masonry Design
CE 6100	Traffic Engineering: Operations
CE 6210	Geotechnical Engineering Design
CE 6360	Sustainable Construction
CE 8010	Finite Element Analysis
CE 8930	Risk Engineering
CE 8930	AI for Civil Engineering Systems

Materials Science & Engineering

MSE 4220/6220	Mechanical Behavior of Materials
MSE 4150/6150	Polymer Science & Engineering
MSE 8190/8191	Inorganic Materials Characterization Techniques
MSE 8100	Fundamentals of Materials Science

Mechanical Engineering

ME 6300	Mechanics of Composite Materials
ME 8180	Introduction to Finite Element Analysis
ME 8340	Principles of Structural Stability
ME 8360	Fracture Mechanics
ME 8510	Advanced Finite Element Analysis

Mathematics

MTHS 6000	Theory of Probability
MTHS 6030	Introduction to Statistical Theory
MTHS 6050	Statistical Theory and Methods II
MTHS 6060	Sampling Theory and Methods
MTHS 8000	Probability

Statistics

EXST 8010	Statistical Methods I
EXST 8020	Statistical Methods II
EXST 8030	Regression and Least Squares Analysis

Related Course Programs

Students in the Master's degree program are encouraged to take courses outside of the construction materials program to broaden their background. Many alternatives are available, especially in the engineering science and mechanics, structure, geotechnical, materials science, mathematics, statistics, and computer science areas. At the Ph.D. level, it is desirable for the student to develop additional depth in structural mechanics, mathematics, and continuum mechanics.

Glenn Department of
CIVIL ENGINEERING
Clemson University

Geotechnical Engineering
Program Information for Graduate Students

The Geotechnical Engineering graduate program at Clemson University offers Master of Science and Doctor of Philosophy degrees in Civil Engineering. The objective of the program is to provide a well-balanced education in geotechnical engineering analysis and design, and in theoretical and practical aspects of Civil Engineering. Through the graduate-level courses offered within the Civil Engineering department, students learn classical soil mechanics and behavior of soils, explore modern computational techniques, recognize the uncertainties and errors in calculations, and gain hands-on experiences through laboratory/field testing to prepare for a consulting or research career path. Students are also encouraged to explore supporting and complementary courses offered in other Civil Engineering disciplines and other departments at Clemson University.

Geotechnical Engineering Degree Requirements:

Master of Science Program

The plan of study for Masters students should include at least 60% of required classes from the following list: CE 6210, CE 6240, CE 6900 (Geotechnical), CE 8010, CE 8200, CE 8210, CE 8220, CE 8250, CE 8290, CE 8760, and CE 8930 (Geotechnical). It is required that all M.S. students have taken at least one undergraduate-level geotechnical engineering class (CE 3210 or equivalent). For those students that are accepted for admission without having taken this class, it must be taken before taking any other classes in the first semester of their graduate study. This class does not count towards the hour requirements for the MSCE degree. Requirements for the degree programs are as follows:

Master of Science Thesis Option

A minimum of 24 course credits (not including research and thesis credits) is required. Students may take and count a maximum of 12 credits of 6000-level courses, must take a minimum of 12 credits of courses at the 8000-level, and must take at least 6 credits of CE 8910 (Masters Research). The thesis option is generally required for students with a research or teaching assistantship. Upon completing the research and documenting it in an M.S. thesis, students will be required to pass a public oral defense. The student's graduate advisory committee is selected by the student after consultation with the student's research advisor.

Master of Science Non-Thesis Option

Students may take and count a maximum of 15 credits of 6000-level courses and must take a minimum of 15 credits of courses at the 8000-level, with a minimum of 30 total credits. All M.S. Non-Thesis option students may select or have assigned committee chairs from among the Geotechnical Engineering faculty. The committee chair will select the committee members, and consult with the students.

Special Consideration for Graduate Students with Non-Engineering Bachelor's Degrees

For students with non-engineering Bachelor's degrees (i.e., degrees in Physics, Math, Geology, etc.), additional coursework beyond what is required for an M.S.C.E. degree may be required in order to qualify for licensure. Our M.S.C.E. program is not accredited and very few are. It is incumbent on individual students to coordinate their course plan with state examining boards to ensure eligibility for licensure at a later date. In order to provide some guidance to graduate students with this concern the following summary of NCEES (National Council of Examiners for Engineering and Surveying) regulations is provided. Each state board determines its own requirements for education, but most use the education standards given below. Please note that the combination of undergraduate and graduate coursework should be evaluated against these regulations. Applicants having engineering degrees from programs that are not accredited by the Engineering Accreditation Commission (EAC) of ABET must demonstrate the following:

A. 32 college semester credit hours of higher mathematics and basic sciences

1. Credits in mathematics must be beyond algebra and trigonometry and must emphasize mathematical concepts and principles rather than computation. Courses in differential and integral calculus are required. Additional courses may include differential equations, linear algebra, numerical analysis, probability and statistics, and advanced calculus.

2. Credits in basic sciences must include at least two courses. These courses must be in general chemistry, general calculus-based physics, or general biological sciences; the two courses may not be in the same area. Additional basic sciences courses may include earth sciences (geology, ecology), advanced biology, advanced chemistry, and advanced physics. Computer skills and/or programming courses may not be used to satisfy mathematics or basic science requirements. Basic engineering science courses or a sequence of courses in this area are acceptable for credit but may not be counted twice.

B. 16 college semester credit hours in general education that complements the technical content of the curriculum

1. Examples of traditional humanities/social sciences courses in this area are philosophy, religion, history, literature, fine arts, sociology, psychology, political science, anthropology, economics (micro and macro), professional ethics, and social responsibility. Examples of other general education courses deemed acceptable include management (such as organizational behavior), accounting, written and oral communications, business, and law.

2. No more than 6 credit hours may come from courses in management, accounting, business, or law. Courses in engineering economics, engineering management, systems engineering/ analysis, production, and industrial engineering/management will not be counted. Language courses in the applicant's native language are not acceptable for credit; no more than 6 credit hours of foreign language courses are acceptable for credit. Native language courses in literature and civilization may be considered in this area. Courses that instill cultural values are acceptable, while routine exercises of personal craft are not.

C. 48 college semester credit hours of engineering science and/or engineering design courses

1. Courses in engineering science must be taught within the college/faculty of engineering and must have their roots in mathematics and basic sciences but carry knowledge further toward creative application of engineering principles. Examples of approved engineering science courses are mechanics, thermodynamics, heat transfer, electrical and electronic circuits, materials science, transport phenomena, engineering economics, and computer science (other than computer programming skills).

2. Courses in engineering design must stress the establishment of objectives and criteria, synthesis, analysis, construction, testing, and evaluation. Graduate-level engineering courses may be included to fulfill curricular requirements in this area.

Doctor of Philosophy Program:

There are two options for entering the Ph.D. program: directly after completing their B.S. degree and after completing an M.S. degree. Following are the course and reporting requirements for each:

- Direct from B.S. Program – 60 credits beyond the B.S. degree with a minimum of 30 credit hours of coursework. At least half of the 30 credit hours of coursework must be taken at the 8000-level. Also, at least 18 research credits (CE 9910) are required.
- Post M.S. Program – 30 credits beyond the M.S. degree with a minimum of 12 credits of coursework. Also, at least 18 research credits (CE 9910) are required.
- For both programs, GS-2A (Committee Selection) and GS-2B (Plan of Study) forms should be completed in iRoar by the end of the first year of study.

Each Ph.D. student is required to pass the following exams during their program of study: 1) a Comprehensive Examination (also referred to as the "Proposal Defense") and 2) Dissertation Defense examination. The Comprehensive Exam consists of an oral defense of the student's proposed research plan, and written questions provided by the graduate committee members. Two weeks prior to the Comprehensive Exam the student must submit a written research proposal to the graduate committee. Graduate School rules should be followed for the timing of this exam.

After successfully completing the Comprehensive exam, the student is admitted to Ph.D. candidacy. The Dissertation Defense exam consists of an oral defense of the Ph.D. Dissertation. Two weeks prior to the exam the student must submit their dissertation to the graduate committee. Graduate School rules should be followed for the timing of the Dissertation Defense. In the rare circumstance that a student fails the exam, a second opportunity to pass the exam will be given no later than two academic semesters after the first attempt. Students that do not pass on the second attempt will not be allowed to continue in the Ph.D. program.

Other General Information:

- If a student fails to make satisfactory progress toward their degree (M.S. or Ph.D.) then permission may be denied continuing in the program. Students whose cumulative GPA falls below 3.0 are placed on probation and become ineligible for assistantships.
- The duties of students receiving assistantships are described in the letter giving the offer of aid and in the contract signed by the student and by the supervising faculty member.
- Master's theses and Ph.D. dissertations are submitted to the university electronically. Instructions are given on the Manuscript Review Office website.
- During the academic year, students who have a fellowship, scholarship, or graduate assistantship (GA), including teaching and research assistantships, must take a minimum of 9 credit hours per semester.
- International students must maintain full-time student status (i.e., 9 credits) except for summer and their last semester.
- Unfunded domestic students have no minimum credit hour requirement.
- Audited courses are not counted toward the minimum credit requirements.

- Graduate students are not required to enroll during summer sessions unless they are taking courses (e.g., students working on research during the summer are not required to sign up for classes). Students working as teaching or grading assistants during the summer must register for a minimum of 3 credit hours; these hours can be coursework or research. Exception: students graduating in August must register for at least one credit hour.
- Students registered for 12 or more credits may audit one course; students registered for 9-11 credits may audit two courses. Students wishing to audit courses must receive permission from the course instructor.

Courses that may be of interest to graduate students in Geotechnical Engineering, but may not be taught by Geotechnical engineering faculty:

Civil Engineering

CE 6560	Pavement Design and Construction
CE 6570	Material Testing and Inspection
CE 6820	Groundwater and Contaminant Transport
CE 8080	Earthquake Engineering
CE 8130	Highway and Airport Pavement Design
CE 8370	Construction Specifications and Contracts
CE 8410	Underground Construction
CE 8510	Reliability

Geology

GEOL 6090	Environmental and Exploration Geophysics including Laboratory (GEOL 6091)
GEOL 6210	GIS Applications in Geology including Laboratory (GEOL 6211)
GEOL 8030	Geostatistics
GEOL 8080	Groundwater Modeling

Mathematics

MTHS 6000	Theory of Probability
MTHS 6030	Introduction to Statistical Theory
MTHS 6050	Statistical Theory and Methods II
MTHS 6060	Sampling Theory and Methods
MTHS 8000	Probability

Mechanical Engineering

ME 8180 Introduction to Finite Element Analysis
ME 8370 Theory of Elasticity I
ME 8380 Theory of Elasticity II
ME 8400 Plasticity
ME 8510 Advanced Finite Element Analysis

Statistics

EXST 8010 Statistical Methods I
EXST 8020 Statistical Methods II
EXST 8030 Regression and Least Squares Analysis

Related Course Programs:

Students in the M.S. degree program are encouraged to take courses outside of the geotechnical engineering program to broaden their background. Many alternatives are available, especially in engineering science and mechanics, construction, geotechnical, materials, mathematics, statistics, and computer science areas. At the Ph.D. level, it is desirable for the student to develop additional depth in geotechnical engineering, geology, mathematics, probability and statistics, and continuum mechanics.

Geotechnical Engineering Faculty:

Dr. Andrus, Professor, Glen Department of Civil Engineering; 200 Lowry Hall, Clemson, SC 29634; Phone: (864) 656-0488; Email: randrus@clemson.edu.

Dr. Chen, Associate Professor, Glen Department of Civil Engineering; 320 Lowry Hall, Clemson, SC 29634; Phone: (864) 656-3330; Email: qiushi@clemson.edu.

Dr. Ravichandran, Associate Professor, Glen Department of Civil Engineering, 202 Lowry Hall, Clemson, SC 29634; Phone: (864) 656-2818; Email: nravic@clemson.edu.

Glenn Department of
CIVIL ENGINEERING
Clemson University

Structural Engineering
Program Information for Graduate Students

The Structural Engineering graduate program at Clemson University offers Master of Science and Doctor of Philosophy degrees in Civil Engineering. The objective of the program is to provide a well-balanced education in structural analysis and design, and in theoretical and practical aspects of Civil Engineering. Through the graduate level courses offered within the Civil Engineering Department, students learn classical structural mechanics and behavior of engineering materials, explore modern computational techniques, recognize the uncertainties and errors in calculations, and gain hands-on experiences through laboratory/field testing to prepare for a consulting or research career path. Students are also encouraged to explore supporting and complimentary courses offered in other Civil Engineering disciplines and other departments at Clemson University.

Structural Engineering Degree Requirements:

The plan of study should include at least 80% of required classes from the following list: CE 6010, CE 6040, CE 6070, CE 6080, CE 8010 (or ME 8180), CE 8020, CE 8030, CE 8040, CE 8050 (or ME 6320), CE 8070, CE 8080, and CE 8090. The plan must also include a mixture of graduate-level structural design courses such as concrete, steel, masonry, or wood design. It is required that all M.S. students have taken at least two undergraduate-level structural design classes (CE 4020 and CE 4060 or equivalents). For those students that are accepted for admission without having taken these two classes, they should be taken before the end of the second semester of graduate study. These classes do not count towards the credit requirements for the M.S. degree.

Requirements for the degree programs are as follows:

Master of Science Thesis Option: A minimum of 24-course credits (CE 8910 Masters Research) is required. Students may take a maximum of 12 credits of 6000-level courses, must take a minimum of 12 credits of courses at the 8000-level, and must take at least 6 credits of CE 8910 (Masters Research). The thesis option is required for students with research or teaching assistantships. Upon completing the research and documenting it in a M.S. thesis, students will be required to pass a public oral defense. The student's graduate advisory committee is selected by the student after consultation with the student's research advisor.

Master of Science Non-Thesis Option: Students may take a maximum of 15 credits of 6000-level courses and must take a minimum of 15 credits of courses at the 8000 level, with a minimum of 30 total credits. All M.S. non-thesis option students will have committee chairs and committee members assigned by the Structures coordinator for the MS non-thesis option degree.

Special Consideration for Graduate Students with Non-Engineering Bachelor's Degrees: For students with non-engineering Bachelor's degrees (i.e., degrees in Physics, Math, etc.) additional coursework beyond what is required for an M.S. degree may be required in order to qualify for licensure. Our M.S. program is not accredited and very few are. It is incumbent on individual students to coordinate their course plan with state examining boards to insure eligibility for licensure at a later date. To provide some guidance to graduate students with this concern the following summary of NCEES (National Council of Examiners for Engineering and Surveying) regulations is provided. Each state board determines its own requirements for education, but most use the education standards given below. Please note that the combination of undergraduate and graduate coursework should be evaluated against these regulations.

Applicants having engineering degrees from programs that are not accredited by the Engineering Accreditation Commission (EAC) of ABET must demonstrate the following:

A. *32 college semester credit hours of higher mathematics and basic sciences*

1. *Credits in mathematics must be beyond algebra and trigonometry and must emphasize mathematical concepts and principles rather than computation. Courses in differential and integral calculus are required. Additional courses may include differential equations, linear algebra, numerical analysis, probability and statistics, and advanced calculus.*
2. *Credits in basic sciences must include at least two courses. These courses must be in general chemistry, general calculus-based physics, or general biological sciences; the two courses may not be in the same area. Additional basic sciences courses may include earth sciences (geology, ecology), advanced biology, advanced chemistry, and advanced physics. Computer skills and/or programming courses may not be used to satisfy mathematics or basic science requirements. Basic engineering science courses or sequence of courses in this area are acceptable for credit but may not be counted twice.*

B. *16 college semester credit hours in general education that complements the technical content of the curriculum*

1. *Examples of traditional humanities/social sciences courses in this area are philosophy, religion, history, literature, fine arts, sociology, psychology, political science, anthropology, economics (micro and macro), professional ethics, and social responsibility. Examples of other general education courses deemed acceptable include management (such as organizational behavior), accounting, written and oral communications, business, and law.*
2. *No more than 6 credit hours may come from courses in management, accounting, business, or law. Courses in engineering economics, engineering management, systems engineering/ analysis, production, and industrial engineering/management will not be counted. Language courses in the applicant's native language are not acceptable for credit; no more than 6 credit hours of foreign language courses are acceptable for credit. Native language courses in literature and civilization may be considered in this area. Courses that instill cultural values are acceptable, while routine exercises of personal craft are not.*

C. *48 college semester credit hours of engineering science and/or engineering design courses*

1. *Courses in engineering science must be taught within the college/faculty of engineering and must have their roots in mathematics and basic sciences but carry knowledge further toward creative application of engineering principles. Examples of approved engineering science courses are mechanics, thermodynamics, heat transfer, electrical and electronic circuits, materials science, transport phenomena, engineering economics, and computer science (other than computer programming skills).*
2. *Courses in engineering design must stress the establishment of objectives and criteria, synthesis, analysis, construction, testing, and evaluation. Graduate-level engineering courses may be included to fulfill curricular requirements in this area.*

Ph.D. Program: There are two options for entering the Ph.D. program: 1) Directly after completing a B.S. degree and 2) after completing an M.S. degree. Following are the course and reporting requirements for each:

- Direct from B.S. Program – 60 credits beyond the B.S. degree with a minimum of 30 credit hours of coursework. Also, at least 18 research credits (CE 9910) are required.
- Post-M.S. Program – 30 credits beyond the M.S. degree with a minimum of 12 credits of coursework. Also, at least 18 research credits (CE 9910) are required.
- For both programs GS-2A (Committee Selection) and GS-2B (Plan of Study) forms should be completed by the end of the first year of study.

Each Ph.D. student is required to pass the following exams during their program of study: a Preliminary Examination, a Comprehensive Examination (also referred to as the "proposal defense"), and a Dissertation Defense.

The *Preliminary Exam* is a written exam that must be passed by the end of the third semester of study and is required for all Ph.D. students. The exception to this is direct Ph.D. admits, who are required to pass the preliminary exam by the end of the fifth semester of study. The exam is given as needed. The exam content and format are as follows:

- The exam is 4 hours long and is closed-book and notes, and appropriate design codes will be provided.
- The exam will contain nine questions: three about structural analysis, three about structural mechanics, and three focused on the student's area of Ph.D. research.
- The Preliminary Exam may be taken at the end of the second or third semesters of study, and if the first attempt is failed then a second attempt is allowed. However, a student may elect to wait and take the exam only once, at the end of the third semester of study. Students who do not pass the exam by the end of the third semester (whether having one or two attempts) will not be allowed to continue in the Ph.D. program.

The *Comprehensive Exam* consists of an oral defense of the student's proposed research plan, and written questions provided by the graduate committee members. Two weeks prior to the Comprehensive Exam the student must submit a written research proposal to the graduate committee. Graduate School rules should be followed for the timing of this exam. After successfully completing the Comprehensive Exam, the student is admitted to Ph.D. candidacy.

The *Dissertation Defense* consists of an oral defense of the Ph.D. Dissertation. Two weeks prior to the exam the student must submit their dissertation to the graduate committee. Graduate School rules should be followed for the timing of the Dissertation Defense. In the rare circumstance that a student fails the exam, a second opportunity to pass the exam will be given no later than two academic semesters after the first attempt. Students that do not pass on the second attempt will not be allowed to continue in the Ph.D. program.

Other General Information:

- If a student fails to make satisfactory progress toward their degree (M.S or Ph.D.) then permission may not be permitted to continue in the program. Students whose cumulative GPA falls below 3.0 are placed on probation and become ineligible for assistantships.

- The duties of students receiving assistantships are described in the letter giving the offer of aid and in the contract signed by the student and by the supervising faculty member.
- Master's theses and Ph.D. dissertations are submitted to the university electronically. Instructions are given on the Manuscript Review Page website.
- During the academic year, students who have a fellowship, scholarship, or graduate assistantship (GA), including teaching and research assistantships, must take a minimum of 9 credit hours per semester.
- International students must maintain full-time student status (i.e., 9 credits) except for summer and their last semester.
- Unfunded domestic students have no minimum credit hour requirement.
- Audited courses are not counted toward the minimum credit requirement.
- Graduate students are not required to enroll during summer sessions unless they are taking courses (exception: students graduating in August). Students working as teaching or grading assistants during the summer must register for a minimum of 3 credit hours; these hours can be coursework or research.
- Students registered for 12 or more credits may audit one course; students registered for 9-11 credits may audit two courses. Students wishing to audit courses must receive permission from the course instructor.

Courses that may be of interest to graduate students in Structures, but may not be taught by Structural Engineering faculty:

Civil Engineering

CE 6570	Material Testing and Inspection
CE 8260	Properties of Portland Cement Concrete
CE 8270	Special Cements and Concrete
CE 8280	Repair and Rehabilitation of Concrete Structures
CE 6210	Geotechnical Engineering Design
CE 6240	Earth Slopes and Retaining Structures CE 8220 Foundation Engineering
CE 8250	Soil Dynamics and Geotechnical Earthquake Engineering
CE 8510	Reliability

Mathematics

MTHS 6000	Theory of Probability
MTHS 6030	Introduction to Statistical Theory
MTHS 6050	Statistical Theory and Methods II
MTHS 6060	Sampling Theory and Methods
MTHS 8000	Probability

Mechanical Engineering

ME 6300	Mechanics of Composite Materials
ME 8180	Introduction to Finite Element Analysis
ME 8340	Principles of Structural Stability
ME 8360	Fracture Mechanics
ME 8370	Theory of Elasticity I
ME 8380	Theory of Elasticity II
ME 8450	Structural Vibrations
ME 8510	Advanced Finite Element Analysis

Statistics

EXST 8010	Statistical Methods I EXST 8020 Statistical Methods II
EXST 8030	Regression and Least Squares Analysis

Related Course Programs:

Students in the Master's degree program are encouraged to take courses outside of the Structures program to broaden their background. Many alternatives are available, especially in engineering science and mechanics, construction, geotechnical, materials, mathematics, statistics, and computer science areas. At the Ph.D. level it is desirable for the student to develop additional depth in structural mechanics, mathematics, and continuum mechanics.

Structural Engineering Faculty:

Tommy Cousins, Professor; P.E.
Ph.D., North Carolina State University.
Bridge engineering behavior; prestressed and reinforced concrete.

Steve Csernak, Senior Lecturer; P.E.
M.S. Clemson University.
Structural engineering, wind and seismic design.

Mohannad Naser, Assistant Professor
Ph.D., Michigan State University.
Structural engineering, structural fire.

Weichiang Pang, Professor
Ph.D. Michigan Tech
Structural reliability, earthquake engineering, wind engineering

Laura Redmond, Assistant Professor,
Ph.D. Georgia Tech
Behavior of reinforced concrete and masonry structures, non-linear modeling of structures.

Brandon Ross, Associate Professor, P.E.
Ph.D. University of Florida.
Building adaptation, experimental evaluation of prestressed and reinforced concrete, and low-cost systems for housing.

Emeritus Faculty:

Subhash Anand, Ph.D., Northwestern University, Computational Mechanics, Masonry Structures.
Russell Brown, Ph.D., Rice University, Concrete and Masonry Structures, Experimental Testing.
Jack McCormac, M.S., MIT, Structural Analysis and Design.
Robert Nowack, M.S., University of Pittsburgh, Engineering Mechanics.
Peter Sparks, Ph.D., University of London, Wind Engineering and Structural Performance.

Glenn Department of
CIVIL ENGINEERING
Clemson University

Transportation Systems
Program Information for Graduate Students

The Transportation Systems graduate program at Clemson University offers Master of Science and Doctor of Philosophy degrees in Civil Engineering. Transportation systems are essential for the efficient movement of people and goods. Interconnected air, land, and marine transportation systems play a vital role in ensuring strong economic health and improved quality of life for all of society. Because transportation systems are interrelated with many other activities, the challenges of creating and managing transportation systems must be addressed in an interdisciplinary manner.

The Transportation Systems graduate program at Clemson focuses on the planning, design, operation, and maintenance of transportation systems. The program provides a foundation of knowledge on the basics of how transportation systems work and how they are designed and encourages students to add breadth to their education by understanding the environmental, institutional, and societal context within which the systems operate.

Transportation Degree Requirements:

The Glenn Department of Civil Engineering offers several specialized courses related to transportation. Additionally, Transportation Systems graduate students are encouraged to take courses in City and Regional Planning, Computer Science, Economics, Geography, Industrial Engineering, and Statistics. Relevant GIS classes are also offered by the Geology and Forestry departments.

Undergraduate Required Courses:

CE 3110 – Transportation Engineering Planning and Design – Planning, design, and operation of transportation facilities including highways, airports, public transportation systems, and harbors. Coverage includes economic, safety, and environmental considerations. *NOTE: This class is a prerequisite for the graduate program. Students enrolled in the Transportation Systems graduate program who have not taken CE 3110 or an equivalent from another university must enroll in it during their first semester. The course will not count toward the student's required credits for graduation.*

Master's Degree Requirements:

The Masters of Science degree has two pathways: a thesis option, and a non-thesis option. Each pathway is described in the following sections.

General Requirements:

All the M.S. degrees require a minimum of 30 credits, 50% of which must be at the 8000-level. A minimum 3.0 GPA is required for graduation. All students should have already taken an undergraduate equivalent to CE 3110. A combination of prior work experience and coursework in related classes may meet this requirement. Otherwise, the student must take this in their first semester of study. There are 6 required classes as follows:

CE 6100	Traffic Engineering operations	3
CE 6110	Roadway Geometric Design	3
CE 6120	Urban Transportation Planning	3
CE 6130	Civil Infrastructure Systems	3
CE 8550	Transportation Systems Seminar	1
STAT 8010	Statistical Methods 1	3
	Total	**16**

A minimum of two additional courses for thesis students and three additional courses for non-thesis students must be taken from the transportation electives. The remainder may be additional transportation electives, from other disciplines within Civil Engineering, or from related departments. These electives should be discussed and approved by the student's academic advisor.

Master of Science Degree, Non-Thesis option: For students planning to take all coursework, this would be the most appropriate option. The student is encouraged to try to publish a paper in a scholarly journal and/or present the paper at a professional conference. A comprehensive exam taken during the last semester of study is required. This degree can be accomplished in 1 year of full-time study, but an additional semester is recommended.

Master of Science Degree, Thesis option: This option will usually be taken by students on funded research. Students must take a minimum of 24-course credits (not including research credits) and a minimum of 6 credits of CE 8910 (Masters Research). This degree option requires a thesis approved by the Graduate Advisory Committee, comprised of at least 3 faculty members. The student's graduate committee is selected by the student after consultation with the student's research advisor. An oral, public, thesis defense is also required. The student will be encouraged to try to publish a paper based on their thesis in a scholarly journal and/or present the paper at a professional conference. The thesis will usually require three semesters to complete (one year plus one additional semester).

Ph.D. Degree Requirements:

There are two options for entering the Ph.D. program: directly after completing the B.S. degree and after completing an M.S. degree.

- Direct from B.S. Program – 60 credits beyond the B.S. degree with a minimum of 30 credit hours of coursework. At least 18 credits of CE 9910 (Dissertation Research) are required.
- Post M.S. Program – 30 credits beyond the M.S. degree with a minimum of 12 credits of coursework. At least 18 credits of CE 9910 (Dissertation Research) are required.
- For both programs, the GS2-A (Committee Selection) and GS2-B (Plan of Study) forms should be completed in iRoar, by the end of the first year of study.

Each Ph.D. student is required to pass the following exams during their program of study:

- Qualifying Exam – the exact form and content of this exam is determined by the student's graduate committee. This exam is typically taken at the end of the third semester. If the student does not pass the exam, it may be retaken once, the following semester. If the student does not pass within the two attempts, they will not be permitted to continue.
- Proposal Defense – The proposal defense consists of an oral defense of the student's proposed research plan that accompanies a written proposal. This document typically corresponds to between one-third and two-thirds of the dissertation content. The written document should be provided to the committee at least two weeks prior to the oral defense. Graduate School rules should be followed for the timing of this exam. After successfully completing this exam, the student advances to Ph.D. candidacy.
- Dissertation Defense – The final defense consists of an oral defense of the Ph.D. Dissertation. Two weeks prior to the exam, the student must submit their written dissertation to the graduate committee. Graduate School rules should be followed for the timing of this exam. In the rare circumstance that the student fails the exam, a second opportunity to pass the exam will be given no later than two academic semesters after the first attempt. Students who do not pass on the second attempt will not be allowed to continue in the Ph.D. program.

Other General Information:

- If a student fails to make satisfactory progress toward their degree (M.S. or Ph.D.), then permission may not be permitted to continue in the program. Students whose cumulative GPAs fall below 3.0 are placed on probation and become ineligible for assistantships.
- The duties of students receiving assistantships are described in the letter giving the offer of aid and in the contract signed by the student and by the supervising faculty member.
- Master's theses and Ph.D. dissertations are submitted to the university electronically. Instructions are given on the Manuscript Review Office website.
- During the academic year, students who have a fellowship, scholarship, or graduate assistantship (GA), including teaching and research assistantships, must take a minimum of 9 credit hours per semester.
- International students must maintain full-time student status (9 credits or more) except for summer and their last semester.
- Unfunded domestic students have no minimum credit hour requirements.
- Audited courses are not counted toward the minimum course requirements.
- Graduate students are not required to enroll during the summer sessions unless they are taking courses. (Exception: Students graduating in August must register for at least one credit.) Students working as teaching or grading assistants during the summer must register for a minimum of 3 credit hours; these hours can be coursework or research.

Elective Course Options:

Design-oriented students should consider taking electives from the following list:

CE 8150*	Traffic Safety Engineering	3
CE 8350	Construction Project Modeling	3
CE 8400	Project Management Applications	3
CE 6560	Pavement Design and Construction	3
CE 8130	Pavement Design	3
CE 8230	Asphalt Cement Concrete Properties	3
CE 8240	Portland Cement Concrete Properties	3
CE 8250	Pavement Maintenance and Rehabilitation	3

* Indicates transportation elective.

Students interested in Traffic Operations/ITS should consider taking electives from the following list:

CE 8530*	Applications in Traffic Engineering	3
CE 8140*	Intelligent Transportation Systems	3
CE 8XXX*	Safety and Security in ITS	3
CE 8XXX*	Network Analysis and Traffic Assignment	3
CE 8XXX*	Connected Vehicle Technology	3
CE 8XXX*	Automated Vehicle System	3

* Indicates transportation elective.

Students interested in Transportation Planning should consider taking electives from the following list:

CE 8540*	Travel Demand Forecasting	3
CE 8XXX*	Transport Risk and Evacuation	3

* Indicates transportation elective.

Plus, additional courses in Urban Regional Planning and Statistics.

Transportation Systems Faculty:

Mashrur Chowdhury, Ph.D., P.E., F.ASCE (University of Virginia, 1995)
Professor of Civil Engineering and Professor of Automotive Engineering
Intelligent transportation systems, connected vehicle technology, traffic engineering, transportation infrastructure safety and security, risk and decision analysis.

Pamela Murray-Tuite, Ph.D. (University of Texas at Austin, 2003)
Professor of Civil Engineering
Transportation systems, resilience, evacuation, network analysis, travel demand forecasting, connected and autonomous vehicles, infrastructure interdependence.

Jennifer Ogle, Ph.D. (Georgia Tech, 2005)
Professor of Civil Engineering
Traffic safety, crash reconstruction, survey methods, traffic data analysis, vehicle instrumentation.

Wayne Sarasua, Ph.D., P.E. (Georgia Tech, 1992)
Professor of Civil Engineering
Highway engineering, geographic information systems, travel demand forecasting, traffic simulation, computer–aided design, knowledge-based expert systems, alternative modes.

Chao Fan, Ph.D. (Texas A&M University, 2020)
Assistant Professor of Civil Engineering
Urban system digital twins, climate change adaptation, justice, environmental sustainability, community resilience, human mobility

Glenn Department of
CIVIL ENGINEERING
Clemson University

Water Resources Engineering
Information for M.S. Students

Required Courses:

6000-Level	8000-Level
CE 6620 Coastal Engineering	CE 8600 Advanced Fluid Mechanics or ME 8010 Foundations of Fluid Mechanics (if CE 8600 not offered)
CE 6470 Storm Water Management	CE 8460 Flow in Open Channels
CE 6430 Water Resources Engineering	CE 8680 Environmental Fluid Mechanics
CE 6420 Hydrologic Analysis and Design	CE 8930 Stochastic Hydrology and CE 8930 Hydroclimatic Extremes (must take at least one)
CE 6910 Introduction to Environmental Fluid Mechanics	CE 8890 Special Project or CE 8910 Masters Thesis
	CE 8750 Numerical Methods in Hydraulics

Other Acceptable Courses:

6000-Level	8000-Level
CE 6820 Groundwater and Contaminant Transport	CE 8610 Sediment Transport
MTHS 6240 Advanced Engineering Mathematics	ME 8140 Concepts of Turbulent Flow
MTHS 6020 Statistics for Science and Engineering or STAT 6020 Introduction to Statistical Computing	ME 8180 Introduction to Finite Element Analysis or ME 8190 Computational Methods in Thermal Science
EE&S 6020 Water and Wastewater Treatment Systems	EES 8520 Subsurface and Wetland Hydraulics
EE&S 6300 Air Pollution Engineering	EE&S 8550 Surface and Subsurface Transport
	EE&S 8080 Groundwater Modeling

Course other than the above list requires prior approval of the advisor/committee.

Requirements for M.S. Non-Thesis Students:

- Need a total of 30 credits of coursework to graduate*.
- The students will be required to complete a minimum of 3 hours of CE 8890 (Special Project) with a Water Resources Engineering faculty member.
- The students will be required to pass an oral exam that will be held in the first two weeks of September, November, February, and April. The oral examination will include 15 minutes of project presentation followed by general questions from the courses taken by the student at the undergraduate level (in the area of Applied Fluid Mechanics) and at the graduate level. It is the student's responsibility to select their Graduate Committee and schedule the oral exam. The candidate will have a maximum of two chances to pass the oral exam. Failure to pass the exam in two attempts will result in expulsion from the program. (Note: It may be to the candidate's advantage to arrange for the oral exam in the first part of the semester for a second try, if needed, in the later part of the semester)
- If GPR falls below 3.0, the student may not be allowed to continue in the program.

Requirements for M.S. Thesis Students:

- Need a minimum of 24 credit hours of coursework*.
- Need a minimum of 6 credit hours of CE 8910 (M.S. Research).
- If GPR falls below 3.0, the student may not be allowed to continue in the program.

* Minimum of half of the required coursework must be from 8000-level courses.

Water Resources Faculty Members:

Dr. Nigel Kaye, Professor
nbkaye@clemson.edu

Dr. Abdul Khan, Professor
abdkhan@clemson.edu

Dr. Ashok Mishra, Professor
ashokm@clemson.edu

Glenn Department of
CIVIL ENGINEERING

DEGREE CHECKLISTS

M.S. Thesis Checklist

M.S. Non-Thesis Checklist

Ph.D. Checklist

Glenn Department of
CIVIL ENGINEERING

Checklist for Completing M.S. Thesis Degree in CE
Talk with your advisor about research, courses, and expectations.
With guidance from advisor, select other Graduate Committee members.
Submit Committee Selection in iRoar (end of first semester).
Submit Plan of Study in iRoar (end of second first).
BEFORE final semester, familiarize yourself with Grad School Graduation Deadlines.
Final semester – apply for graduation in iRoar. (Avoid late fees – apply BEFORE deadline.)
Communicate with Grad Committee to select date and time for thesis defense.
Find out when Graduate Committee expects a completed copy of your thesis.
Inform the Grad School of the date/time/location of your defense. (At least 10 days prior.)
Prepare your GS7-M form and send it to your Graduate Committee before your defense.
After defense, submit signed GS7-M form to Graduate Enrolled Student Services.
Submit thesis with all content revisions to Manuscript Review Office for format check.
Submit final, complete thesis with all formatting revisions to Manuscript Review Office.
Graduation: More information on the ceremony can be found here.

**Please notify Kristi Baker if you need to be removed from the graduation list.*

Glenn Department of CIVIL ENGINEERING

Checklist for Completing M.S. Non-Thesis Degree in CE
Meet with Faculty Advisor to discuss courses.
With guidance from Advisor, select other Graduate Committee members.
Submit Committee Selection in iRoar (end of first semester).
Submit Plan of Study in iRoar (end of first semester).
BEFORE final semester, find out if comprehensive exam /research presentation is required.
BEFORE final semester, familiarize yourself with Grad School Graduation Deadlines.
Final semester – apply for graduation in iRoar. (Avoid late fees – apply before deadline.)
If exam/presentation is not required, no other steps are necessary.
If exam/research presentation IS required, schedule with Graduate Committee.
Prepare and send GS7-M form to Grad Committee Chair BEFORE exam/research presentation.
After exam/presentation, submit signed GS7-M form to Graduate Enrolled Student Services.
Graduation: More information on the ceremony can be found here.

**Please notify Kristi Baker if you need to be removed from the graduation list.*

Glenn Department of
CIVIL ENGINEERING

Checklist for Completing Ph.D. Degree in CE
Talk with your Research Advisor about research, courses, and expectations.
With guidance from Advisor, select other Graduate Committee members.
Submit Committee Selection in iRoar (end of first year).
Submit Plan of Study in iRoar (end of first year).
Near the midpoint of program, schedule, take, and pass the Comprehensive Exam with your Graduate Committee (GS5-D Doctoral Comprehensive Exam & Candidacy Form)**
Present research proposal to Graduate Committee (Approval of Dissertation Research Proposal)
BEFORE final semester – be familiar with all relevant Graduate School Graduation Deadlines.
Final semester – apply for graduation in iRoar (avoid late fees – apply BEFORE deadline).
Work with Graduate Committee to schedule defense date and time.
Find out when Graduate Committee expects a completed copy of your dissertation.
Inform the Grad School of the date/time/location of your defense. (At least 10 days prior.)
BEFORE defense - Prepare your GS7-D form and send it to your Graduate Committee Chair.
After defense, submit signed GS7-D form to Graduate Enrolled Student Services.
Submit dissertation with all content revisions to Manuscript Review Office for format check.
Submit final, complete dissertation with all formatting revisions to Manuscript Review Office.
Graduation: More information on the ceremony can be found here.

***Must be completed no less than 6 months prior to graduation.*

Glenn Department of
CIVIL ENGINEERING

FORMS & DOCUMENTS

CE Desk/Office Agreement

Sample Assistantship Contract

Sample GA Evaluation

Glenn Department of
CIVIL ENGINEERING

Lowry Hall Graduate Office Space User Agreement

Student Name: Degree:

Email: Phone Number:

Faculty Advisor:

Expected Graduation Date:

The purpose of this agreement is to define expectations for users of graduate office space in Lowry Hall. Graduate offices are intended to be quiet spaces for occupants to devote to research and academics with limited distractions, and therefore it is imperative that office users abide by the policies outlined below.

General Graduate Office Policies:

- Due to issues with insects, mice, etc., food is not to be stored in graduate offices.
- Microwaves, refrigerators, and other appliances are not to be brought into the graduate offices. There is a microwave for graduate students in Room 131.
- Trash and recycle bins are located in the hallways to prevent infestation/odors in offices. **This is also university policy to have more centralized trash areas.
- Residents of graduate offices are responsible for disposing of their own garbage in the hallway bins on a daily basis. There is no cleaning staff for the graduate offices, so each person must clean up after themselves. Desks are expected to be neat and tidy. Any spills should be cleaned up immediately and reported to Kristi Baker for proper cleaning.
- Any packaging (empty computer boxes, etc.) should be disposed of in the bins in the hallway and not left in the graduate offices. Cardboard boxes should be broken down and placed beside the bins in the hallway.
- Using extension cords or any other electrical or data lines or cords of any kind across walkways is not allowed per safety regulations.
- No vaping, use of tobacco products, or consumption of any other drugs or alcohol in any graduate office.
- Monitors, desktops and/or laptops are not provided by the CE Department but may be provided at the discretion of your advisor. Any technology provided is the property of the Department and must be returned upon graduation, upon leaving the program, or at the request of your advisor.

Student Initials:_____

Student Desks:

- Do not write or paint on the furniture. Do not tape anything to the furniture or place stickers on the furniture. Pushpins can be used to adhere items to the bulletin board. Cleaning fees may be charged for damaged desks.
- Personal belongings should be stored in the storage cabinet attached above the desks.
- One set of keys will be provided and should be returned to Kristi Baker at the time of graduation or when you move out of your assigned desk. Lost keys will result in a $10 replacement fee.
- Items should not be stacked on the floor around your desks or on top of the desk storage cabinet. Boxes or additional storage containers should not be stored on top or around the desks.
- If you need additional storage space, please see Kristi Baker.
- You are assigned ONE desk – do not store any of your belongings on or in other desks, even if they appear to be unused.
- Use the chair provided at your desk – no outside chairs/furniture should be brought into the office.

Maintaining a Quiet Space:

- Meetings (either in-person or virtual) are not to be held in graduate offices. Faculty advisors will be notified that meetings with students should not take place in the graduate offices – there are conference rooms and classrooms that can be used for this purpose.
- For the sake of courtesy to others, phone calls should not be made/taken in the graduate offices.
- Room 131 can be used for meetings, phone calls, etc.

Checking Out:

- Occupants will be asked to complete and submit a checkout form to Kristi Baker before graduation. This form will be signed by Kristi and your faculty advisor.
- All items (trash and personal belongings) must be removed from your desk before graduation.
- Desks must be vacated and all items removed within 3 days after graduation, except for extenuating circumstances, which must be cleared with Kristi beforehand.
- Any technology, items related to research, or property of the Department/your advisor should be returned prior to graduation.
- Desk assignments will not be held for students who take a semester off (excluding summer) or who are on a co-op/internship during the Fall/Spring semester.

Termination of User Agreement:

- Random checks of spaces will be conducted throughout the semester.
- If you are not abiding by the rules outlined in this document, you will receive a warning. After three warnings, you will lose the right to use the space.

I have read and fully understand the contents of this document. I agree to the terms and conditions stated above.

Printed Name:_____

Signature:_____ Date:_____

CLEMSON UNIVERSITY OFFER OF GRADUATE ASSISTANTSHIP

Instructions to departments making appointment: Please do not alter this document except to fill in detail where indicated below. You may attach an addendum outlining details of the appointment if more space is needed.

Instructions to graduate student: Please initial and return all pages of this contract to the person indicated on page 4.

Date: _____

Name of recipient: _____ **XID#**: _____

Type of assistantship: _____

Sponsoring unit: _____

Supervisor: _____

Stipend amount:[1] _____

Appointment dates:[2] From _____ to _____ (12 months maximum)

Hours per week: _____

This appointment will require that you provide 28, 20 or 10 hours per week, or whatever number of hours you assign. Minimum number of hours is 10 and maximum number of hours is 28. International students are restricted by law to a maximum of 20 hours per week per semester.

Specific duties and responsibilities: _____

_____

_____

_____

_____

_____

_____

_____

Be as specific as possible in describing the nature of the work that the student will be required to perform. Changes in duties require a new contract. Supervisors should help students understand what work is part of their assistantship and what is work performed toward completion of their degree and therefore is not part of the assistantship.

1. Must be at least a rate of 1.2x the prevailing minimum wage, according to Graduate School policy. Appropriate taxes are withheld as required by federal and state law.

2. Appointments for Fall semester may begin as early as August 1 provided extra summer support is provided to the student for the time prior to the start of classes at the same rate (or higher) as during the regular academic year. See Graduate School Policies & Procedures Handbook for details.

Graduate Student name _____ *Student initials* _____

TERMS OF THIS AGREEMENT

Commitment to Clemson University: Clemson University is a member of the Council of Graduate Schools (CGS) and subscribes to the resolution below regarding fellowships, assistantships, and traineeships.

> *Please inform us in writing of your decision no later than April 15. In accordance with the Council of Graduate Schools' (CGS) resolution, we will honor this offer until the April 15 deadline, after which point it will be rescinded unless you are informed in writing that the deadline for a decision has been extended. Although you are under no obligation to accept this offer prior to April 15, please let us know as soon as you have made a decision so that we may extend offers to other prospective students if possible. You may consider other offers of financial support; if you choose to accept another offer of financial support, you must first resign from your acceptance of our offer, either before or after April 15.* (CGS)

Student responsibilities

Full-time enrollment: In order to maintain a graduate assistantship, a student must maintain full-time enrollment status. This requires a minimum of 9 credit hours during the fall and spring semesters. If an assistantship is awarded for the entire summer (Long Summer), the student must register for at least 6 credits. Any credits for research must be registered in the Long Summer section. An assistantship in one of the 6-week part of terms (SSI, SSII, Mini A, Mini B, Mini C, Mini D) will require registration in 3 credits during that part of term.

Performance and good standing: In order to remain eligible to continue receiving this support, you must be in compliance with all policies contained in the Graduate School Policy Handbook and policies from the department/program awarding the assistantship. You must maintain minimum enrollment levels, maintain at least a 3.0 GPA, make satisfactory progress toward your degree, perform at a high level in your assistantship duties, and follow all other expectations of conduct appropriate to a graduate student. Failure to comply with these expectations can result in loss of support and other sanctions outlined in the Policy Handbook and program handbook. Conduct, ethical, and integrity violations can lead to immediate termination of the assistantship as well as other sanctions outlined in the Graduate Policy Handbook.

Intellectual property terms, research policies and procedures: Ownership of any intellectual property you may produce is governed by the University's IP Policy, found at http://media.clemson.edu/research/technology-transfer/ip-policy.pdf

International students: International students on assistantship without a U.S. Social Security card/number must arrive on campus, register for classes, and complete the required International student SEVIS check-in process outlined in the International Student Arrival Guide (https://www.clemson.edu/campus-life/campus-services/international/student-arrival/arrival-guide.html) ***a minimum of 15 days prior*** to the University's official "late enrollment" period. Please find the enrollment deadline for the relevant term at the Registrar's academic calendar page: http://www.registrar.clemson.edu/html/acad_cal.htm. It is ideal to arrive earlier, but remember that International students cannot arrive more than 30 days prior to their program start date found on the front page of their I-20 or DS-2019 Certificate of Eligibility. Additionally, students who are not native English speakers must demonstrate proficiency prior to being appointed as a teaching assistant. The Office of International Services is located in 108 Long Hall.

Graduate Student name _____ *Student initials* _____

Renewal of appointment / loss of appointment

Contingent upon availability of funds, this offer of financial assistance will be reviewed at the end of each semester/term and may be renewed based on satisfactory performance in your academic program as well as in your assistantship responsibilities. Once a year (minimum) you should receive a written summary of your performance. If you do not receive a written performance review, request one from your supervisor. Inform the Graduate School if you are not provided an annual review after requesting one.

Loss of funding: Under very rare circumstances, your contract may be terminated due to unforeseen loss of funding. This can be due to loss of external funding (if assistantship is funded from external contracts or grants) or due to unexpected changes in the University budget environment (such as drastic and unexpected changes to state or federal funding).

Financial liability from loss of assistantship: Your stipend payments will cease immediately upon the termination of your assistantship, regardless of reason for termination. Any pay received erroneously in excess of the contracted amount or after termination of the assistantship must be returned to Clemson University.

In the event an assistantship is terminated, whether by the student or by the university, tuition and fees for the current term will be recalculated to the normal rates rather than the highly subsidized rate afforded to a student on an assistantship. The student will be responsible for the full balance once the bill is recalculated.

Other implications of loss of assistantship: If you are an international student who is required to have an assistantship, or a student required to maintain your assistantship for other reasons, loss of your assistantship may change your ability to continue studies at Clemson University. Loss of an assistantship may also change your eligibility for certain forms of financial aid. It is your responsibility to understand these implications and work with appropriate offices where necessary.

Benefits

Please see the following links for a summary of your other benefits:

- http://www.clemson.edu/graduate/students/policies-procedures/index.html
- https://www.clemson.edu/graduate/students/student-assistance/index.html

Mandatory health insurance: All graduate students are required to maintain health insurance while enrolled at Clemson. Redfern's current insurance and billing fee schedules may be found at https://www.clemson.edu/campus-life/student-health/insurance-and-billing.html.

Leave and benefits: Graduate students DO NOT accrue paid leave or vacation time. You are expected to work the set number of hours throughout the time you are appointed except when:

a) the University is shut down (except where required and described under duties),
b) your supervisor and you agree to alternate arrangements, or
c) where HR policies (like Family Medical Leave Act) would require leave.

Graduate Student name _____ *Student initials* _____

Protections: Graduate students at Clemson are future colleagues and should be treated with respect befitting that status. You are entitled to a workplace free from harassment and/or discrimination. If you feel you have been subject to a hostile work environment, harassment, discrimination, abuse, or have any other concern about your working and academic conditions, please contact the Office of Access and Equity, Human Resources, the dean of the Graduate School, or the Ombudsman's office.

Access and Equity policies and information about harassment and discrimination: https://www.clemson.edu/campus-life/campus-services/access/anti-harassment-policy.html.

This document may not alter or supersede the policies contained in the Graduate School Policies & Procedures handbook, University HR policies, federal policies, etc. Graduate School policies can be found at: http://www.clemson.edu/graduate/students/policies-procedures/index.html.

An assistantship appointment will not be considered final until it has been approved by the Graduate School.

SIGNATURES

Department chair name: _____
Please print

Chair signature: _____ **Date**: _____

Department: _____

I hereby ☐ **accept** *or* ☐ **decline** this offer of financial assistance from Clemson University.

Student name: _____
Please print

Student signature: _____ **Date:** _____

Please return a copy of this document to:

Name: _____

Office or department: _____

Mailing address: _____

_____

Email: _____ **Fax**: _____

Instructions for
GS-GA1 — Graduate Assistant Evaluation Checklist

Following policy enacted for the Fall 2017 term, all departments hiring graduate assistants are required to perform annual evaluations of each returning appointment. To help departments and programs meet this requirement, the Graduate School provides two generic form alternatives — this GS-GA1 and a GS-GA2 — that you may use as-is. These are formatted as PDFs and are fillable on-screen. To ensure functionality of all the interactive PDF features (including digital signatures), we recommend that you download and save the form to your computer or device and open it with Adobe® Reader or Adobe® Acrobat, rather than opening it through your browser.

Because your departmental needs may include other evaluation criteria than what is covered by these stock forms, the Graduate School also provides a Word template that includes both evaluation models for your use in creating custom forms. For example, you may customize the header and footer with your departmental wordmark and contact information; adapt, add, or delete questions and checkpoints in the form(s); and add pages to accommodate long comments. Departments are also free to build custom graduate assistant evaluation forms from scratch.

Graduate School forms and templates are downloadable at the **Faculty & Staff Forms** web page (login required).

Your completed evaluations are to be filed in the student's departmental employee record. Please do not send completed evaluation forms to the Graduate School.

CLEMSON UNIVERSITY GRADUATE SCHOOL E-106 Martin Hall Clemson, SC 29634-5713 864.656.5202

GS-GA1 — Graduate Assistant Evaluation Checklist

Graduate Assistant name: _____ Term: _____

Supervisor's name: _____ Hours per week: _____

Assistantship type: _____

Work performance: Please evaluate the Graduate Assistant in each of the following areas.

1. Accomplishment of assigned tasks
☐ Exceeds expectations ☐ Meets expectations ☐ Below expectations

2. Quality of work products
☐ Exceeds expectations ☐ Meets expectations ☐ Below expectations

3. Attendance and punctuality
☐ Exceeds expectations ☐ Meets expectations ☐ Below expectations

4. Level of self-initiative
☐ Exceeds expectations ☐ Meets expectations ☐ Below expectations

5. Professional attitude and demeanor
☐ Exceeds expectations ☐ Meets expectations ☐ Below expectations

6. Quality of relationships and teamwork
☐ Exceeds expectations ☐ Meets expectations ☐ Below expectations

7. Receptiveness and responsiveness to feedback
☐ Exceeds expectations ☐ Meets expectations ☐ Below expectations

8. Overall performance
☐ Exceeds expectations ☐ Meets expectations ☐ Below expectations

Recommend reappointment? ☐ Yes ☐ No ☐ Dependent on other factors (explain below)

Supervisor's comments (any areas marked "below expectations" require clarification in this section)

Graduate Assistant's comments (optional)

Graduate assistant signature: _____ Date: _____

Supervisor signature: _____ Date: _____

Attach additional notes as needed. A copy of the completed form will be provided to the graduate assistant as well as maintained in the department's files (digital file or hard copy are acceptable). Supervisors are encouraged to discuss the evaluation with the graduate assistant. In cases where performance indicators are below expectations, a meeting to discuss the evaluation is required. Thank you in advance for contributing to the professional development of Clemson University's GAs, and for providing information that will be valuable in making future GA assignments.