# TABLE OF CONTENTS

## SECTION I – INTRODUCTION

- Degrees Offered .......................... 1
- Specialty Areas .......................... 1
- Purpose of the Handbook ............... 1

## SECTION II – THE ADMISSIONS PROCESS

- Applying to the Program .................. 2
- Supporting Material ....................... 3
- Admissions Types ......................... 3
- Non-Degree Applicants ................... 4
- Direct Admission from BS to PHD ....... 4
- Transfer Students ......................... 5
- Deadlines ................................ 6
- Deferring Admissions .................... 6
- BS/MS Program .......................... 6

## SECTION III – NEWLY ACCEPTED STUDENTS

- Checklist for Enrolling at Clemson University ............... 7
- New International Students .................. 7
- Temporary/Interim Graduate Advisor ............. 7
- Course Selection and Registration for the First Semester .... 8
- Tuition and Fees .......................... 8
- When to Arrive .......................... 8
- Travel to Clemson ........................ 8

## SECTION IV – REQUIREMENTS FOR MASTER OF SCIENCE DEGREE

- Overview of the Master of Science Degree .................. 9
- Degree Requirements for the MS-Thesis Option ............. 9
  - MS Thesis Graduate Advisory Committee ............... 9
  - The MS Thesis .................................. 10
- Degree Requirements for the MS Non-Thesis Option ....... 10
  - MS Non-Thesis Advisory Committee .................. 10
  - MS Non-Thesis Comprehensive Exam ................. 10
- Advisory Committee Selection and Plan of Study (Form GS2) .. 11
- Time Limit for Completing the MS Degree .................. 11
- Checklists for Completing the MS Degree ................. 11
  - Checklist for MS-T Students ...................... 12
  - Checklist for MS-NT Students .................... 12
### SECTION V – REQUIREMENTS FOR THE DOCTOR OF PHILOSOPHY DEGREE

- Degree Requirements for the Doctor of Philosophy Degree
  - PhD Students without an MS Degree
  - PhD Students with an MS Degree
- The Doctoral Dissertation
- The Graduate Advisory Committee
- Committee Selection and Plan of Study (Form GS2)
- Proposal Defense, Comprehensive Exam, and Admission to Candidacy
- Final Dissertation Defense
- Time Limit for Completing the PhD Degree
- Checklist for PhD Students

### SECTION VI – ENROLLED STUDENT INFORMATION

- Student Services
- Changing Areas
- MS en route to PhD
- Full-Time Enrollment Requirements
- Former Students Returning
- Grievances and Ombudsman Services

### SECTION VII – REGISTRATION

- Registering for Classes
- Variable Course Credits
- Pass/Fail Courses
- Credit Load
- Assistance with Registration Issues
- Blackboard
- Fee Payment
- Withdrawing from the University

### SECTION VIII – FUNDING OPPORTUNITIES

- Graduate Assistantships
  - Graduate Laboratory Assistants and Graduate Grading Assistants
  - Graduate Research Assistants
  - Graduate Teacher of Record
- Assistantship Offers
- Assistantship Benefit
- Special Considerations for International Student
- Minimum Enrollment Requirements
- Termination of Assistantship
- Graduate Fellowships
- Hourly Employment
SECTION IX – GRADUATION PROCEDURES  

- Applying for Graduation  
- Manuscript Information for MS-T and PhD Students  
- Delaying Graduation  
- Graduation Supplies  
- Ceremonies  
- Resources for After Graduation  

SECTION X – OTHER RESOURCES FOR GRADUATE STUDENTS  

- Lowry Hall  
  - Card Access  
  - Graduate Offices and Mailboxes  
  - Lab Information  
  - Building Security  
- Center for Career and Professional Development  
- Student Health Services  
- Libraries  
- Clemson Computing and Information Technology (CCIT)  
- Gantt Multicultural Center  
- Graduate Student Government  
- Parking Services  
- Transit Services  
- Fike Recreation Center  
- Resources for New International Students  

APPENDICES  

- Appendix A - Important Contact Information for the Graduate Program  
- Appendix B - Faculty by Area  
- Appendix C - Labs and Facilities  
- Appendix D - Form CE-G1 – Request for Approval to Change Concentration Area  
- Appendix E - Form CE G2 – Request for Approval of Transfer Credits
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, having been taught since the foundation of the University in 1889. Today, the Department is home to more than 400 undergraduate students, 150 graduate students, and 30 faculty. The graduate program is focused 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.

**Degrees Offered**

The Glenn Department of Civil Engineering offers graduate degree programs leading to the Master of Science and Doctor of Philosophy degrees. Students who pursue a Master of Science degree can select a research-oriented thesis option, or a non-thesis option with more extensive coursework.

**Specialty Areas**

The Department is subdivided into the six traditional areas that fall under the umbrella of civil engineering. Each area is represented by faculty, who serve as members of the Graduate Program Committee, and are also the primary point of contact for their respective areas:

- **Applied Fluid Mechanics** – Dr. Abdul Khan (abdkhan@clemson.edu)
- **Construction Materials** – Dr. Amir Poursaeem (amire@clemson.edu)
- **Construction Engineering and Management** – Dr. Kalyan Piratla (kpiratl@clemson.edu)
- **Geotechnical Engineering** – Dr. Nadarajah Ravichandran (nravic@clemson.edu)
- **Structural Engineering** – Dr. Sez Atamturktur (sez@clemson.edu)
- **Transportation Engineering** – Dr. Mashrur Chowdhury (mac@clemson.edu)

While there are opportunities for interdisciplinary study, applicants to the civil engineering graduate program are required to select a primary area of study on their graduate application.

**Purpose of the Handbook**

The *Civil Engineering Graduate Program Handbook* serves several purposes:

- Provide information about the graduate program in civil engineering;
- Present guidelines for satisfying graduate degree requirements;
- Serve as a supplement to the information contained in the *Graduate School Policies and Procedures* (http://www.clemson.edu/graduate/files/pdfs/gs_policy_handbook.pdf).
Applying to the Program

Those interested in applying to the graduate program in civil engineering should begin by reviewing the website of the Office of Graduate Admissions: http://www.clemson.edu/graduate/admissions/index.html. The graduate application and all supporting material are submitted directly to Graduate Admissions; any problems with the mechanics of the application itself should be directed to Graduate Admissions at grdapp@clemson.edu. Please note the Frequently Asked Questions pages for the Graduate Admissions website (http://www.clemson.edu/graduate/admissions/admissions-faq.html) – this is a very helpful resource and will answer many questions that applicants may have about the process.

It is mandatory that Civil Engineering applicants select one of the following six concentration areas when applying to the program:

- Applied Fluid Mechanics
- Construction Engineering and Management
- Construction Materials
- Geotechnical Engineering
- Structural Engineering
- Transportation Engineering

Applications are reviewed by faculty based on the concentration area indicated by the applicant. For instance, applications to Structural Engineering will be reviewed by Structural Engineering faculty. Thus, when the concentration information is missing from the application, it will result in delays with the review process. It is expected that students will complete the requirements for the concentration area in which they were originally accepted – enrolled students who later decide to change concentration areas will be required to go through an approval process.

Applications are not released to the Civil Engineering Department for review until the application fee has been paid and all supporting material are received. For August admissions, review of applications begins in January, and, for January admissions, review begins in September. Typically, final decisions on all applications are completed by April 1 for August applicants and by October 1 for January applicants. Applicants are encouraged to check their status by using the status check tool on the Graduate Admissions website.
Supporting Material for MS and PhD Applications

The following supporting material are required of all MS and PhD applicants:

- **References** – Two references are required of MS applicants, and three are required of PhD applicants. Electronic reference forms are sent by email when the application is submitted. Problems with the reference forms should be directed to Graduate Admissions;
- **Transcripts** – For the purpose of the admissions process, unofficial transcripts are sufficient. Students who are accepted and matriculate at Clemson will be required to submit official transcripts upon arrival;
- **Required Tests** – Official GRE Scores, and official language scores for students whose native language is not English (TOEFL, IELTS, or PTE Academic).
- **Personal statement.**

Clemson University students who have a Grade Point Average (GPA) of 3.4 or higher are not required to submit GRE scores; however it is highly recommended that they take the exam. Also, per Graduate School policy, minimum score requirements are as follows:

- TOEFL – 80
- IELTS – 6.5
- PTE Academic – 54
- GRE – no minimum requirement

While there is no minimum GRE score requirement, the decision is heavily based on GRE scores, along with the other supporting material.

All application material should be submitted online. Paper copies should only be mailed to Graduate Admissions or the CE Department if requested. Additionally, the ETS Institutional Code for Clemson University is 5111. We do not have a departmental code.

Admissions Types

Civil Engineering grants two types of acceptance into the graduate program:

- **Full Status** – The application has been accepted and the applicant has submitted final official transcripts, which includes the graduation date.
- **Conditional** – The application has been accepted but the applicant has not submitted final official transcripts. In most cases, this happens when a student applies before he/she has graduated from a previous institution. The conditional status will be removed when final official transcripts have been received by the Graduate School.

Conditional admission is not awarded for any other reason other than the reason stated above. Civil Engineering does not admit students conditionally as part of any intensive language program (e.g., ELS) Likewise, Civil Engineering does not offer any type of provisional acceptance, per Graduate School policy.
Non-Degree Applications

In certain cases, it is necessary for applicants to seek admissions to the graduate program as a non-degree seeking student. Following are some scenarios of when a non-degree application may be appropriate:

- If an applicant’s undergraduate GPA is below a 3.0, the faculty may recommend that they seek admission to the non-degree program. In this scenario, non-degree students are given certain academic parameters that must be met before they can be considered for acceptance into the degree-seeking program. This is limited to domestic applicants only.
- A student whose undergraduate degree is not civil engineering may be accepted into the non-degree program for the purpose of taking undergraduate prerequisite courses before they seek admission into a degree-seeking program. Again, this option is limited to domestic applicants.
- Students may also seek admission to the non-degree program if they wish to take a class for professional development reasons but do not intend on seeking a degree from Clemson University.

Applicants who apply to the program as non-degree seeking students are required to submit official transcripts showing an appropriate background and confirming that they have received at least a Bachelor’s degree. A non-degree student who later decides to pursue a graduate degree in Civil Engineering must reapply to the program. Non-degree students may be allowed to transfer up to 12 credits to a future degree program, pending approval of their academic advisor. Please contact Dr. Bryant Nielson (bnielso@clemson.edu) for more information about applying as a non-degree seeking student.

Direct Admissions from BS to PhD

Civil Engineering occasionally accepts students without an MS degree directly into the PhD program. (See degree requirements in Section IV.) A student who is accepted directly into the PhD program has typically demonstrated the following:

- Excellence in their undergraduate program;
- Strong test scores;
- Prior research experience in their chosen area of study.

Upon agreement with the faculty advisor, direct entry students may elect to complete an MS degree en route to the PhD (http://www.clemson.edu/graduate/files/pdfs/GS2-14.pdf). For more information about the MS en route to the PhD, please see Section VI of this handbook, or contact Kristi Baker (kristi@clemson.edu).
Transfer Students

Graduate students who are interested in transferring to Clemson from another institution are expected to go through the same review process as any other applicant to the program. In accordance with the Graduate School policy, the following transfer credits from regionally accredited universities are allowed, pending the approval of the appropriate Area Coordinator:

- MS-Thesis students – up to 8 credits of coursework may be transferred;
- MS-Non Thesis students – up to 10 credits of coursework may be transferred;
- PhD students – up to 48 credits of coursework may be transferred.

Potential transfer students are encouraged to consult with the faculty member who is the Area Coordinator in their intended program area to seek approval of transfer courses during the application process. Approved transfer courses will be listed on a student’s Plan of Study (See Section IV for MS or Section V for PhD). To avoid confusion, it is strongly recommended that transfer students complete an initial Plan of Study during their first semester at Clemson.

Deadlines

The Civil Engineering Department reviews applications on a continuing basis, however, it is recommended that applications be complete (all supporting material received) by May 1 for August enrollment and November 1 for January enrollment. Additionally, the Office of International Services has established deadlines for issuing I-20s that must be taken into consideration: July 1 for August enrollment and November 15 for January enrollment. Taking into consideration that it could take up to two months for a decision to be reached once an application is complete, it is especially important for international students to submit their application and supporting material as early as possible.

Deferring Admissions

Accepted students who are unable to enroll at Clemson University during the semester in which they originally applied are allowed to defer their admission up to one year. Students who are seeking to defer admission should send an email of intent to Kristi Baker (kristi@clemson.edu), and include their full name, XID number, original start term, and the requested new start term. A “Change of Term” form will be submitted by Ms. Baker to Graduate Admissions, and a new admission letter with the updated start term will be generated. Students who are unable to enroll after one year from the original entry term must submit a new application and will go through the application review process again.

BS/MS Program

The combined BS/MS program in Civil Engineering provides eligible undergraduate students the opportunity to double count graduate courses to satisfy requirements for the B.S. and MS degrees. Senior students who have an overall Grade Point Average (GPA) of 3.4 or better are eligible to participate in this program. Other important considerations are as follows:
• Students should consult with an advisor in their intended area of graduate study before taking any graduate level courses;

• Up to 6 credit hours from approved 6000-level or 8000-level Civil Engineering courses may be used to satisfy the requirements of the BS degree. These courses will be counted as technical electives; additionally, graduate courses taken as an undergraduate student will be included in the graduate Plan of Study.

• Students in the combined degree program are conditionally accepted to the graduate program pending the completion of the BS degree requirements;

• Upon completion of the BS degree, the Graduate School will review the transcripts of BS/MS students to ensure that a GPA of 3.4 or higher was achieved. Once confirmed, the student’s status will be changed from undergraduate to graduate;

• Typically, courses taken as a BS/MS student are not transferable to other programs, either at Clemson or other institutions;

• In some situations, BS/MS students in their final undergraduate semester may be permitted 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 GS6-BS/MS form (http://www.clemson.edu/graduate/files/pdfs/GS6BSMS.pdf) will serve as the student’s application to the Civil Engineering graduate program at Clemson University – no additional application (including supporting material) is required. Although BS/MS participants are not required to take the Graduate Record Exam (GRE), some fellowship applications may require GRE scores. Additionally, given the competitive nature of graduate assistantships, strong GRE scores may be beneficial to help BS/MS students secure this type of financial support for their graduate studies.

Interested students who are eligible for the BS/MS program should contact Kristi Baker (kristi@clemson.edu) for more information, and to begin the process of approval. It is required that students complete the BS/MS paperwork before taking any courses for dual credit.
CHECKLIST FOR ENROLLING AT CLEMSON UNIVERSITY

The Graduate School has compiled a checklist for newly accepted students, which includes all relevant information for enrolling at Clemson: [http://www.clemson.edu/graduate/students/new-student-to-do.html](http://www.clemson.edu/graduate/students/new-student-to-do.html). This checklist will answer most questions that a new student may have about enrolling at Clemson University – from the planning stage to the arrival process. It is extremely important for students to review this information as soon as they receive acceptance into the graduate program.

NEW INTERNATIONAL STUDENTS

Upon receiving admissions, international students planning to enroll at Clemson University will need to create their Clemson University student account and submit an electronic request to receive the I-20 Certificate of Eligibility. Instructions on completing this process are available here: [http://www.clemson.edu/campus-life/campus-services/international/forms%20folder/Student Instructions on How to Request Certificate of Eligibility.pdf](http://www.clemson.edu/campus-life/campus-services/international/forms%20folder/Student Instructions on How to Request Certificate of Eligibility.pdf).

Additionally, new international students should consult with the Graduate School’s “Arrival Guide” found here: [https://sites.google.com/a/g.clemson.edu/2015-summer-fall-orientation/home](https://sites.google.com/a/g.clemson.edu/2015-summer-fall-orientation/home). This website includes information on the I-20/visa process, traveling to Clemson, and steps for post-arrival, and many other relevant topics for new international students.

TEMPORARY/INTERIM GRADUATE ADVISOR

MS-Thesis and PhD students who have received assistantship offers and will be conducting research under the direction of a Civil Engineering faculty advisor will be advised by their research advisor. MS Non-Thesis and self-supporting PhD students will be assigned a temporary advisor upon their arrival in Clemson. Before arrival, questions related to a specific concentration area should be addressed to the following individuals:

- Applied Fluid Mechanics – Dr. Abdul Khan ([abdkhan@clemson.edu](mailto:abdkhan@clemson.edu))
- Construction Engineering and Management – Dr. Kalyan Piratla ([kpiratl@clemson.edu](mailto:kpiratl@clemson.edu))
- Construction Materials – Dr. Amir Poursae (amire@clemson.edu)
- Geotechnical Engineering – Dr. Nadarajah Ravichandran ([nravic@clemson.edu](mailto:nravic@clemson.edu))
- Structural Engineering – Dr. Sez Atamturktur ([sez@clemson.edu](mailto:sez@clemson.edu))
- Transportation Engineering – Dr. Mashrur Chowdhury ([mac@clemson.edu](mailto:mac@clemson.edu))
Course Selection and Registration for the First Semester

After creating their student account, newly accepted students will register for classes in the iRoar registration system. Any questions about course selection should be addressed to the temporary graduate advisor listed in the section above. Also, the Academic Calendar should be reviewed for relevant deadlines related to registration (dropping/adding classes, when to register): http://www.registrar.clemson.edu/html/Acad_Cal.htm.

Tuition and Fees

Updated tuition and fee information for graduate students can be found here: http://www.clemson.edu/graduate/finance-tuition/index.html. Civil Engineering is a “Tier 2” Program. Other important information related to student bills (including payment methods and payment plans) can be found on the Student Financial Services website: http://www.clemson.edu/finance/student-financials/.

When to Arrive

Students should make arrangements to arrive in Clemson in time to attend all required orientation sessions. The “Information for New Students” tab on the Civil Engineering website (www.clemson.edu/grad) includes information related to the various orientation sessions that a student might be required to attend, including sessions for the Graduate School, the College of Engineering, Computing and Applied Science, The Glenn Department of Civil Engineering, and International Services.

International students who receive an assistantship offer prior to arriving at Clemson should plan to arrive in the United States at least ten days before the beginning of their first semester. See Section VIII of this manual for more information.

Travel to Clemson

Clemson University is located in the western corner of South Carolina. Students traveling by air typically fly into one of the following airports:

- Greenville-Spartanburg International Airport (GSP) – located in Greenville, South Carolina and approximately 1 hour away in driving distance.
- Charlotte Douglas International Airport (CLT) – located in Charlotte, North Carolina and approximately 2.5 hours away by car.
- Hartsfield-Jackson Atlanta International Airport (ATL) – located in Atlanta, Georgia and approximately 2.5 hours away by car.

There are a variety of airport shuttles who serve the Clemson area. Students should check with each shuttle service about fees and if advance reservations are needed.
Overview of the Master of Science Degree

Students pursuing the Master of Science (MS) in Civil Engineering will be accepted into one of the following six major program areas:

- Applied Fluid Mechanics
- Construction Engineering and Management
- Construction Materials
- Geotechnical Engineering
- Structural Engineering
- Transportation Engineering

There are no CE Department requirements for MS students; however, each program area has distinct degree requirements. Students should consult with their faculty advisor for more information on the required core courses for their area.

The MS degree can be undertaken with a research orientation (through the preparation of a thesis), or it can be accomplished through a non-thesis path, which includes more extensive coursework. Following are the common degree requirements for MS students:

Degree Requirements for the MS-Thesis (MS-T) Option

- Total of 30 credit hours:
  - Minimum of 24 credits of approved graduate coursework, none of which have been used for a previous degree, except for approved BS/MS courses;
  - Minimum of 6 credits of Masters Thesis Research (CE 8910);
- At least 12 of the 24 credits coursework must be taken from 8000-level courses.

MS-T Graduate Advisory Committee

All MS students are required by the Graduate School to select at least three faculty members to serve as their Graduate Advisory Committee. For MS-T students, the purpose of the advisory committee is to approve coursework, supervise research, administer the thesis defense, and recommend the student for graduation. The committee is comprised of a Chair and at least two other members. On occasion, the inclusion of a Co-Chair may be appropriate. The majority of the advisory 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 the advisory committee but may not serve as Chair. Individuals who are not employed by Clemson University must be appointed to adjunct faculty status to be eligible to serve.

*The MS Thesis*

Students who are pursuing the MS-T option will work closely with their research advisor, who will also serve as their advisory committee chair (see above for more information on the Graduate Advisory Committee). During their final semester MS-T students will submit a thesis to their committee, and present an oral defense of their research. See the website of the Manuscript Review Office for details on formatting, deadlines, submission, etc.: [http://www.clemson.edu/graduate/students/theses-and-dissertations/index.html](http://www.clemson.edu/graduate/students/theses-and-dissertations/index.html)

**Degree Requirements for the MS Non-Thesis (MS-NT) Option**

- Minimum of 30 credits of approved graduate coursework, none of which have been used for a previous degree, except for approved BS/MS courses;
- At least 15 of the 30 credits of coursework must be taken from 8000-level courses.

*MS Non-Thesis Advisory Committee*

All MS students are required by the Graduate School to select* a minimum of three faculty members to serve as their Graduate Advisory Committee. For MS-NT students, the purpose of the advisory committee is to approve coursework, administer the comprehensive exam, and recommend the student for graduation. The committee is comprised of a Chair and two members. The majority of the Graduate Advisory 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 the advisory committee but may not serve as Chair. Individuals who are not employed by Clemson University must be appointed to adjunct faculty status to be eligible to serve.

*For MS-NT students in the Structural Engineering area, the Graduate Advisory Committee will be assigned by the Structural Engineering faculty.*

*MS Non-Thesis Comprehensive Exam*

All MS-Non Thesis (MS-NT) students will take a comprehensive exam, typically during their final semester. Students should consult with their Graduate Advisory Committee prior to their last semester to start planning for their exam. There is no set format for delivery of the exam – each program area administers the final exam in the manner in which they deem appropriate. The following information is the typical method for the comprehensive exam in each area, however, there may be some exceptions.

- Applied Fluid Mechanics – Consult with the academic advisor;
- Construction Engineering and Management – Consult with the academic advisor;
- Construction Materials – May be written and/or written – varies by committee;
• Geotechnical Engineering – Typically an oral exam, but may vary by Graduate Committee;
• Structural Engineering – All MS-NT students take a written exam, which is offered twice a year;
• Transportation Engineering – All MS-NT students take a written exam (in-class and take-home).
In some cases, oral exams may also be administered.

Advisory Committee Selection and Plan of Study (Form GS2)

MS students officially declare their Graduate Advisory Committee and submit a preliminary Plan of Study at the end of their first semester by submitting the Form GS-2 to the Graduate School (accessed through iRoar - http://www.clemson.edu/graduate/students/gs2-hints.html). This is a two-step process: 1) the selection of the Graduate Advisory Committee, and 2) the submission of the Plan of Study. The GS-2 may be revised later on if there is a change in the composition of the Graduate Advisory Committee, or if the Plan of Study needs to be modified.

Students will need to consult with their major advisor (who typically serves as the committee chair) in selecting the committee members. When there is an agreement as to who will serve on the Graduate Advisory Committee, the student will initiate the GS2a – Committee Selection in iRoar.

Because there is no “set curriculum” for the graduate program, each student will need to submit the GS2b - Plan of Study - to the Graduate School, which includes all courses that will count towards the completion of the degree. Students will consult with their Graduate Advisory Committee to determine the courses that should be taken to satisfy the requirements for their program of study. Any approved transfer courses or BS/MS courses will be listed in the GS2b.

Both components of the GS2 require approval by each committee member, the Graduate Program Coordinator, the Department Chair or his designee, and the Dean of Graduate Studies for the College of Engineering, Computing and Applied Science. Students who do not have a GS2 (both sections) on file with Graduate Enrolled Student Services will not be allowed to apply for graduation.

Time Limit for Completing the MS Degree

Per Graduate School policy, the MS must be completed in six years. Students have six calendar years from their matriculation date to complete all of the requirements of the degree. See page 43 in the Graduate School Policies and Procedures manual (http://www.clemson.edu/graduate/files/pdfs/gs_policy_handbook.pdf) for more information.

Checklists for Completing the MS Degree

It is the responsibility of the student to complete all the steps for completing the MS degree in a timely manner, including submission of all required forms and meeting required deadlines. All Graduate School forms can be found on the Graduate School website at the following link: http://www.clemson.edu/graduate/students/forms.html, and deadlines can be found here: http://www.clemson.edu/graduate/students/deadlines.html.
**MS Thesis:**

1. New students – attend all appropriate orientation sessions (see www.clemson.edu/ce/grad);
2. Selection of major advisor and research topic;
3. Submission of GS2a – Graduate Advisory Committee Selection (end of first semester);
4. Submission of GS2b – Plan of Study (end of first semester);
5. Apply for graduation via iRoar at the beginning of the final semester. See the “deadlines” link above for dates;
6. Consult with Graduate Advisory Committee to schedule the thesis defense date;
7. Notify Graduate School of defense date (http://www.clemson.edu/graduate/calendar/defense-form.html) at least ten days prior to the defense;
8. Final defense of thesis;
9. Submit signed GS7M – Final Exam and Thesis Approval Form to Graduate Enrolled Student Services in 104-D Sikes Hall (provide a copy of signed form to Kristi Baker);
10. Submit completed thesis with all committee-recommended revisions to the Manuscript Review Office;

**MS Non-Thesis:**

1. New students – attend all appropriate orientation sessions (see www.clemson.edu/ce/grad);
2. Selection of major advisor*;
3. Submission of GS2a – Graduate Advisory Committee Selection* (end of first semester);
4. Submission of GS2b – Plan of Study (end of first semester);
5. Apply for graduation via iRoar at the beginning of the final semester. See the “deadlines” link above for dates;
6. Consult with advisory committee to schedule final exam;
7. Notify Graduate School of exam date (http://www.clemson.edu/graduate/calendar/defense-form.html) at least ten days prior to the exam;
8. Take final exam;
9. Submit signed GS7M – Final Exam and Thesis Approval Form to Graduate Enrolled Student Services in 104-D Sikes Hall (provide a copy of signed form to Kristi Baker).

* For MS-NT students in the Structural Engineering area, the Graduate Advisory Committee will be assigned.
SECTION V • REQUIREMENTS FOR DOCTOR OF PHILOSOPHY DEGREE

Degree Requirements for the Doctor of Philosophy Degree

Students pursuing the Doctor of Philosophy (PhD) in Civil Engineering will be accepted into one of the six major program areas:

- Applied Fluid Mechanics
- Construction Engineering and Management
- Construction Materials
- Geotechnical Engineering
- Structural Engineering
- Transportation Engineering

There are no CE Department requirements for students pursuing a PhD in Civil Engineering; however, each program area has distinct degree requirements. Students should consult with their faculty advisor for more information on the required core courses for their area.

PhD students should consult with their faculty advisor to determine the core courses for their program of study, and any other courses considered necessary to satisfy their research and professional goals. Following are the Graduate School requirements for PhD students:

**PhD students without an MS Degree**

- Minimum of 60 credits beyond the Bachelor of Science degree;
- A 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.

**PhD students with an MS Degree**

- Minimum of 30 credits beyond the MS degree;
- A minimum of 18 credits dissertation research (CE 9910);
- A minimum of 12 credits of coursework.

See Section I for more information on direct entry into the PhD program.
The Doctoral Dissertation

The purpose of the dissertation is to allow students the opportunity to participate in independent, specialized engineering research that can serve to advance the field. The research is conducted under the direction of a faculty member, who will typically serve as Chair of the Graduate Advisory Committee. On occasion, the inclusion of a Co-Chair may be appropriate. The research should be sufficiently demanding technically, demonstrating the student’s ability to assimilate knowledge from several subject areas for the advancement of engineering knowledge.

The Graduate Advisory Committee

All PhD students are required by the Graduate School to select at least four faculty members to serve as their Graduate Advisory Committee. The purpose of the advisory committee is to approve the Plan of Study, administer the qualifying exam and final defense, and recommend the student for graduation. The PhD advisory committee is comprised of a Chair (and Co-Chair, when appropriate) and at least three members. The majority of the advisory committee, including the major advisor, must be comprised of Clemson University faculty. Either the committee chair or at least half of the committee members must hold rank in the Department of Civil Engineering. In addition, at least four members of the committee must hold a PhD degree. Individuals who are not employed by Clemson University must be appointed to adjunct faculty status to be eligible to serve.

Committee Selection and Plan of Study

PhD students will officially declare their advisory committee and submit a Plan of Study at the end of the first year by submitting the Form GS-2 to the Graduate School (accessed through iRoar - http://www.clemson.edu/graduate/students/gs2-hints.html). This is a two-step process – 1) the selection of the Graduate Advisory Committee, and 2) the submission of the Plan of Study. The GS-2 may be revised later on if there is a change in the composition of the graduate committee, or if the Plan of Study needs to be modified.

Students will need to consult with their research advisor (who typically serves as the committee chair) in selecting the committee members. When there is an agreement as to who will serve on the Graduate Advisory Committee, the student will initiate the GS2a – Committee Selection in iRoar.

Because there is no “set curriculum” for the PhD program, each student will need to submit the GS2b - Plan of Study - to the Graduate School, which includes all courses that will count towards the completion of the degree. Students will need to consult with their Graduate Advisory Committee to determine the courses that should be taken to satisfy the requirements for their program of study. Any approved transfer courses or BS/MS courses will be listed in the GS2b.

Both components of the GS2 require approval by each committee member, the Graduate Program Coordinator, the Department Chair or his designee, the Dean of Graduate Studies for the College of Engineering, Computing and Applied Science. Students who do not have a GS2 (both sections) on file with Graduate Enrolled Student Services will not be allowed to apply for graduation.
Proposal Defense Comprehensive Exam, and Admission to Candidacy

Upon completion of the required courses determined by their Plan of Study, students are eligible to take the comprehensive exam*, which generally also includes the presentation of their research proposal to the Graduate Advisory Committee. Per Graduate School policy, the comprehensive exam must take place no more than five years and no less than six months before the date of graduation. Students are allowed two attempts to pass the comprehensive exam – after the second failed attempt, the student will be declared ineligible to enter into candidacy for a doctoral degree at Clemson University. There is no Departmental format for the PhD comprehensive exam – the administration of the exam varies based on the expectations of the committee.

Students must have both pieces of the GS2 (Committee Selection and Plan of Study) on file with Graduate Enrolled Student Services before taking the comprehensive exam. Students will be admitted to PhD candidacy upon the completion of all components of the exam, and at the recommendation of the Graduate Advisory Committee, who will submit a Form GS5 – Results of the Doctoral Comprehensive Exam and Candidacy (http://www.clemson.edu/graduate/files/pdfs/GS5D.pdf) to Graduate Enrolled Student Services.

*Structural Engineering graduate students are also required to take a qualifying exam. Students should see their faculty advisor for more information.

Final Dissertation Defense

During the final semester, PhD candidates will submit their dissertation to the Graduate Advisory Committee, and will present an oral defense of their research. See the website of the Manuscript Review Office for details on formatting, deadlines, submission, etc.: http://www.clemson.edu/graduate/students/theses-and-dissertations/index.html

Time Limit for Completing the PhD Degree

Per Graduate School policy, the comprehensive exam, the defense of the dissertation, and the acceptance of the dissertation by the Graduate School must be completed within five years prior to graduation. See page 36 in the Graduate School Policies and Procedures manual (http://www.clemson.edu/graduate/files/pdfs/gs_policy_handbook.pdf) for more information.

Checklist for Completing the Doctor of Philosophy Degree

It is the responsibility of the student to complete all the steps for completing the PhD degree in a timely manner, including submission of all required forms and meeting required deadlines. All Graduate School forms can be found on the Graduate School website: http://www.clemson.edu/graduate/students/forms.html, and deadlines can be found at the following link: http://www.clemson.edu/graduate/students/deadlines.html.

1. New students – attend all appropriate orientation sessions (see www.clemson.edu/ce/grad);
2. Selection of major advisor and research topic;
3. Submission of GS2a – Committee Selection (end of first year);
4. Submission of GS2b – Plan of Study (end of first year);
5. Comprehensive exam and proposal defense*;
6. Submit signed GS5 – Results of Doctoral Comprehensive Exam and Candidacy to Graduate Enrolled Student Services (provide a signed copy to Kristi Baker).
7. Apply for graduation via iRoar at the beginning of the final semester. See the “deadlines” link above for dates;
8. Consult with advisory committee to schedule the dissertation defense date;
9. Notify Graduate School of defense date (http://www.clemson.edu/graduate/calendar/defense-form.html) at least ten days prior to the defense;
10. Final defense of dissertation;
11. Submit signed GS7D – Final Exam and Thesis Approval Form to Graduate Enrolled Student Services in 104-D Sikes Hall (provide a copy of signed form to Kristi Baker);
12. Submit completed thesis with all committee-recommended revisions to the Manuscript Review Office;

*Structural Engineering graduate students are also required to take a qualifying exam. Students should see their faculty advisor for more information.
Student Services
The Graduate Advisory Committee Chair should always be consulted on matters related to a student’s area of study (e.g., required coursework, area-specific policies and procedures). However, general questions about the graduate program, information about required forms, policies and procedures, graduation, office space, and other related matters may be addressed, as appropriate, to Ms. Kristi Baker. Ms. Baker is the Graduate Student Services Manager for the Glenn Department of Civil Engineering.

Ms. Kristi Baker
Graduate Student Services Manager
110 Lowry Hall
864.656.3001
kristi@clemson.edu

Changing Areas of Study
It is expected that students will complete their studies within the concentration area they applied and were admitted. However, in the event that a student wishes to change to a new area, the student will need to seek permission from the faculty in the new concentration area. The student may be asked to provide supporting documents, or the faculty may ask to review material submitted with the original graduate application. Acceptance into the new area is left to the discretion of the faculty. If the change of area is approved, the faculty area coordinator should inform Kristi Baker of the approval by email.

MS en Route to PHD
Students who are accepted directly into the PhD program without an MS degree may choose to complete an MS en route to the PhD. This provides an opportunity for a direct entry PhD student to use 30 of their mandatory 60 credits to satisfy the requirements of the MS degree. Following are some important considerations for MS en route to PhD:

- Interested students should consult with their faculty advisor to determine if the MS en route to PhD is an appropriate option.
- Courses listed on the MS Plan of Study cannot be included on the PhD Plan of Study.
- Students who choose this option will still be required to meet the requirements for both the MS and PhD degrees as specified in Sections IV and V of this manual.
- After seeking approval from the faculty advisor, students should contact Kristi Baker for more information, and to initiate the necessary paperwork.
Full Time Enrollment Requirements

Per University policy, full-time status for graduate students is defined as being enrolled in 9 credit hours during fall/spring semesters and 6 credit hours in the Long Summer Session.

Former Students Returning

The University policies for former graduate students who are seeking re-enrollment at Clemson University are as follows:

- Graduate students who were enrolled during the previous six years will complete a Request for Re-entrance (http://www.registrar.clemson.edu/pdf/gradReEnroll.pdf). Students should send the completed form to Kristi Baker (kristi@clemson.edu) in 109 Lowry Hall. Ms. Baker will get the necessary approval and submit the form to Graduate Enrolled Student Services.
- Graduate students who haven’t been enrolled during the previous six years are considered new applicants and will be required to submit a new application, including supporting materials and the application fee.

Graduate Student Grievances and Ombudsman Services

The University has formal policies and procedures for addressing graduate student grievances. More information can be found in the Graduate School Policy Handbook (http://www.clemson.edu/graduate/files/pdfs/gs_policy_handbook.pdf) and at the following link: http://www.clemson.edu/administration/ogc/legal-topics/grievances.html.
SECTION VII • REGISTRATION

Registering for Classes

Registration for the upcoming semester occurs at a set time each semester – usually in late March for Fall classes, and late October for Spring and Summer classes. Specific dates can be found in the Academic Calendar: http://www.registrar.clemson.edu/html/Acad_Cal.htm. Students with questions about course selection should consult with their graduate advisor.

Variable Credit Courses

Certain courses do not have fixed credit hours, including MS and PhD research hours and Special Problems I and II. Students will need to specify the intended number of credit hours when they register for these courses. iRoar will default variable credit courses to one credit, therefore students will need to change the credit to the appropriate number of hours when they register.

** CE 6910 courses (Selected Topics) are considered by the University to be variable credit courses. However, unless otherwise specified, all CE 6910 courses are to be taken for 3 credit hours.**

Pass/Fail Courses

The only courses that may be taken on a Pass/Fail basis are thesis and dissertation research courses – CE 8910 and CE 9910, respectively. Graduate students may not request to take graded courses on a Pass/Fail Basis.

Credit Load

Maximum limits for graduate student enrollment include graduate and undergraduate credits combined. During summer sessions, if the 6-week session and 3-week session run concurrently, students are not permitted to enroll for more credits than allowed in the 6-week session. See the table below for credit limits for the different graduate student classifications.

<table>
<thead>
<tr>
<th>Student Category</th>
<th>Semester</th>
<th>6-Week Session</th>
<th>3-Week Session</th>
</tr>
</thead>
<tbody>
<tr>
<td>Full-time students</td>
<td>15</td>
<td>6</td>
<td>3</td>
</tr>
<tr>
<td>¼ time Grad Assistant</td>
<td>15</td>
<td>6</td>
<td>3</td>
</tr>
<tr>
<td>½ time Grad Assistant</td>
<td>12</td>
<td>6</td>
<td>3</td>
</tr>
<tr>
<td>¾ time Grad Assistant</td>
<td>12</td>
<td>6</td>
<td>3</td>
</tr>
<tr>
<td>Full-time employees</td>
<td>9</td>
<td>6</td>
<td>3</td>
</tr>
</tbody>
</table>
Assistance with Registration Issues

There are many resources available online for assistance on how to best utilize iRoar ([http://www.registrar.clemson.edu/html/trainingStudent.htm](http://www.registrar.clemson.edu/html/trainingStudent.htm)). Any technical issues that prevent registration should be addressed to Clemson Computing and Information Technology (CCIT) by sending an email to ithelp@clemson.edu. Contact Kristi Baker for any issues or problems with registration for any course with a CE designation.

Blackboard

Many instructors use Blackboard as a tool to share resources with students online. Any issues with Blackboard should be addressed to CCIT by email (ithelp@clemson.edu) or visiting the CCIT Help Desk on the ground floor of Martin Hall.

**Please note that students who add a course after the first day of the semester may not automatically be added to the class in Blackboard. If this happens, send an email to ithelp@clemson.edu to ask to be manually added to the course.**

Fee Payment

The website for Student Financial Services ([http://www.clemson.edu/finance/student-financials/index.html](http://www.clemson.edu/finance/student-financials/index.html)) includes information about deadlines for payment of tuition and fees. It is important that students make arrangements for the payment of tuition and fees by the posted deadline to prevent the cancellation of their schedule. Seats in classes will not be saved for students whose schedules are dropped for nonpayment of tuition.

Withdrawing from the University

Students who seek to withdraw from the University due to unusual personal or medical reasons will submit the request via iRoar. Students who officially withdraw within the first four weeks of the semester will have no recorded grades, while those who withdraw after the first four weeks of the semester will have a “W” grade on their transcripts. Failure to attend classes and/or verbal notification to instructors is not considered official notification. Students who drop out of courses without going through the official withdrawal process will receive a grade of “F”.
Graduate Assistantships

Civil Engineering graduate students may receive financial support in the form of graduate assistantships, which are awarded based on availability of funding, academic achievement, and compatibility of research interests. Students who are employed as a graduate assistant receive semi-monthly stipends and pay significantly reduced tuition and fees. Generally, funding is given to students conducting research (PhD or MS Thesis option). Students who pursue the MS Non-Thesis option are only supported in unusual circumstances. Additionally, funded students who change their program areas are not guaranteed continued financial support.

It is important to note that assistantships are extremely limited in number and are very competitive in nature. Each year, the number of qualified Civil Engineering students accepted far exceeds the number of assistantships available. Students may be accepted into the program based on credentials alone, without any plans to offer financial support.

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 their academic responsibilities. For this reason students are usually employed as half-time graduate assistants (20 hours per week) or quarter-time graduate assistants (10 hours per week). The assistantship stipend is commensurate with the number of hours worked per week.

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. For instance, a student may be funded as a Graduate Research Assistant (GRA) for 10 hours and a Graduate Grading Assistant (GGA) for 10 hours. Below is a summary of each type of assistantship:

**Graduate Laboratory Assistants (GLA) and Graduate Grading Assistants (GGA):**

- Awarded by the Graduate Program Coordinator at the recommendation of the faculty in each program area;
- Tied to specific courses, and thus, are somewhat limited in number;
- Responsibilities may include understanding the lab procedure or homework problems, timely return of graded work with appropriate feedback, tracking grades, holding office hours, assisting instructor with other course needs, proctoring exams, and setting up/cleaning up/maintaining labs (GLA);
- Typically awarded for up to four semesters for MS students and up to eight semesters for PhD students.
Graduate Research Assistantships (GRA):

- Awarded by faculty and usually associated with a funded research grant or contract;
- May be made at any time for any duration;
- MS students who receive GRA positions are expected to be pursuing the MS thesis option.

Graduate Teacher of Record (GTR):

- Awarded to senior PhD students who already have a funding commitment;
- Students are assigned as GTR on a semester-to-semester basis as needs arise;
- 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;
- All international students who are candidates for a GTR are required to take a language test administered by the Graduate School.

Assistantship Offers:

Most assistantship offers are made at the time a student is admitted into the graduate program. Generally, if a student has been selected to receive funding, he/she will receive an assistantship offer letter within a month of their acceptance. Students can receive GRA, GLA, or GGA funding after their arrival, however, students who come to Clemson unfunded should be prepared to be self-supported for the duration of their studies.

Accepted applicants do not need to take additional steps to apply for assistantships. During the application review process, the faculty also determine if students will or will not be offered an assistantship. Anyone who is selected for an assistantship will receive an official offer letter, which is usually sent by email. The assistantship offer letter will include the start date, stipend amount, assistantship duties, and the name of the supervisor. Any special conditions – for instance, if the offer is guaranteed only for a specified period of time – would also be included in the offer letter. Students who accept the assistantship offer will need to return a signed copy of the offer letter to Kristi Baker.

Benefits of a Graduate Assistantship

Students on assistantship, regardless of their resident status, pay a fee of approximately $1,200 per semester. For more information about the procedure for paying the fee, see the following information on Student Financial Services website: [http://www.clemson.edu/finance/student-financials/billing.html](http://www.clemson.edu/finance/student-financials/billing.html). This link also includes information on the option of paying fees by installments.

Graduate Assistants are paid for their duties on the 15th and 30th of each month. The stipend amount will be included in the assistantship offer letter (minus taxes). New graduate assistants should meet with Ms. Monica Hughes (109 Lowry Hall; monica@clemson.edu) as soon as possible after their arrival on campus to complete the paperwork to be paid. When meeting with Ms. Hughes, students should bring their driver’s license or other picture ID and Social Security card. (International students will need to obtain a Social Security card upon arrival - see the “Special Considerations” section below for a link
Special Considerations for International Students:

The Office of International Services has some helpful information on their webpage, which clearly describes the necessary steps for new international graduate assistants: https://sites.google.com/a/g.clemson.edu/2015-summer-fall-orientation/employment.

It is strongly recommended that new international graduate students who will be receiving an assistantship arrive in the United States at least ten days before classes begin at Clemson. Arriving early will require additional personal funds for initial living expenses, but it may prevent delays in being paid. Additionally, one of the first things that new international students should do upon arriving in Clemson is meet with Ms. Monica Hughes (monica@clemson.edu; 109 Lowry Hall) to begin the paperwork for the assistantship.

Minimum Enrollment for Graduate Assistants:

All graduate assistants must register for the required number of credits as established by the Graduate School in order to be eligible for their assistantship. Minimum enrollment requirements are:

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

Only graduate-level courses (6000-level or higher) will count toward the minimum enrollment requirement for graduate assistants. While graduate students may enroll in undergraduate courses (4000-level or below), those credits will not count toward the minimum enrollment requirements for their assistantship.

*Some exceptions may be necessary depending on summer course offerings. See Kristi Baker for unique situations.

Termination of Assistantships:

The graduate assistantship can be terminated for unsatisfactory performance of assigned duties, by falling below a 3.0 GPA, being placed on academic probation or suspension, or by being placed on disciplinary probation or suspension. If graduate assistantship is terminated, no further payment of the stipend will be made after the date of termination.
**Graduate Fellowships:**

Another option of financial support may be available through fellowships. Students may be awarded full or partial fellowships in addition to an offer of a graduate assistantship. More information about graduate fellowships can be found on the Graduate School website: [http://www.clemson.edu/graduate/finance-tuition/fellowships.html](http://www.clemson.edu/graduate/finance-tuition/fellowships.html).

**Hourly Employment:**

A faculty member may hire students to work on an hourly basis. Students who receive hourly employment work for an established number of hours per week at a set rate of pay, and the position is typically linked to a funded research grant or contract. However, these positions are NOT assistantships – students employed in this manner receive a semi-monthly stipend, but do not receive any type of tuition reduction. At any time during the year (fall/spring semesters or summer), if a student is paid on an hourly basis, the established University policy regarding minimum course enrollment must be followed. Under no circumstance can a student who is employed on an hourly basis work more than 28 hours per week.
SECTION IX • GRADUATION PROCEDURES

Applying for Graduation

Students will apply for graduation at the beginning of their final semester; the graduation application is online and can be accessed by logging into iRoar. Deadlines related to upcoming graduations can be found here: [http://www.clemson.edu/graduate/students/deadlines.html](http://www.clemson.edu/graduate/students/deadlines.html). Applying after the deadline will result in a late fee of $75 and an additional $5 for each additional day. Students must have both components of the Form GS2 (Committee Selection and Plan of Study) on file with Graduate Enrolled Student Services before they will be allowed to apply for graduation. A missing GS2 is the most common reason why a student would be required to pay a late application fee, so it is extremely important not to wait until the last minute to submit this document.

Manuscript Information for MS-T and PhD Students:

The website for the Manuscript Review Office ([https://www.clemson.edu/graduate/students/theses-and-dissertations/format.html](https://www.clemson.edu/graduate/students/theses-and-dissertations/format.html)) should be consulted early and often during the process for all information related to formatting and submitting a thesis or dissertation. Students should schedule their defense far enough in advance to allow time for any committee-recommended changes. All committee-recommended changes to the manuscript must be made prior to the submission deadline – only formatting revisions will be allowed after this date.

Students are not required to order hardbound copies of their manuscript. Final manuscripts are archived digitally with the Cooper Library. However, students who wish to order hardbound copies may do so through ProQuest ([http://www.proquest.com/products-services/dissertations/order-dissertation.html](http://www.proquest.com/products-services/dissertations/order-dissertation.html)).

Delaying Graduation

Occasionally, there are unexpected delays in the research process which make it necessary for a student who applied for graduation to be removed from the graduation candidate list. The following steps should be taken when a student learns that he/she will need to delay graduation:

- Communicate with the graduate advisor (and graduate committee, if needed) to determine a timeline and plan to move forward to the next graduation cycle;
- Contact Kristi Baker ([kristi@clemson.edu](mailto:kristi@clemson.edu)) by email to request to be removed from the graduation list (Ms. Baker will notify Graduate Enrolled Student Services);
- Register for classes in the upcoming semester;
- Apply for the next graduation ceremony by the appropriate deadline.
Graduation Supplies:

Students can order all of their graduation supplies, including regalia, announcements, etc. through the Clemson University Bookstore (http://www.clemson.edu/campus-life/campus-services/bookstore/graduationitems.html). The bookstore hosts a semi-annual “Grad Fair” in the Hendrix Student Center for students to order graduation items, however, these items can also be ordered online at any time. Those who are participating in the graduation ceremony should purchase their regalia as early as possible during their final semester to avoid any unexpected surprises, such as delays in shipping or limited supplies.

Graduation Ceremonies

Clemson University confers degrees at three graduation ceremonies each year, held in May, August, and December.

MS Students:

All Master of Science students (along with all Bachelors of Science students) receive their diplomas at ceremonies conducted at Littlejohn Coliseum. Important information about graduation can be found on the Registrar’s website: http://www.registrar.clemson.edu/html/graduation.htm. Students should be careful to note the instructions provided in the “Candidate Letter”, paying particular attention to the “Important Reminders”, which has information about the ceremony itself. (http://www.registrar.clemson.edu/html/candLtr.htm)

PhD Students:

In December 2015, Clemson University began holding a special hooding ceremony for graduating PhD students. The hooding ceremony is held in the Brooks Center for the Performing Arts, and participating students are hooded by their faculty advisor and Department Chair. The following website includes more information: http://www.clemson.edu/graduate/students/commencement/faq.html.

After Graduation:

Graduate alumni are encouraged to keep in touch with the Department through social media. We maintain a presence on Facebook, Twitter, and LinkedIn.

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

- Michelin Career Center: https://career.clemson.edu/. Alumni have full access to the Career Center – including career fairs and all resources – for up to one year after graduation.
- Alumni Association - http://alumni.clemson.edu/
Lowry Hall

The Glenn Department of Civil Engineering is located primarily in Lowry Hall. Constructed in 1958, Lowry Hall is an example of modern architecture in the International Style, and was placed on the National Register of Historic Places in 2010. Although originally known as the Structural Science Building, today Lowry houses Civil Engineering administrative and faculty offices, classrooms, meeting space, graduate and undergraduate laboratories, and graduate student offices.

Card Access to Lowry Hall

In an effort to provide a more secure environment, the doors to Lowry Hall are locked each day from 7:00PM – 7:00AM, and on weekends. During these times, Lowry is only accessible to Civil Engineering faculty, staff, and students, who will need to scan their Tiger One card to gain access to the building. The elevator entrance and the side entrance from the courtyard have card access readers. On weekends when Clemson University has a home football game scheduled (typically about 6 games per year, during the fall semester), Lowry Hall is inaccessible to everyone. On those weekends, the building will lock at 12:00AM on Saturday and will not reopen until 11:00AM on Sunday.

Graduate Offices and Mailboxes

Lowry Hall contains a limited amount of office space for graduate students. Office/desk assignments are made by Kristi Baker, and priority is given to GLAs, GRAs (MS and PhD), non-funded PhD students, based on space availability. The graduate offices are keyless – students will be given a numeric combination to enter their assigned offices. The combination should not be shared with anyone not assigned to that office. Space is also available at some off-campus locations; students should contact their faculty advisor about the availability of these spaces.

Students who are employed as GLAs and GGAs will also be assigned a mailbox, located in 123 Lowry Hall. These mailboxes are not to be used for personal mail.

Laboratories

Teaching and research labs are located in the basement level of Lowry Hall. New graduate students who will be utilizing the Lowry Hall labs are required to attend an orientation session during the first week of class for an overview of lab policies and procedures. Following are some guidelines for lab usage:

- Proper safety equipment must be used at all times (safety glasses, gloves, etc.);
- Broken or malfunctioning equipment should be reported to the Technical Staff immediately – students should not attempt to repair equipment themselves;
• Students who do not know how to operate a piece of equipment should contact the Technical Staff for assistance;
• In the event of an accident requiring medical attention, seek medical attention by calling 911, and notify the Technical Staff;
• Students should not work alone in labs if at all possible.

Building Security

All who use Lowry Hall are responsible for its security. Following are a few things to keep in mind about building security:

• During the evenings and on weekends when the building is locked, students should not open the outside door to anyone who does not have card access;
• Students should not bring personal items or items of value into the building. Laptops, tablets or any item of value should be locked up, if possible;
• The door combinations to the graduate offices should not be shared with anyone who is not assigned to that office;
• During evening hours, the doors to the graduate offices should remain closed, particularly if students are working alone;
• Any suspicious activity or issues should immediately be reported to police by calling 656-2222. Students should also notify the Building Security Coordinator, Mr. Danny Metz (dmetz@clemson.edu).

Center for Career and Professional Development

The Center for Career and Professional Development (https://career.clemson.edu/resources.php), housed in the Hendrix Student Center, offers a variety of services for students, including workshops, seminars, online resources, and Career Fairs, which take place in February and September each year. The Center offers a number of resources for graduate students, and also collaborates with the Graduate School and Graduate Student Government to offer workshops specific to graduate students.

Student Health Services

Student Health Services provides a variety of health care services for Clemson University students, including resources for:

• Medical services
• Pharmacy
• Counseling and Psychological Support
• Promoting lifestyles

More information about Student Health Services can be found here: https://career.clemson.edu/michelin_career_center/career_development_recruiting/graduate_students/.
Libraries

See the following link for more information about services offered by the Clemson University Libraries: http://www.clemson.edu/library/.

Clemson Computing and Information Technology (CCIT)

Clemson Computing and Information Technology provides support, help, and resources for Clemson University students, faculty, and staff.

- For complete details on all of the services provided by CCIT, visit their website at: http://www.clemson.edu/ccit/;
- To submit a request for support, email ithelp@clemson.edu;
- CCIT has a Help Desk located on the ground floor of Martin Hall. See the CCIT website for information on hours;
- CCIT maintains a number of computer labs across campus. See the CCIT website for information on location/hours.

The Gantt Multicultural Center

The Harvey and Lucinda Gantt Multicultural Center is committed to creating diverse learning environments that foster the holistic development of our students. The center supports and advocates for the needs of all students, challenges students to think critically about themselves and their communities, provides engaging experiential learning opportunities and empowers students to be positive change agents.

The Center offers multicultural programs, LGBTQ programs, social justice education, as well as many other resources to benefit the Clemson University community. More information can be found on their webpage: https://www.clemson.edu/centers-institutes/gantt/.

Graduate Student Government (GSG)

Graduate Student Government serves as a strong advocate for graduate education at Clemson University, and serves as a voice for graduate students across campus. For more information about GSG, visit their website: http://www.clemson.edu/students/cgsg/.

Parking Services

Students who plan to drive a car on campus must purchase a parking permit from Parking and Transportation Services. Students are encouraged to visit their website to find out more information about parking and other transportation-related topics: http://www.clemson.edu/campus-life/parking/index.html.
Transit Services

Clemson University and the City of Clemson offer fare-free bus transit systems that are available to Clemson University students and citizens of the surrounding communities. The bus routes include stops on campus, many of the off-campus residential areas and apartment complexes, other points of interest around Clemson, and to satellite campuses (CU-ICAR and Clemson One) in Greenville, South Carolina. The following link includes information about the forms of transit, routes, schedules, and other details:

Fike Recreation Center

Full-time graduate students have access to the services provided by the Swann Fitness Center at Fike Recreation Center. The Swann Fitness Center includes state-of-the art fitness and cardio equipment, a climbing wall, indoor pool, racquetball courts, an indoor track, basketball courts, and other facilities.
(http://www.clemson.edu/campus-life/campus-recreation/fike/)

Resources for New International Students

Following are some resources that might be helpful to new international graduate students:

http://www.internationalstudentguidetothusa.com/articles/c_american_culture.htm
APPENDICES
Appendix A - Important Contact Information

Graduate Program Contacts:

Construction Engineering & Management  
Dr. Amy Landis  
112 Lowry Hall  
alandis@clemson.edu

Construction Materials  
Dr. Amir Poursaeae  
316 Lowry Hall  
864.656.3323/amire@clemson.edu

Geotechnical Engineering  
Dr. Nadarajah Ravichandran  
202 Lowry Hall  
864.656.2818/nravic@clemson.edu

Structural Engineering  
Dr. Sez Atamturktur  
210 Lowry Hall  
864.656.3003/sez@clemson.edu

Dr. Weichiang Pang  
312 Lowry Hall  
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Mr. Danny Metz  
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Appendix B – CE Graduate Faculty by Area

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Dr. Kapil Chalil Madathil (kmadath@clemson.edu)
Dr. Kalyan Piratla (kpiratl@clemson.edu)

Construction Materials
Dr. Amir Poursae (amire@clemson.edu)
Dr. Brad Putman (putman@clemson.edu)
Dr. Prasad Rangaraju (prangar@clemson.edu)

Geotechnical Engineering
Dr. Ronald Andrus (randrus@clemson.edu)
Dr. Qiushi Chen (qiushi@clemson.edu)
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Dr. Thomas Cousins (cousin5@clemson.edu)
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Dr. Brandon Ross (bross5@clemson.edu)

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Dr. Jennifer Ogle (ogle@clemson.edu)
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Dr. Abdul Khan (abdkhan@clemson.edu)
Dr. Ashok Mishra (ashokm@clemson.edu)
Appendix C – Labs and Facilities

The Clemson Hydraulics Laboratory (CHL)

The Clemson Hydraulics Laboratory (CHL) is an off campus research facility adjacent to Lake Hartwell and the University Walker golf course. It includes two buildings that are used for hydraulic physical model studies. An outdoor recirculating flume (100 ft by 4.5 ft by 4 ft) which has a 30 ft³/s flow capability, is used for larger-scale, two-dimensional studies. A variety of instrumentation is available including: electromagnetic and impeller-type current meters, surface-piercing wave gages, water samplers, and pressure transducers, ADVs, etc.

An indoor flume is being constructed. The new flume will be 60-ft long with a cross sectional area of 4 ft by 4 ft. This flume will have a recess in a section of the bed to allow for scour studies.

Construction Materials Facilities

The Civil Engineering Department has state of the art facilities to conduct asphalt and concrete materials research. The concrete materials lab is housed in Lowry Hall while the asphalt research is conducted in a dedicated research facility within a five-minute driving distance from Lowry Hall.

Geotechnical Engineering Facilities

The Geotechnical Engineering Facilities occupy about 3500 square feet of floor space, and have standard and advanced testing equipment. Advanced soil mechanics testing equipment includes: four Trautwein GeoTAC computer-automated workstations for consolidation, triaxial, direct shear, and permeability testing; two 3-position pressure panels; and one shake table for relative density testing.

Advanced soil dynamics testing equipment includes: one four-channel dynamic signal analyzer (Agilent 35670A); various velocity and acceleration sensors; two modally turned impact hammers of different sizes; and one free-free resonant column/pulse test system. This equipment can be used for determining small-strain dynamic properties (i.e., Young’s modulus, shear modulus, Poisson’s ratio, damping ratio) of various civil engineering materials in both the laboratory and field. Field tests possible with the equipment include: spectral analysis of surface waves (SASW), seismic crosshole and downhole, reflection/refraction, and vibration monitoring.

Computational facilities include networked PC’s and workstation clusters. PCs and printers are located in all faculty offices, most graduate offices, and all geotechnical engineering laboratories. In addition, the University has state-of-the-art high-performance computing capabilities that are available for research purposes.
**Structural Engineering Research Lab (SERL)**

The main structures engineering testing area supports experimental research related to the performance of buildings, bridges and other structures. The lab has an indoor test area with nearly 4000 ft² of floor space for testing of full-scale building components, a 5000 ft² outdoor reaction slab for testing large structural systems, and an outdoor reaction frame for testing long structural members in bending. In addition, the lab serves as the home base for mobile instrumentation lab for testing highway bridges. The lab is equipped with closed loop hydraulic and screw-drive actuators for applying loads, BRERWULF for applying static and fluctuating air pressures, an air cannon for missile impact studies, a universal test machine for testing small components and data acquisition equipment to measure and record data (stresses, loads, accelerations and deformations).

In addition, the group has access to the Wind Load Test Facility. The WLTF is a 10,000 sf laboratory housing one of the largest atmospheric boundary wind tunnels in the country. The WLTF possesses an instrumentation and model shop area, actuators and fabrication workshop that are used for constructing test specimens.

**The Wind Load Test Facility (WLTF)**

The Wind Load Test Facility is an off-campus research laboratory for wind engineering. This laboratory houses one of the nation’s largest boundary layer wind tunnels as well as component testing equipment which is unique in the United States. Funded after Hurricane Hugo devastated parts of South Carolina, the facility is used for studies focusing on storm damage to low-rise buildings, such as houses or commercial buildings of three stories or less.

The boundary layer wind tunnel at the Wind Load Test Facility is capable of simulating winds close to the ground at a range of model scales. The wind tunnel can be used to generate wind load time histories which can then be applied to full-scale test specimens. The wind tunnel facilities are complimented by a range of load testing machines and reaction frames which allow testing of structural components and systems.

**Transportation Systems Research Laboratory (TSRL)**

TSRL resources include computer hardware, software, and specialized traffic surveillance devices to support multiple disciplinary Transportation Systems research.

The Transportation Systems Mobile Laboratory is a multi-use traffic surveillance van that can collect an array of transportation related information including: traffic volumes, traffic speeds, turning movements, traffic queues, headways roadside topography, continuous road survey road inventory, traffic control locations, digital video-log, grade, and cross-slope.
APPENDIX D - CE-G1 – REQUEST FOR APPROVAL TO CHANGE CONCENTRATION AREA

Approval to change Concentration Area is subject to review and approval by faculty in the requested Area. Additional material (transcripts, application supporting material, etc.) may be required. A faculty member in the requested Area will initial below to indicate which (if any) completed courses may be allowed to satisfy the requirements of the degree.

*Note: Graduate Assistants who change Concentration Areas are not guaranteed continued financial support.*

Name: ___________________________  Degree: ___________________________

XID#: ___________________________  Current GPA: ___________________________

Current Concentration Area: ___________  Current Faculty Advisor: ___________

Requested Concentration Area: ___________  CU Entrance Date: ________________

Brief statement of reason for request to change areas:

List all graduate courses completed for the degree, either at Clemson or transfer credits (if applicable):

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Approval Signatures:

Student ___________________________  Date ________________

Current Concentration Area ___________________________  Date ________________

Requested Concentration Area ___________________________  Date ________________

Graduate Program Coordinator ___________________________  Date ________________
APPENDIX E - CE-G2 – REQUEST FOR APPROVAL OF TRANSFER CREDITS

A syllabus for each course must be attached to this form. Refer to the Graduate Handbook for limits on the number of allowable transfer credits per degree type.

Name: ___________________________ Date: ___________________________

Concentration Area: ___________________________ Degree: ___________________________

Previous University: ___________________________ CU Entrance Date: ___________________________

List all graduate level transfer courses to be considered.

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Approval Signatures:

Student ___________________________ Date ___________________________

CE Faculty Advisor ___________________________ Date ___________________________

Graduate Program Coordinator ___________________________ Date ___________________________

Glenn Department of Civil Engineering • 109 Lowry Hall • Clemson, SC 29634 • 864.656.3001