



MISSISSIPPI STATE UNIVERSITY

Civil and Environmental Engineering

Graduate Student Guide

(Effective: January 2013)

Mississippi State University's Bagley College of Engineering offers programs of study leading to Masters and Doctoral degrees in Civil and Environmental Engineering (CEE) with specializations in the following areas:

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

The basic requirements for graduate studies and degrees are established by Mississippi State University (MSU) and are found in the Graduate Bulletin. Additional requirements and procedures established by the CEE Faculty are described below. Where there is a conflict, the Bulletin takes precedence.

For further information on CEE studies, see the departmental web site

<http://www.cee.msstate.edu>

or email the graduate coordinator

grad-coordinator@cee.msstate.edu

CONTENTS

CONTENTS	2
ADMISSION	3
Regular Admission	3
Contingent Admission.....	3
Provisional Admission.....	4
ACADEMIC PERFORMANCE	4
FINANCIAL ASSISTANCE FOR ON-CAMPUS STUDENTS	5
Program of Study – Thesis Option	5
Detailed Steps – Thesis Option	6
Program of Study – Non-Thesis Option	7
Detailed Steps – Non-Thesis Option	8
Time Limit – Both Options	9
DOCTOR OF PHILOSOPHY (PhD) DEGREE	9
Program of Study	9
Summary of Steps to Complete PhD Degree.....	9
Detailed Steps to Complete the PhD Degree.....	9
Time Limit	14
Penalties.....	14
CORE GRADUATE COURSES	14
Group 1: Engineering Mechanics and Operations.....	14
Group 2: Mathematics and Statistics.....	14
Group 3: Sciences.....	14

ADMISSION

Students are admitted to graduate study in the Department of Civil and Environmental Engineering (CEE) upon approval of the Mississippi State University (MSU) Office of Graduate School (OGS), the Departmental Graduate Coordinator, and the department's graduate faculty. Admission is based on the criteria listed below. Application forms and instructions are available at the website of the Office of the Graduate School (www.grad.msstate.edu).

Regular Admission

Applicants meeting the following requirements are eligible for regular admission:

1. Possess qualifications and interests indicating the applicant will be successful in the MSU CEE graduate program.
2. Bachelor of Science from a program accredited by the Engineering Accreditation Commission of ABET (www.ABET.org) and includes core competency in the sub-discipline in which the student will focus their graduate studies. Applicants from other engineering programs will be considered on a case-by-case basis.
3. Minimum undergraduate grade point average (GPA) of 3.0 on a 4.0 scale as computed for courses that comprise the last two academic years of the degree program.
4. GRE for all applicants though this maybe optional for those with an ABET-accredited civil engineering degree program.
5. International students must obtain a minimum TOEFL (Test of English as a Foreign Language) score of 550 (written test, PBT), 213 (computer-based test, CBT) or 79 IBT. As an alternative, an international student may take the IELTS (International English Language Testing Systems) exam on which they must obtain a minimum score of 6.5.

Contingent Admission

Applicants failing to meet the requirements for regular admission may be considered for contingent admission. Contingent admission may be granted under the following conditions:

1. Applicants with appropriate degrees in engineering, mathematics, or science but do not satisfying the civil engineering sub-discipline's core competencies for the area of the student's graduate studies may be admitted on contingent status provided they satisfy the applicable GPA and TOEFL/IELTS criteria for regular admission and have taken the GRE.
2. To be removed from contingent status, the student must successfully complete remedial sub-discipline prerequisite courses defined by their graduate committee with a grade of B or better for each course.

3. Undergraduate sub-discipline prerequisite courses may not be used for graduate credit.
4. Students that do not satisfy the stipulations for removal from contingent status in a timely manner will be dismissed from the graduate program.

Provisional Admission

Applicants failing to meet the requirements for regular admission may be considered for provisional admission. Provisional admission may be granted under the following conditions:

1. Applicants with appropriate degrees in engineering, mathematics, or science and who satisfy the civil engineering sub-discipline prerequisites may be granted provisional admission when the applicant's minimum undergraduate GPA is 2.7 or greater on a 4.0 scale when computed for courses that comprise the last two academic years of the degree program.
2. To be removed from provisional status, the student must earn a 3.0 GPA or higher on the first nine graduate credit hours applicable to their program of study taken at MSU. Courses with an S grade, transfer credits, or credits earned while in Unclassified status cannot be used to satisfy this requirement.
3. Students that do not satisfy the stipulations for removal from provisional status in a timely manner will be dismissed from graduate study.
4. While in the provisional status, a student is not eligible to hold a graduate assistantship.

ACADEMIC PERFORMANCE

Once admitted to the CEE graduate program, a student who fails to maintain a satisfactory academic record will be considered to be on academic probation. A graduate GPA will be computed for each student at the end of each semester. The student's graduate GPA is the average of all graduate courses attempted while in the CEE graduate program.

1. A student whose graduate GPA drops below 3.0 is automatically on academic probation.
2. A student who obtains a grade below a B on a prerequisite course is automatically on academic probation.

To be removed from academic probation, the student, by the completion of the next nine credit hours of progress toward the degree, must:

1. Achieve a graduate GPA of 3.0 or above.
2. Earn a grade of B or above on any prerequisite core of which a grade lower than B was previously obtained before the subsequent course(s) may be taken.

At the beginning of each semester CEE Department will evaluate the records of all CEE graduate students currently on probation, as well as students making a grade of D, F, or U during the previous semester. Such students may be dismissed from the CEE graduate program if:

1. The student was admitted on contingent status due to deficiencies in prerequisite coursework and fails to make satisfactory progress toward completion of prerequisites.
2. The student is on academic probation and is unable to meet all requirements for good academic standing by the completion of the next nine credit hours of progress toward the degree.
3. The student makes a grade of D or F in a graduate or undergraduate course attempted while in the CEE graduate program.
4. The student receives a grade of U (unsatisfactory) in an course for which a grade of S (satisfactory) is required.

FINANCIAL ASSISTANCE FOR ON-CAMPUS STUDENTS

Financial assistance in the form of teaching or research assistantships is available to qualified students on a competitive basis and offers a monthly stipend and tuition remission. In addition, scholarships and fellowships may be awarded that supplement or replace assistantships.

Unless otherwise directed by the committee, a student who is awarded a research assistantship that provides more than 50% support over his or her time in graduate school will be expected to write a thesis on some aspect of the research (hourly wage work on research projects will not count as part of the 50% support). Students who participate in research to a lesser extent, and a students who are awarded teaching assistantships, may write a thesis on a topic approved by their graduate committee, or elect the non-thesis option.

Students who are considered to be on academic probation will not be eligible for research or teaching assistantships. Similarly, if the university places a student on probation due to violation of honor code requirements, they will not be eligible for financial assistance from the department. Once they have been removed from probationary status, as students eligibility for financial support will be reevaluated.

MASTER OF SCIENCE (MS) DEGREE

Program of Study – Thesis Option

1. Students electing the thesis option must complete a minimum of twenty-four credit hours of graduate course work plus a minimum of six credit hours of thesis research that satisfies the requirements below.

2. Half of all graduate coursework hours in the program of study must be at the full graduate level (numbered 7000, 8000 or 9000).
3. A minimum of half the credit hours in the program of study must be CE courses.
4. Students must satisfy graduate any core curriculum requirements within the sub-discipline that the student is studying.
5. A minimum of nine credit hours must be taken in mathematics and statistics, engineering mechanics and operations, and basic science. The department maintains a recommended list of graduate courses that can be used to satisfy this requirement (see attachment). The student may request the committee approve the substitution or addition of courses not on the attached list.
6. Up to six hours of CE 7000 (special-topic, directed individual study) courses) may be used to fulfill the CE and full graduate level requirements above.
7. A maximum of nine credit hours can be transferred from other institutions as approved by the student's committee.
8. No CE course with a "C" or lower can be used for graduate credit.

Detailed Steps – Thesis Option

1. Form graduate committee and develop plan of study during first semester. The Committee must have a minimum of three members; the Committee Chair (major advisor), and two other members. The major advisor must be a Level 1 or 2 member of the Graduate Faculty. No more than one member may hold Graduate Committee Participant status. Forms for the committee and plan of study are available on the Graduate School web site (<http://www.grad.msstate.edu>; original completed forms are submitted to the Graduate School and copies to the CEE office).
2. Choose Thesis Topic. The student is required to present a thesis proposal to their graduate committee that includes a brief literature review, demonstrates a basic understanding of their research topic, and demonstrates that successful completion of the research will yield an acceptable thesis in a timely manner.
3. For distance students only, obtain certification for the facility in which they will conduct their research (see OGS for certification form at <http://www.grad.msstate.edu/forms>).
4. Complete Coursework with requirements as described above as well as any prerequisite courses required by graduate committee.
5. A minimum of six credit hours of CE 8000 Thesis - Research/Thesis is required and can be used to satisfy the 30 hour requirement for the thesis option degree.
6. Finish Research, write and then defend thesis. A minimum of three weeks prior to the defense, a complete, final draft of the thesis must be submitted to Graduate Committee members. The date and location of the defense will be publicized two

weeks prior to the defense. The thesis must conform to the university guidelines as set in the Graduate Bulletin. The defense has two components: 1) a public presentation of the thesis contents, and 2) an oral comprehensive examination. The student's examination and thesis defense will be held at the MSU Starkville, MS campus. Part 2) will be closed to the public. Upon completion of the exam, the committee submits a Report of Examination Results to the Graduate School (and copies to the CEE office for the permanent file).

7. Students will be expected to participate in the development and submission of at least one publication to a forum of mutual agreement between the student and major advisor (major professor).
8. Obtain approval for thesis cover sheet from library and submit to graduate committee and graduate advisor for approval. Submit cover sheet with all signatures completed except for Dean to the Dean's office along with a copy of thesis abstract and completed college exit survey form.
9. Note that students must complete a Notification of Intent to Apply for Graduation form in the semester PRIOR to the semester of intended graduation. The graduating semester the student must apply for graduation and pay an application fee. The student should also ensure that all forms (committee, program of study, transfer forms, etc.) are updated and correct or submit change forms as necessary. Note that the courses on their transcript have to match exactly what is on their plan of study. See the academic calendar on the graduate school web site for dates and deadlines. All original forms must be submitted to the graduate school and copies to the committee and CEE office for the permanent record.
10. Also, students will need to comply with the MSU library deadlines for submittal, including completing Author Contact Form and ETD Rights and Permission Form with signatures (see <http://library.msstate.edu/thesis/index.asp> for instructions and deadlines),
11. Continuous registration is required and students are required to be enrolled during the semester they take their exams and complete graduation.

Program of Study – Non-Thesis Option

1. Students electing the non-thesis option must complete a minimum of thirty-three credit hours of graduate course work.
2. A minimum of 15 credit hours in the program of study must be at the full graduate level (numbered 7000, 8000 or 9000).
3. A minimum of eighteen credit hours of CE courses are required.
4. Students must satisfy graduate any core curriculum requirements within the sub-discipline that the student is studying.

5. A minimum of nine credit hours must be taken in mathematics and statistics, engineering mechanics and operations, and basic science. The department maintains a list of recommended graduate courses that can be used to satisfy this requirement (see attachment). The student may request the committee approve the substitution and/or addition of courses not on the attached list.
6. Up to six hours of CE 7000 courses may be used to fulfill the CE and full graduate level requirements above.
7. A maximum of nine credit hours can be transferred from other institutions.
8. No CE course with a "C" or lower can be used for graduate credit.
9. Exit examination for non-thesis students – two options:
 - a. Project and examination - a project in partial fulfillment of the degree requirements. A written report on the project in thesis format will be submitted and a formal oral presentation of the work will be made to the committee. The committee will inquisitively review the work with the student during the presentation. The report must be approved by the committee and oral examination successfully completed.
 - b. Examination only - a comprehensive examination over all graduate coursework and core competency areas will be successfully completed. The format and content of the exam is at the discretion of the graduate committee.

Detailed Steps – Non-Thesis Option

1. Form graduate committee and develop plan of study during first semester. The Committee must have a minimum of three members; the Committee Chair (major advisor), and two other members. The major advisor must be a Level 1 member of the Graduate Faculty. Forms for the committee and plan of study are available on the Graduate School web site (original completed forms are submitted to the Graduate School and copies to the CEE office).
2. Complete Coursework with requirements as described above as well as and prerequisite courses required by graduate committee.
3. Complete comprehensive exam or project as described above. Upon completion of the exam, the committee submits a Report of Examination Results to the Graduate School (and copies to the CEE office for the permanent file).
4. Complete exit form from the College and submit in the graduating semester.
5. Note that students must complete a Notification of Intent to Apply for Graduation form (commonly referred to as the Pre-Audit Form) in the semester PRIOR to the semester of intended graduation. The graduating semester the student must apply for graduation and pay an application fee. The student should also ensure that all forms (committee, program of study, transfer forms, etc.) are updated and correct or

submit change forms as necessary. Note that the courses on their transcript have to match exactly what is on their plan of study. See the academic calendar on the graduate school web site for dates and deadlines. All original forms must be submitted to the graduate school and copies to the committee and CEE office for the permanent record.

6. Continuous registration is required and students are required to be enrolled their graduating semester.

Time Limit – Both Options

The time limit on credits earned that can be accepted toward fulfilling the requirements for a Master of Science degree is eight years.

DOCTOR OF PHILOSOPHY (PhD) DEGREE

Program of Study

The PhD in CEE requires satisfactory completion of 38 credit hours beyond the MS or a minimum of 62 hours beyond the BS, passing two examinations (Qualifying and Comprehensive), and submission and defense of an acceptable dissertation. Details of these requirements are given below.

Summary of Steps to Complete PhD Degree

1. Admission.
2. Demonstrate English proficiency.
3. Form Dissertation Committee, develop plan of study and begin taking courses.
4. Qualifying Exam.
5. Choose dissertation topic.
6. Finish coursework.
7. Written Preliminary Exam and Oral Comprehensive Exam.
8. Complete dissertation.
9. Prepare draft of journal papers.
10. Defend and Submit Dissertation.

Detailed Steps to Complete the PhD Degree

1. Admission to Program. Admission requirements are specified above as well as the MSU Graduate Student Bulletin.

2. English Proficiency Requirement for International Students. Regular admission into the PhD program requires a minimum TOEFL score of 550 (written test, PBT), 213 (computer-based test, CBT) or 79 IBT. In addition, doctoral students must demonstrate proficiency in written English. See the graduate bulletin for other requirements (at <http://www.grad.msstate.edu>). Assistance in communication is provided by the Bagley College of Engineering's Shackouls Technical-Communication Program which a tutor program to assist with all sorts of writing and speaking endeavors. The university also offers a English as a Second Language classes that may be required if remediation of English skills is deemed appropriate and required by the Office of the Graduate School (OGS) or the committee (e.g., ESL 5313, 5323).
3. Form Graduate (Dissertation) Committee and Develop Program of Study (POS). This task is to be completed during first semester. The Committee must have a minimum of four members; the Committee Chair (major advisor), and three other members. No more than two (2) members may hold Graduate Committee Participant status. The major advisor must be a Level 1 member of the Graduate Faculty. If the student chooses a minor, the student must also include the minor advisor as an additional member on the Committee. Forms are available on the Graduate School Web site (original completed forms are submitted to the Graduate School and copies to the CEE office).
4. For distance students only, obtain certification for the facility in which they will conduct their research (see OGS for certification format <http://www.grad.msstate.edu/forms>).
5. Take Qualifying Examination. A qualifying exam will be required in a format specified by the student's graduate committee. The qualifying exam is to be taken before completion of nine course hours (non-research) after admission to the program. The student's major advisor may also require that the exam be taken earlier, given reasonable notice. The student must be enrolled during the semester in which the exam is taken. Here it is assumed that the student already possesses a MS in the field of study or the equivalent. The exam is intended to determine whether the student possesses:
 - a. sufficient knowledge of the discipline to pursue PhD degree;
 - b. sufficient theoretical reasoning skills to pursue the PhD degree, and;
 - c. any academic deficiencies that must be remediated in developing the program of study.

Specific exam content is to be determined by the CEE graduate faculty to which the student is affiliated (environmental, geotechnical, materials, structures, transportation, or water resources). This exam is not intended to be specific to a student's dissertation topic, but rather to test general knowledge that any PhD Candidate in the student's discipline should possess. If a student fails the qualifying exam, it must be retaken within three months. If the exam is failed the second time,

the student will be expelled from the PhD program and may not continue pursuit of the PhD degree in CEE at MSU.

6. Choose Dissertation Topic. No later than 1 month (not including University holidays) after passing the Qualifying Exam, the student must select a tentative dissertation topic and form the Graduate (dissertation) Committee. The advisor of direct-entry (from BS level) students may require the completion of this step earlier in the program. The student must arrange for a Committee meeting to present the proposed coursework and brief summary of the dissertation topic for Committee approval. This is not an examination, but to ensure that the student's initial selection of a dissertation topic is reasonable and compatible with the expertise of the Committee and with the student's plan of study.
7. Complete Coursework. A minimum of 18 credit hours of coursework beyond the MS (plus a minimum of 20 credit hours of dissertation research) or a minimum of 42 credit hours of coursework beyond the BS (plus a minimum of 20 hours of dissertation research) is required. Hence, there are three options for obtaining a PhD:
 - a. PhD following award of a MS – Students who have completed a MS degree before admission to the PhD program will be required to complete a 38-credit hour program of study that includes 18 credit hours of coursework and a minimum of 20 credit hours of dissertation research.
 - b. PhD following award of a BS and does not receive a MS (Direct Admission; Option 1) – Students who are admitted directly to the PhD program following completion of a BS without obtaining a MS will be required to complete a 62-credit hour program of study that includes 42 credit hours of coursework and a minimum of 20 credit hours of dissertation research.
 - c. PhD and MS following award of a BS (Direct Admission; Option 2) – Students who are admitted directly to the PhD program following completion of a BS, but who also wish to obtain a MS prior to completing the requirements for the PhD, will be required to complete a 71-credit hour program of study that includes 51 credit hours of coursework and a minimum of 20 credit hours of dissertation research.

If the student does not meet the MSU Civil and Environmental Engineering MS graduate core course requirement, this requirement must be fulfilled but courses taken to meet the requirement may count toward the minimum coursework hours subject to the approval of the student's Graduate Committee. However, the committee may also require additional courses beyond the minimum.

Up to six hours of CE 7000 may be used. The Committee may approve transfer credit, but at least $\frac{1}{2}$ of the course work and dissertation credit requirements must be taken from MSU. Students who do not maintain adequate coursework performance may be dropped from the PhD program. Inadequate coursework performance includes: GPA less than 3.0; a grade of "U", "D", or "F" in any course, or more than two grades

below “B”. No grade of “C” or less in any CE course will be accepted for graduate credit.

8. Complete requirement for a minimum of 20 credit hours of CE 9000 - Dissertation Research/Dissertation.
9. Complete Comprehensive Examination (written and oral) in all areas of study; major, minor and collateral.
 - a. Within one month (not including University holidays) after the student completes or is within credit six hours of completing the required plan of study coursework, the student must take the preliminary and comprehensive exams.
 - b. A student must be enrolled during the semester in which the exam is administered.
 - c. Within two weeks prior to the examination the student will post an open call to all CEE faculty indicating the dates of the exam and inviting questions for the preliminary exam. Exam questions will be prepared by the Graduate (dissertation) Committee.
 - d. During the written preliminary exam, the student must demonstrate sufficient knowledge of the subject matter of courses on the plan of study, the dissertation subject, as well as the viability of the detailed dissertation topic. Thus, the examination may cover coursework included in the plan of study as well as subjects relevant to the student’s dissertation topic.
 - e. The preliminary exam has two components; a written preliminary examination and an oral comprehensive examination. During the oral comprehensive examination, the student must present a detailed dissertation topic to the committee. Here the Committee approves, suggests or requires modifications to, or disapproves of the topic and its scope.
 - f. If a student fails the preliminary or comprehensive exams, they must be retaken within five months. If the exam is failed a second time, the student will be expelled from the PhD program and may not continue pursuit of the PhD degree in CEE at MSU.

The student becomes a degree Candidate after passing the preliminary and comprehensive exams, completing the plan of study, satisfying the English proficiency requirement, and having the final graduate program accepted in the Office of Graduate Studies. The committee submits a Report of Examination Results and Admission to Candidacy forms to the Graduate School (and copies to the CEE office for the permanent file)

10. Finish Research and Write Dissertation. The PhD program must be completed within eight years of admission.

11. Submit Technical Papers. Students will be expected to lead the development and submission of at least two manuscripts to peer reviewed journals of mutual agreement between the student and major advisor. Unless otherwise indicated by the graduate committee, authors are to include the student, the major advisor, and other members of the Committee significantly contributing to the research.
12. Defend Dissertation. A minimum of three weeks prior to the defense, a complete, final draft of the dissertation must be submitted to Graduate Committee members. The dissertation must conform to the university guidelines as set in the Graduate Bulletin. The student must file for defense at least two weeks prior to the intended date. The defense has two components: 1) a public presentation of the dissertation contents, and 2) an oral examination by the Graduate committee. Part 2) may be closed to the public. Upon completion of the exam, the committee submits a Report of Examination Results to the Graduate School (and copies to the CEE office for the permanent file).
13. Complete dissertation and submit to library (cover for approval and then dissertation for review prior to final submittal). Consult <http://library.msstate.edu/thesis/process.asp> for process and deadlines
14. Obtain approval for dissertation cover sheet from library and submit to graduate committee and graduate advisor for approval. Submit cover sheet with all signatures completed except for Dean to the Dean's office along with a copy of the dissertation abstract and completed college exit survey form.
15. The graduating semester the student must apply for graduation and pay an application fee. The student should also ensure that all forms (committee, program of study, transfer forms, etc.) are updated and correct or submit change forms as necessary. Note that the courses on their transcript have to match exactly what is on their plan of study. See the academic calendar on the graduate school web site for dates and deadlines. All original forms must be submitted to the graduate school and copies to the committee and CEE office for the permanent record.
16. Also, students will need to comply with the MSU library deadlines for submittal, including completing Author Contact Form and ETD Rights and Permission Form with signatures (see <http://library.msstate.edu/thesis/index.asp> for instructions. Details on final manuscript submission requirements are given in the MSU Graduate Student Bulletin.
17. Continuous registration is required and students are required to be enrolled their graduating semester.

A student who fails the final defense must wait at least 6 months before another can be taken. A second failure results in expulsion from the PhD program. It is traditional that, upon successful completion of the defense, the candidate provides final bound dissertation copies to each of the committee members.

Time Limit

The time limit on credits earned that can be accepted toward fulfilling the requirements for a PhD is five years following satisfactory completion of the preliminary and comprehensive exams.

Penalties

If deadlines are not met or satisfactory progress is not made on research, the advisor or department may, for one or more semesters, suspend tuition and stipend funding to a non-compliant student.

CORE GRADUATE COURSES

Graduate students in the Department of Civil and Environmental Engineering will be required to have completed a minimum of nine credit hours in mathematics and statistics, engineering mechanics and operations, and science. The recommended courses that may be used to satisfy this requirement are listed below. The student may request the committee approve the substitution of courses not on this list and may be substituted at the discretion of the graduate committee based on course content and availability.

Group 1: Engineering Mechanics and Operations

CE 8533 Hydromechanics	IE 6513 Engineering Administration
CE 8683 Advanced Finite Element Analysis	IE 6533 Project Management
CSE 8833 Algorithms	IE 6713 Operations Research I
CSE 6633 Artificial Intelligence	IE 6733 Linear Programming
EM 6123 Intro to Finite Element Methods	IE 6773 Systems Simulation I
EM 6213 Adv. Mechanics of Materials	IE 8743 Nonlinear Programming I
EM 8113 Theory of Continuous Media	ME 6833 Intermediate Fluid Mechanics
EM 8203 Applied Elasticity	ME 8813 Viscous Flow I

Group 2: Mathematics and Statistics

CE 8503 Data Analysis for CE	MA 8213 Foundations of Applied Math II
MA 6153 Matrices and Linear Algebra	MA 6523/ST 6523 Intro to Probability
MA 6313 Numerical Analysis I	MA 6533 Intro to Prob and Random Process
MA 6323 Numerical Analysis II	MA 6543/ST 6543 Intro to Math Statistics
MA 8203 Foundations of Applied Math I	ST 8214 Design and Analysis of Experiments

Group 3: Sciences

BIO 6404 Environmental Microbiology	CH 6303 Environmental Chemistry
CE 6843 Environ Engineering Chemistry	CHE 6113 Chemical Reactor Design
CE 8573 Hydro-environmental Analysis	WFA 6221 & 6222 Limnology