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Graduate Student Handbook

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IOWA STATE UNIVERSITY
Department of Civil, Construction, and Environmental Engineering

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The Civil, Construction and Environmental Engineering Department Graduate Student Handbook

1.0 Introduction

The Civil, Construction and Environmental Engineering Department (CCEE) Graduate Student Handbook is intended to provide academic guidance for students enrolled in the CCEE graduate programs. This document references key resources in the University, points to University requirements, identifies degree components, and highlights key components for students pursuing a graduate degree in civil engineering. The handbook does not contain all the resources and policies that may be relevant, but it will help direct the student to additional information.

The University's *Graduate College Handbook* identifies many more resources regarding University procedures, graduate forms, schedules for submission of forms, financial resources, and more. The Graduate College's web site, <http://www.grad-college.iastate.edu>, contains the Graduate College Handbook, as well as many deadlines, forms, and publications that are important to the graduate student. All students should acquaint themselves with these resources.

The CCEE Graduate Student Handbook is consistent with the policies and procedures formulated by the University and the Graduate College and, hence, supplements the materials contained there. This handbook is intended to emphasize departmental requirements and resources. Note that some specialization areas within the department may have additional requirements regarding core courses, graduate seminars, meetings, or other activities.

**EACH STUDENT IS RESPONSIBLE FOR MEETING ALL POLICIES, DEADLINES,
AND REQUIREMENTS.**

The CCEE Graduate Student Handbook is available on the department's web page at http://www.ccee.iastate.edu/files/2014/01/CCEEgrad_handbook.pdf

2.0 Degree Programs

2.1 Graduate Degree Major

The CCEE Department offers the Master of Science (M.S.), Master of Engineering (M.Eng.) and the Doctor of Philosophy (Ph.D.) degrees. The degree major is “**Civil Engineering**” with areas of specialization in:

- Civil Engineering Materials
- Construction Engineering and Management
- Environmental Engineering
- Geotechnical Engineering
- Structural Engineering
- Transportation Engineering
- Intelligent Infrastructure Engineering (M.S. (thesis) and Ph.D. only)
- General Civil Engineering (M.Eng. only)

For all degrees, the diploma will list the major, “**Civil Engineering**”.

As noted above, a student can earn a degree in “**Civil Engineering**”, without a specialization. This option is only available for the M. Eng. and is a general degree that addresses three specialization areas selected by the student. Only students with an accredited bachelor’s degree in civil engineering may select this general option.

2.2 Interdepartmental Degree Programs

The department also participates in two interdepartmental degree programs:

- TRANSPORTATION – M.S. only <http://www.ctre.iastate.edu/mstrans/>
- ENVIRONMENTAL SCIENCE – M.S., Ph.D. <http://www.ensci.iastate.edu/grad/homepage.html>
- BIORENEWABLE RESOURCES and TECHNOLOGY (BRT) – M.S., Ph.D.
<http://www.biorenew.iastate.edu/education/brt/>
- WIND ENERGY SCIENCE, ENGINEERING AND POLICY (WESEP) – Ph.D.
<http://www.igert.windenergy.iastate.edu/education/>

These interdepartmental program requirements are established by the supervisory committee of each degree.

2.3 CCEE B.S./M.S. Concurrent Program

CCEE provides an opportunity for eligible students in the undergraduate civil or construction engineering programs to begin graduate studies while they complete the requirements for the undergraduate degree. Juniors and seniors are encouraged to examine the possibility of participating in this concurrent enrollment program. For details about the B.S./M.S. concurrent program eligibility and program structure, please refer to the CCEE home page under the “Academics” heading.

<http://www.ccee.iastate.edu/academics/graduate/concurrent-msbs-program/>

3.0 General Program Requirements

3.1 Graduate English Requirements for Non-Native Speakers of English

Graduate students whose native language is not English and who do not have a bachelor's degree from ISU or a US institution must take the English Placement Test (EPT) at the beginning of their first semester of enrollment. This test is administered by the Department of English. It must be taken in addition to TOEFL (Test of English as a Foreign Language), which is taken as part of the admissions process. A student who does not pass the EPT is assigned to one or more courses in the English 99 and 101 series and must be completed during the first year of study.

A graduate student whose native language is not English but did graduate from a U.S. institution, may be exempted from taking the EPT. The student must submit to the Graduate College the "Request for the Graduate College to Approve the Graduate English Requirement for a Student Whose Native Language is NOT English" form (see English Requirement Approval <http://www.grad-college.iastate.edu/common/forms/files/EnglishRequirement.pdf>). The following conditions must be met:

- the student must have received a bachelor's, master's, or Ph.D. degree from a U.S. college or university and
- the language of instruction at that college or university must have been in English.

or

- students with a TOEFL score of 640 and above (paper-based TOEFL) or 105 and above (internet-based TOEFL). Additionally, a score of 8.0 and above on the IELTS is exempt from taking the EPT.

3.2 Civil Engineering Language Requirements

Civil Engineering does not require a foreign language for either the Master of Science, Master of Engineering or the Doctor of Philosophy degrees.

3.3 Course Requirements

A Master of Science and the Master of Engineering degrees each requires a minimum of 30 credits and the doctoral degree requires a minimum of 72 credits. The details of the program are developed in consultation with a major professor and a program of study (POS) committee. M.S. students may choose between **thesis** and **non-thesis** (creative component) options as described in the following sections, however, students who have research assistant appointments are expected to complete the **thesis** option.

The courses listed in Table 1 are minimum **undergraduate** course requirements for students seeking a graduate degree in the areas of specialization in the CCEE Engineering Department. Equivalent courses may be substituted for the listed courses. If these conditions are not met at the time of application, a provisional admission may be given. The student is required to remove deficiencies by taking appropriate courses on a graded basis. These courses do not count toward a graduate degree.

Students without an accredited bachelor's degree in engineering should be aware that completion of the graduate degree may not qualify the student to attain registration as a professional engineer in some states. The policies for registration are established by the Board of Engineering Examiners in each state. The Board in the state you desire registration in should be contacted for complete information about current and developing policies regarding the qualifications for engineering registration.

3.4 Thesis and Dissertation Requirements

The Graduate Handbook defines:

A master's thesis as:

“A scholarly composition that demonstrates the ability of the author to do independent and creative work. It explores in some depth a problem or issue related to the major field of study. Although considerable variations in format and style are acceptable, precise expression, logical construction, and meticulous attention to detail are essential. A minimum of three research credits is required on every program of study for a thesis master's degree.”

A creative component:

“Must present substantial evidence of individual accomplishment (e.g., a special report, capstone course, integrated field experience, annotated bibliography, research project, design, or other creative endeavor). A minimum of two credits of such independent work is required on those programs of study (POS).”

CCEE expects the student to show mastery and understanding in the topic of the student's creative component through the final exam.

A Ph.D. dissertation:

“Must demonstrate conclusively the ability of the author to conceive, design, conduct, and interpret independent, original, and creative research. It must attempt to describe significant original contributions to the advancement of knowledge and must demonstrate the ability to organize, analyze, and interpret data. In most instances, a dissertation includes a statement of purpose, a review of pertinent literature, a presentation of methodology and results obtained, and a critical interpretation of conclusions in relation to the findings of others. When appropriate, it involves a defense of objectives, design, and analytical procedures. Dissertation research should be worthy of publication and should appear in appropriate professional journals or in book form. Since satisfactory completion of the thesis or dissertation can constitute one of the most gratifying experiences in graduate study, the document should reflect the highest standards of scholarship, serving as a measure of quality for the student, major professor, the program, and Iowa State University.

Table 1: Minimum Undergraduate Course Requirements for CCEE Department Graduate Degrees

Minimum Undergraduate Course Requirements	ConE	G/M	Envir	Str	Tran*	IIE
Mathematics and Computer Science Calculus (12 semester credits, 3 of the 12 credits can be a numerical analysis course)..... Math 266...Elementary Differential Equations..... Computer Language..... Statistics.....	Calculus Math 266 Computer Stat	Calculus Math 266 Computer Stat	Calculus Math 266 Computer Stat	Calculus Math 266 Computer Stat	Calculus Math 266 Computer Stat	Calculus Math 266 Computer Stat
Science Chem 167 or 177...General Chemistry..... Geol 201...Geology for Engineers & Envir. Scientists..... Phys 221...Introduction to Classical Physics I.....	Chem 167or177 Phys 221	Chem 167or177 Geol 201 Phys 221	Chem 167or177 Geol 201 Phys 221	..... ..... Phys 221	Chem 167or177 Geol 201 Phys 221	(select one) Chem 167 or 177 Geol 201 Phys 221
Engineering Mechanics EM 274...Statics of Engineering..... EM 324...Mechanics of Materials..... EM 327...Mechanics of Materials Laboratory..... EM 345...Dynamics..... EM 378...Mechanics of Fluids.....	EM 274 EM 324 EM 327	EM 274 EM 324 EM 345 EM 378	EM 274 EM 378	EM 274 EM 324 EM 327 EM 345	EM 274 EM 324 EM 378	(select one) EM 274 EM 324 EM 345 EM 378
Civil Engineering CE 111...Fundamentals of Surveying I..... CE 326...Principles of Environmental Engr..... CE 332...Structural Analysis I..... CE 333...Structural Steel Design I..... CE 334...Reinforced Concrete Design I..... CE 360...Geotechnical Engineering..... CE 372...Engineering Hydrology and Hydraulics..... CE 382...Design of Concretes CE 383...Design of Portland Cement Concrete..... CE 453...Highway Design.....	..... ..... CE 332 CE 334 CE 360 CE 383 .....	..... ..... ..... ..... ..... CE 360 CE 382 .....	..... CE 326 CE 372 ..... ..... .....	..... ..... CE 332 CE 333 CE 334 CE 360 ..... ..... ..... ..... .....	..... ..... ..... ..... ..... CE 360 CE 372 CE 382 CE 453	(select two) CE 111 CE 326 CE 332 CE 333 CE 334 CE 360 CE 372. CE 382 CE 383 CE 453
Construction Engineering – Demonstrated competencies in topic areas of current undergrad ConE courses (see below)** ConE 340...Concrete and Steel Construction..... ConE 421...Construction Estimating..... ConE 441...Construction Planning, Scheduling, & Control.	ConE 340 ConE 421 ConE 441	..... ..... .....	..... ..... .....	..... ..... .....	..... ..... .....	ConE 340 ConE 421 ConE 441

- * Students with engineering degrees in other disciplines who plan to emphasize in planning and/or traffic operations should check with the program of study (POS) committee.
- ** Competency will be evaluated by testing, course work, or experience.

4.0 Graduate Degree Options and Credit Requirements

4.1 Master of Science with Thesis

- * Minimum of 30 total credits including thesis research.
- * Minimum of 22 credits of formal courses (which may include up to 3 credits of CE 590 but excluding CE 599 or 699). (For Area of Specialization Course Guidance - see Appendix)
- * Minimum of 6 credits of thesis research (CE 699).
- * Minimum of 6 credits of courses outside of the area of specialization (as approved by the POS committee).
- * Minimum of 20 credits of 500 level courses or above, including thesis research in the area of specialization.
- * Maximum of one 3-credit course at 400 level within the Department (see list of approved courses, Table 2).

4.2 Master of Science Non-Thesis (Creative Component)

- * Minimum of 30 total credits including creative component.
- * Minimum of 27 credits of formal courses (which may include up to 3 credits of CE 590, but excluding CE 599 or 699). (For Area of Specialization Course Guidance - see Appendix)
- * Minimum of 2 credits for creative component (CE 599).
- * Minimum of 6 credits of courses outside of the area of specialization (as approved by the POS committee).
- * Minimum of 20 credits of 500 level courses or above, including creative component in the area of specialization.
- * Maximum of one 3-credit course at 400 level within the department (see list of approved courses, Table 2).

4.3 Master of Engineering in Civil Engineering with Specialization

- * Minimum of 30 total credits (which may include up to three credits of CE 590)
- * Minimum of six credits of courses outside the area of specialization (as approved by the POS advisor)
- * Minimum of 20 credits of 500 level courses or above
- * Minimum of 18 credits of 500 level courses or above (excluding CE 590) in area of specialization. (For Area of Specialization Course Guidance - see Appendix)
- * Maximum of one 3-credit course at 400 level within the department (see list of approved courses, Table 2)

4.4 Master of Engineering in Civil Engineering without Specialization

- * Minimum of 30 total credits with at least six credits in each of the three specialization areas administered by the department (which may include up to 3 credits of CE 590) (For Area of Specialization Course Guidance - see Appendix)
- * Minimum of six credits of courses outside the department (as approved by POS advisor)
- * Minimum of 20 credits of 500 level courses or above
- * Maximum of one 3-credit course at 400 level within the department (see list of approved courses, Table 2)

Graduate credits (equivalent to ISU B grade or better) received at another institution may be used towards the master's degree program but are subjected to the approval of the student's POS committee and the Graduate College. As stated in the Graduate College Handbook, "at least 22 graduate credits must be earned from ISU." In addition, no more than 9 credits earned in non-degree status as a graduate student may be used towards a graduate degree [Nine-credit Rule"]. Research credits earned at another institution are generally not transferred.

Table 2: CCEE Courses Approved for Graduate Credit Outside Specialization Area and Minor Graduate Credit

Specialization Area	CCEE Courses Permitted
Civil Engineering Materials	417, 428, 446, 448
Construction Engineering & Management	417, 428, 446, 448, 460
Geotechnical Engineering	417, 428, 446, 448
Environmental Engineering	417, 446, 448, 460
Structural Engineering	417, 428, 460, 467
Transportation Engineering	417, 428, 446, 448, 460
Intelligent Infrastructure Engineering	417, 428, 446, 448, 460

4.5 Doctor of Philosophy

- * Minimum of 72 credits including dissertation research.
- * Minimum of 33 credits of formal course work (including not more than 6 credits of CE 590). (For Area of Specialization Course Guidance - see Appendix)
- * Minimum of 16 credits of dissertation research, CE699 (Research credits for M.S. degree program earned at ISU or at another institution are generally not transferable).
- * Minimum of 36 credits of 500 level courses or above, including research credits.
- * Minimum of 9 formal course credits outside of the department (as approved by the POS committee). These credits are counted in the 33 credits above.
- * Maximum of 6 credits of 400 level formal course credits within the department, but outside the specialization area (see list of approved courses, Table 2).

Applicable graduate credits received from Iowa State University for the Master of Science degree can be included as part of a doctor of philosophy program, subject to approval of the program of study (POS) committee. Graduate credits received elsewhere may be included in a doctor of philosophy program subject to the approval of the student's POS committee and the Graduate College. At least 36 graduate credits, including all dissertation research, must be earned at ISU. Research credits for M.S. degree earned at ISU or at another institution are generally not transferred.

4.6 Co-Specialization Options (M.S. and Ph.D. in Civil Engineering)

The CCEE Department permits the pursuit of a co-specialization option if both specializations are approved by the student's POS committee. The degree is to be granted when the student fulfills separately the requirements of each specialization. At least 9 graduate credit hours in the area of

specialization must be earned to satisfy the co-specialization for the master's degree. At least 15 graduate credit hours must be earned in the area of specialization to satisfy the co-specialization for the Ph.D. degree.

Examinations and research work associated with a co-specialization option should be related to both specializations. The desire for such a program would result from a professional interest that does not clearly fall within a single specialization area but is within the scope of two areas.

4.7 Co-Major Degree Program

A co-major is a program of study for a single degree in which the requirements for two separate majors are met. A master's degree student, outside the CCEE department who wishes to co-major in an area of specialization within Civil Engineering, is required to take at least 12 graduate credit hours in that area of specialization or other CCEE graduate courses approved by the CCEE co-major professor. A Ph.D. degree student, outside the CCEE department who wishes to co-major in an area of specialization in Civil Engineering, is required to take at least 18 graduate credit hours in that area of specialization or other CCEE graduate courses approved by the CCEE co-major professor. Students must show that all degree requirements in their department and in the CCEE area of specialization are met in their program of study.

The student's POS committee will have co-chairs, one from the CCEE Department and one from his/her department. It is expected that the research component in the co-major will be related to both majors.

CCEE students who wish to co-major in another degree program should consult the DOGE of the degree program with regards to the co-major degree requirements.

4.8 Minor for Other Master of Science Major Degrees

- * Minimum of 9 credits of 500 level courses in the specialization area.
- * One graduate faculty member from the specialization area must be the minor representative/committee member on the POS committee.
- * The minor committee member will guide the student in specific course requirements and administer written or oral questions during the final oral exam.

4.9 Minor for Other Doctor of Philosophy Major Degrees

- * Minimum of 15 credits of 500 level courses in the area of specialization.
- * One graduate faculty member from the specialization area must be the minor representative/committee member on the POS committee.
- * The minor committee member will guide the student in specific course requirements and administer written or oral questions during the preliminary and final oral exams.

4.10 Co-Majors for Students Without an Accredited Civil Engineering Degree

Students without an accredited engineering bachelor's degree may take a co-major in a civil engineering area of specialization if appropriate background courses are successfully completed. The minimum undergraduate course requirements for each specialization are listed in Table 1.

5.0 Non-Degree Programs

5.1 Non-Degree Program - General

Qualified students may enroll in a non-degree graduate program with a declared area of specialization in Civil Engineering. These programs are intended to provide advanced study opportunities to students who wish to increase their technical competence, but who are not interested in pursuing the entire advanced degree program. A maximum of 9 credits earned under the non-degree option may be applied to an advanced degree if the student later chooses to undertake a degree option. A major professor from the department will be appointed to advise the student.

5.2 Certificate in Environmental Engineering

Students must have earned an undergraduate engineering degree or have met the prerequisite undergraduate courses shown in Table 1 for the Environmental Engineering specialization.

The following are requirements for a Certificate in Environmental Engineering:

- Minimum of 12 approved graduate credits
- Six of the 12 credits required are: CE 520 - Environmental Engineering Chemistry and CE 521 - Environmental Biotechnology
- Remaining six credits are selected from a list of approved courses maintained by the Environmental Division (see <http://www.elo.iastate.edu/graduate-certificates/environmental-engineering-graduate-certificate-online/>). Students should check with the major professor or the Focus Area leader for current courses that have been approved for the certificate.
- A seminar presentation in CE 591 (Environmental Engineering Seminar)

5.3 Certificate in Environmental Systems

The following are requirements for a Certificate in Environmental Systems:

- Minimum of 12 approved graduate credits, with at least 6 of those credits listed from the core courses. See listing of courses at: <http://www.elo.iastate.edu/graduate-certificates/environmental-systems-graduate-certificate-online/>. Students should check with the major professor or the focus area leader or other departments for current courses that have been approved for the certificate.
- Required - seminar course CE 591 from CCEE Department or course approved by the Agricultural and Biosystems Engineering graduate faculty.

5.4 Certificate in Construction Management

The following are requirements for a Certificate in Construction Management:

- Minimum of 12 approved graduate credits
- 9 of the 12 credits required are: CE 501 – Preconstruction Project Engineering and Management, CE 502 – Construction Project Engineering and Management, and CE 503 – Construction Management Function and Processes. Other courses are listed at: <http://www.eol.iastate.edu/graduate-certificates/construction-management-graduate-certificate-online/> Students should check with the major professor or the focus area leader for current courses that have been approved for the certificate.

6.0 Developing the Program

6.1 Major Professor

New incoming graduate students are required to arrange to meet with their major professors within the first two weeks of their first semester. Table 3 should cover all students and if there are students without a major professor, the DOGE will work to ensure the students will have a major advisor.

Table 3. Major Professor Selection

Student	Major Professor
With research assistantship	Faculty providing the assistantship
With teaching assistantship	Professor who had indicated willingness to work with student during admission process or Focus Area graduate coordinator serving as temporary major advisor until student decides on a permanent major advisor
Self-funded students (M.S. or Ph.D.)	Professor who had indicated willingness to work with student during admission process or Focus Area graduate coordinator serving as temporary major advisor until student decides on a permanent major advisor
M.Eng. students	Focus Area graduate coordinators or assigned by the Focus Area graduate coordinator
Certificate Students	Certificate coordinators unless student selects a different faculty member

The major professor directs a student's graduate program and serves as chair of the POS committee. Specifically, the responsibilities of the major professor are to:

- * Guide the student in the selection of the POS committee
- * Assist the student in defining educational and professional objectives and developing a program of study to meet the student's objectives, and
- * Supervise the student's research work, thesis or creative component, and professional development.

6.2 Program of Study (POS) Committee

A POS committee should be formed before the end of the first semester for a master's student and before the end of the second semester for a Ph.D. student. All prospective committee members should be contacted personally by the student and asked to serve in this capacity.

M.Eng. students do not need to form a POS committee.

The following are minimum requirements for committee membership (Table 4):

Table 4. POS Committee Membership

Degree	Committee Membership
Master of Science	No fewer than three members of the graduate faculty, at least two members must be from the area of specialization and at least one must be from outside area of specialization.
Doctor of Philosophy	No fewer than five members of the graduate faculty, at least three members must be from the area of specialization and at least two members must be from outside the student's specialty area. (In situations where there are insufficient faculty in the area of specialization, one of the three members can be from a related area of specialization) At least one member must be from outside the CCEE Department.
Master of Engineering	Focus Area graduate coordinator
Certificate	Certificate program administrator or a faculty of student's choice

* Unless otherwise specified, an area of specialization is considered a focus area

It may be to the student's advantage to include additional committee members, especially from outside the department, in order to broaden the perspective for review of the student's program. The student should select committee members who can contribute to the student's educational and research programs.

Meetings of all members of the advisory committee should be held as frequently as necessary to guide the student's work and to evaluate progress. As a minimum, formal meetings of the committee should be held to approve the program of study including research or creative component topic and to conduct the oral examination. The POS committee is appointed to aid the student in the completion of quality research. The student should seek guidance from his/her major professor and from members of his/her POS committee during the conduct of the research and not just at the time of the final oral examination. All committee members must participate in the final oral examination.

6.3 Program of Study (POS)

The student and the major professor develop the program of study with the consultation and approval of the POS committee. Each student's program of study should be consistent with the CCEE degree and credits requirements (Section 5), designed to correct deficiencies in academic preparation, allow study of subject matter that most interests the student, and avoid repetition in areas where the student is well prepared. The POS committee assures that program requirements are met before signing the POS form.

The responsibilities of the major professor, POS committee members and student are summarized in Chapter 6 of the Graduate College Handbook (http://www.grad-college.iastate.edu/common/handbook/Grad_College_Handbook_September_2013.pdf)

The POS form must be received by the CCEE DOGE and Graduate College no later than the published deadline date in the term (semester) before: (i) the preliminary oral examination (Ph.D. candidates), (ii) final oral examination (M.S. candidates), or (iii) graduation (M.Eng. candidates).

6.4 Credit Load

Full-Time Student--Own Support. This student can register for a maximum of 15 credits per semester (10 credits for the summer session) with no employment responsibility to the department. The student is responsible to his or her major professor for fulfilling program requirements and for participating in activities designed for his or her professional development.

Full-Time Student--Sponsored by Another University, Foundation, or Government Agency. This student can register for a maximum of 15 credits per semester (10 credits for the summer session). When the POS is planned for this student, the student and the major professor are obligated to see that the objectives as set forth in the sponsoring agency's program are met.

Full-Time Student--Research/Teaching Assistants. The maximum credit load for research/teaching assistants is from 9 to 15 credits dependent on the appointment level. Details are provided in the Graduate Assistant Information section of this handbook and the University Graduate Handbook. Graduate students on assistantships are certified as full-time when enrolled in 1.0 or more credits, providing the assistantship is coded on the student's record in the Graduate College. However, the student must be enrolled for a minimum of two credits in the final semester or for GR ST 600 (Examination only) if no additional course or research credits are required.

6.5 Area of Specialization Course Guidance and Requirements

Guidance on course requirements within each area of specialization are listed in the Appendix.

7.0 Academic Progress

Full time status for graduate students not on appointment requires nine credits each semester. However a research or teaching assistant may take a lesser load, with the approval of the major professor. Regardless of the number of credits, a cumulative grade point average (GPA) of 3.0 must be maintained to remain in good standing. The grade point average is calculated using the standard point allocation for University grades except that grades for creative component (CE 599) or thesis research (CE 699) are not included in the grade point average.

7.1 Academic Probation

Students must maintain a minimum of a 3.0 grade point average for all courses on their program of study and must complete all courses on the program of study with a minimum grade of C. Exceptions must be recommended in writing by the student's POS committee and DOGE and approved by the Dean of the Graduate College.

Students not maintaining a 3.0 grade point average will be placed on academic probation by the Dean of the Graduate College. While on academic probation a student will not be admitted to candidacy for a degree and if appointed to a graduate assistantship, the student will not receive a Graduate College tuition scholarship.

The Graduate College places a hold on registration for students who are on probation. Before the student registers for each term, the major professor must review the record and make a recommendation to the CCEE Director of Graduate Education (DOGE) regarding continued

registration in the Graduate Program. If a major professor has not been selected, a temporary advisor from the area of specialization will conduct the initial review.

7.2 Dismissal Criteria

Although the inability to maintain the minimum 3.0 grade point average is one indication of inadequate progress towards a degree, other factors may lead to dismissal. A student may be dismissed, that is, removed from the degree program and not be permitted to register in the Civil Engineering program, for the following reasons as outlined in the Graduate College Handbook:

- Failure to pass within the time frame designated by the relevant academic program any required examinations. This includes qualifying, preliminary, or final oral examinations.
- Failure to complete within the time frame designated by the relevant academic program any required coursework, or thesis or creative component credits.
- Failure to demonstrate scholarly and professional competence.
- Academic probationary status for two or more years.
- Failure to establish a major professor in the time frame specified by the major program.
- Failure to comply with graduate student responsibilities or requirements discussed in this Graduate College Handbook or in the relevant program's student handbook.
- A finding by the ad hoc investigatory committee of academic misconduct in research and scholarly activity as outlined in the Faculty Handbook, Section 7.2.2.3.
- Personal conduct that violates the Regents Uniform Rules of Personal Conduct and General University Regulations discussed in the “Student Life” section of the Policy Library and the Student Disciplinary Regulations.

7.3 Dismissal Procedures

A student’s POS committee or, if the student has no POS committee, the student’s major professor or temporary advisor, can recommend dismissal of a student for any of the reasons listed under the Dismissal Criteria heading.

Procedures for dismissal are as described in the ISU *Graduate College Handbook*. Before a dismissal is decided, the CCEE Director of Graduate Education (DOGE) must give the student a written notice explaining why dismissal is being considered. The DOGE and the major professor (or temporary advisor) will discuss the situation with the student in an attempt to find a satisfactory resolution prior to submitting the dismissal review to the CCEE Administrative Council. This discussion constitutes the “informal conference” as described in the *Graduate College Handbook*. If a satisfactory resolution cannot be reached and the CCEE Administrative Council votes to dismiss the student, either party may bring the issue to the attention of the Associate Dean of the Graduate College for a decision. The student may appeal the decision of the Associate Dean, as described in the *Graduate College Handbook*.

7.4 Appeal Process

The University has established appeal processes for student grievances. These vary depending on the nature of the grievance, and are described in the *Graduate College Handbook*. Generally, these procedures begin with the program chair or the appropriate DEO. It is usually best for all parties if a satisfactory resolution can be reached without initiating a formal appeal process. The Associate Dean

of the Graduate College is available to informally consult with students, major professors, and the DEO.

8.0 Resources for Graduate Students

8.1 Office Space

Office space will be provided for teaching and research assistants. The department will try to accommodate the remaining students as space permits. Requests for office space should be made through the major professor or Focus Area leader who will contact the office administrator accordingly.

8.2 Computing

The department maintains and operates networked PC computer laboratories in Town Engineering Building for use by undergraduate and graduate students. Graduate students can obtain an account and receive an allocation for use of the laser printer in the computer laboratories. Most, if not all, of the graduate students' office desks are equipped with a desktop computer.

8.3 Copy Machine

The department's copy machines are available for copying materials related to research and teaching responsibilities. A copy code number must be obtained from the graduate student's major professor so the costs can be allocated to the correct projects. Inappropriate use of this equipment (e.g. copying a textbook, developing a personal library of journal articles, or copying coursework) is not permitted. **It is a state policy that University equipment shall not be used for personal use.**

It is important that each person help maintain security by observing rules for locking equipment room doors.

8.4 Forms

Most of the forms used at the Graduate College are provided on-line at http://www.grad-college.iastate.edu/common/forms/student_forms.php

8.5 Safety Training

Graduate students are responsible for compliance with established safety policies that ensure safety, protection of health and minimization of the institution's impact on the environment. All graduate students involved with laboratory or field research are expected to complete EH&S Lab Safety training and any additional lab specific training needed to complete their research. Registration information for safety training is available at the EH&S website: www.ehs.iastate.edu. Students should work closely with their supervisors to identify safety training needs and document completion of all training. Graduate students are also expected to be familiar with the policies established in the Iowa State University Laboratory Safety Manual, which is available for download: <http://www.ehs.iastate.edu/publications/manuals/labsm.pdf>.

9.0 Examinations and General List of Action Items

9.1 Graduate English Requirement

The Graduate English Requirements for Non-Native Speakers of English, which is to be completed during the first semester, is discussed under the section **Graduate English Requirements for Non-Native Speakers of English** on page 3.

9.2 Ph.D. Diagnostic Examinations

Under certain circumstances, and depending upon the area of specialization, an entering graduate student may be required to take a Ph.D. diagnostic examination. This examination, if required, normally will be taken during the first semester of residence at Iowa State University. The purpose of a diagnostic examination is to ascertain deficiencies in academic preparation of critical importance to a specific program. Consequently, examinations will differ depending upon a student's specialization. The major professor will advise the student as to the necessity for a diagnostic examination and arrangements for taking the examination.

Depending upon the outcome of the diagnostic examination, a student may be advised to remedy the deficiency by self-study or to undertake certain remedial undergraduate courses for which graduate credit may not be received. These remedial courses must be taken early in a graduate program.

9.3 Master of Science Final Examinations

The final examination for Master of Science candidates will be administered and evaluated by the student's POS committee. The examination is comprehensive and usually oral, although a written component may be included. The majority of the final exam is directed towards the defense of the thesis or creative component. However, each area of specialization may have further requirements for the final exam.

The proportion of the examination devoted to the creative component for a non-thesis program will be less than that devoted to a thesis. A complete copy of the thesis or creative component should be delivered to members of the POS committee at least two weeks prior to undertaking a final oral examination.

9.4 Doctor of Philosophy Program Examinations

A student undertaking a Ph.D. program must pass a preliminary examination prior to being admitted to candidacy for the degree. A Ph.D. candidate must also pass a final examination to satisfy requirements for the degree. Both examinations are administered and graded by the student's POS committee. Six months or more must elapse between passing the preliminary oral examination and the date of the final oral examination ["Six-month Rule"]

The preliminary examination will include an oral component and a written component taken prior to the oral examination. At a minimum, committee members in the student's area of specialization should provide a written exam. This examination is comprehensive and is not restricted to the content of graduate courses. A graduate student who fails the preliminary examination may be afforded the opportunity to retake it, providing that six months elapse before a reexamination. A student is

admitted as a candidate for the Ph.D. degree after successful completion of the preliminary examination.

The Ph.D. final examination is devoted primarily to a defense of the dissertation. It is normally an oral examination. The POS committee may recommend reexamination if the student is unsuccessful in passing the examination. In this case, the requirements to be satisfied prior to reexamination will be stipulated and a time limitation specified.

9.5 Information and Timing of Required Actions

The CCEE department and Graduate College procedures, timelines and forms to be completed are provided in Table 5. Exact dates for each academic year will be announced by Graduate College. **Students are responsible for meeting all degree policies, deadlines, and requirements. Failure to progress satisfactorily in his/her degree program is a criterion for dismissal.**

Table 5 Information and Timing of Required Actions for CCEE Graduate Students

Requirements	Degree	Timeline	Forms	Source of Form
Graduate English Requirement	M.S., M.Eng., and Ph.D. (for non-native speakers of English)	Start of 1st semester	Graduate English Test	<i>English Department</i>
POS Committee	M.S.	Before the end of the 1st semester.	Committee Appointment Form	<i>Graduate College Website</i>
	Ph.D.	Before the end of the 2nd semester.		
Program of Study	M.S. and Ph.D.	Before the end of the 2nd semester.	Program of Study (POS) Form*	<i>Graduate College Website</i>
Preliminary Exam	Ph.D. only	Schedule Preliminary Exam. (After completion of majority of coursework) (Dates for written and oral exam arranged by student and major professor/POS committee)	Request for Preliminary Examination Form (Form must be sent to Graduate College 2 weeks before Prelim Exam.)	<i>Graduate secretary</i>
		Take Preliminary Exam	Report for Preliminary Examination Form	<i>Graduate secretary receives Form from Graduate College and gives to major professor prior Exam</i>
Graduation Preparations	M.S. M.Eng. Ph.D.	By third week of graduation semester (check deadlines)	Application for Graduation Form (Diploma Slip)	<i>From Graduate College web site</i>
Final Exam	M.S. and Ph.D.	Schedule Final Oral Exam ** (upon completion of creative component/thesis/dissertation) (Date for final exam arranged by student and major professor/POS committee)	Request for Final Oral Examination Form (Form must be sent to the Graduate College at least 3 weeks before final oral exam date)	<i>Graduate College Website</i>
		Take Final Oral Exam	Report of Final Oral Examination Form	<i>Graduate secretary receives Form from Graduate College and gives to major professor prior Exam</i>
Graduation	M.S. (with thesis only) and Ph.D.	Submit Thesis/dissertation	Thesis/Dissertation Submission Form	<i>From Graduate College web site</i>
	M.S., Ph.D.		Graduation Approval Slip	<i>Graduate Secretary</i>
	M.Eng		Request for Graduation/Check/Approval Slip	<i>Graduate College Website</i>

* The POS form must be received by the CCEE DOGE and Graduate College no later than the published deadline date in the term (semester) before: (i) the preliminary oral examination (Ph.D. candidates), (ii) final oral examination (M.S. candidates), or (iii) graduation (M.Eng. candidates).

**Six months or more must elapse between passing the preliminary oral examination and the date of the final oral examination. ["Six-month Rule"]

10.0 Graduate Assistant Information

10.1 Graduate Assistant Appointments

A student's major professor initiates the Letter of Intent for a graduate assistantship appointment. The Letter of Intent provides the specific information regarding terms of the student's appointment. The student should understand the terms of the agreement and request a copy for her/his records. The department's financial officer processes the form. Specific time deadlines are to be met with the Letter of Intent in regard to payroll and tuition assistance. Please refer to the *Graduate College Handbook* for more specific information.

The scope of work for teaching assistantships for international students depends on the results of the Oral English Certification Test (OCET) (formerly known as SPEAK/TEACH) evaluation. International students must complete the OCET program, which is scheduled at the beginning of each semester. See <http://itas.grad-college.iastate.edu/testing-home> for details.

A graduate assistant, on a 1/2 time or 1/4 time appointment, is classified as a C-base employee, and is obligated to work for 20 or 10 hours, respectively per week. A 1/2 time graduate assistant may register for a maximum of 12 credits while a 1/4 time graduate assistant may register for a maximum of 15 credits.

Graduate assistants are only permitted to be appointed to a maximum of 3/4 time appointment in the summer.

Generally, only students with full or provisional admission status are eligible to hold graduate assistantships and receive the Graduate College tuition scholarship. The Dean of the Graduate College must approve a term-by-term assistantship awarded to a student on restricted admission status. The graduate assistant on restricted admissions status will be assessed Iowa resident fees but will not receive a Graduate College tuition scholarship.

The minimum registration requirement for a graduate assistant is the equivalent of 2 credits. All graduate students, regardless if on assistantship or not, must register during the term of the final oral examination for the equivalent of 2 credits or for the R-credit "course" GR ST 600 (Examination Only) if no course work is needed. If students take the final oral examination during the interim between terms (including the first day of classes), registration can be either for the term before or the term after the examination is held.

10.2 Tax Status

All assistantship stipends are subject to income tax withholding. The Graduate and Professional Student Senate can provide further information to graduate students with questions about tax liability.

10.3 Leave

Arrangements for a leave of absence are made between the graduate assistant and the assistant's supervisor adhering to all grants and other funding source restrictions. When a graduate student employee needs to be absent either for personal reasons or illness, the supervisor should be understanding and accommodating to that need. At the same time, the graduate assistants should attempt to plan their personal leave so that it does not interfere with duties associated with his or her

appointment. Supervisors of graduate assistants must ensure that their assistants do not exceed reasonable limits for leave.

10.4 University-Approved Travel

Expenses for out-of-state travel can only be paid if a travel authorization has been approved by the major professor. Students should seek approval and agreement with their major professor on availability of funds before travelling. This request should be submitted **at least 15 days before** the departure, unless there are extenuating circumstances. To be reimbursed for expense, a travel expense voucher must be submitted, along with receipts for everything except meals and taxi expenses. When a personal car is used, a record of miles traveled must be included. The student should ask his or her major professor for procedural details when traveling for the first time.

Graduate Students are eligible and are encouraged to apply for “Professional Advancement Grant (PAG). These are mini-travel grants from the Graduate College. These should be applied for at the earliest possible date and only once per fiscal year. Certain rules and deadlines apply so read the guidelines carefully. Forms are available on the Graduate College’s forms web site under the heading of “Professional Advancement Grant (PAG) application.

APPENDIX – Area of Specialization Course Guidance

To demonstrate minimum competency in the student's area of specialization, each student is required to take the courses listed below.

A. *Civil Engineering Materials*

Students in the Civil Engineering Materials are to select 3 courses of the CE 58X courses and 2 courses of the CE 56X courses from the list of courses below.

Course No.	Course Title
C E 583	Pavement Analysis and Design
C E 584	Advanced Design of Concretes
C E 586	Advanced Asphalt Materials
C E 587	Advanced Portland Cement Concretes
C E 560	Fundamentals of Soil Mechanics
C E 561	Applied Foundation Engineering
C E 562	Site Evaluations for Civil Engineering Projects
C E 563	Experimental Methods in Geo-Engineering
C E 564	Application of Numerical Methods to Geotechnical Design
C E 565	Fundamentals of Geomaterials Behavior
C E 567	Geomaterials Stabilization
C E 568	Dynamics of Soils and Foundations
C E 569	Ground Improvement

B. *Construction Engineering and Management*

Students are required to take the following courses:

Course No.	Course Title
CE 501	Preconstruction Project Engineering & Management
CE 502	Construction Project Engineering & Management
CE 503	Construction Management Functions & Processes
CE 505	Design of Construction Systems
CE 595	Graduate Research Methods Seminar

Further information and details on other requirements are listed in the Construction Engineering Graduate Guide (Aug. 15, 2012)

C. Environmental Engineering

Students who are interested in **water quality** aspects of environmental engineering are to include the following courses in their program of study.

Course No.	Course Title
CE 520	Environmental Engineering Chemistry
CE 521	Environmental Biotechnology
CE 522	Water Pollution Control Processes
CE 523	Physical-chemical Treatment Process
CE 591	Environmental Engineering Seminar

Students who are interested in **water quantity** aspects of environmental engineering are to include the following courses in their program of study.

Course No.	Course Title
CE 571	Surface Water Hydrology
CE 573	Groundwater Hydrology
CE 576	Environmental Flows
CE 591	Environmental Engineering Seminar

D. Geotechnical Engineering

Students in the Geotechnical Engineering specialization are to select 4 courses of the CE 56X courses and 1 course of the CE 58X courses from the list of courses below.

Course No.	Course Title
C E 560	Fundamentals of Soil Mechanics
C E 561	Applied Foundation Engineering
C E 562	Site Evaluations for Civil Engineering Projects
C E 563	Experimental Methods in Geo-Engineering
C E 564	Application of Numerical Methods to Geotechnical Design
C E 565	Fundamentals of Geomaterials Behavior
C E 567	Geomaterials Stabilization
C E 568	Dynamics of Soils and Foundations
CE 569	Ground Improvement
C E 583	Pavement Analysis and Design
C E 584	Advanced Design of Concretes
C E 586	Advanced Asphalt Materials
C E 587	Advanced Portland Cement Concretes

E. Structural Engineering

M.S. with thesis:

- Minimum of 6 credits of advanced structural analysis courses from approved list below.
- Minimum of 6 credits of advanced structural design courses from approved list below.

M.S. degree Non-thesis (Creative Component)

- Minimum of 6 credits of advanced structural analysis courses from approved list below.
- Minimum of 9 credits of advanced structural design courses from approved list below.

M. Eng.

- Minimum of 9 credits of advanced structural analysis courses from approved list below
- Minimum of 9 credits of advanced structural design courses from approved list below.

Advanced Structural Analysis Courses

Course No.	Course Title
CE 532	Structural Analysis II
CE 541	Dynamic Analysis of Structures
CE 542 or EM525	Structural Analysis by Finite Elements or Finite Element Analysis
CE 547	Analysis and Design of Plate and Slab Structures
CE 549	Structural Health Monitoring

Advanced Structural Design Courses

Course No.	Course Title
CE 533	Structural Steel Design II
CE 534	Reinforced Concrete Design II
CE 535	Pre-stressed Concrete Structures
CE 536	Masonry and Timber Design
CE 545	Seismic Design
CE 546	Bridge Design
CE 548	Building Design
AE578	Wood Frame Structural Design

F. Transportation Engineering

Students are required to take the following courses:

Course No.	Course Title
C E 551	Urban Transportation Planning Models
C E 553	Traffic Engineering
Trans 691	Seminar in Transportation Planning

G. *Intelligent Infrastructure Engineering*

M.S. students are required to take a minimum of 9 credits while Ph.D. students are required to take a minimum of 12 credits of the following courses:

Course No.	Course Title
CE 541 or CE 568	Dynamics Dynamics of Soils and Foundations
CE 542	Finite Element Analysis
CE 549	Structural Health Monitoring
CE 556	Transportation Data Analysis
CE 557	Transportation System Analysis
CE 559	Asset Management
CE 588	Sustainable Horizontal Infrastructure
CE 594P	Modeling and Evaluation of Energy Performance of Buildings and Communities
CE 5XX	Big Data