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CEE GRADUATE HANDBOOK PROCEDURES AND GUIDELINES
2016-2017

I. INTRODUCTION

The Civil and Environmental Engineering (CEE) Department is highly ranked at the graduate level by U.S. News & World Report 2016. We offer a Master of Science (MS), research thesis, a project-based Master of Engineering (ME), and a Ph.D.

All graduate students use state-of-the-art experimental and computational facilities as they focus their research on engineering problems and applied science topics. Interdisciplinary research is facilitated through the Institute for a Sustainable Environment, the Center for Air Resources Engineering and Science, and the Center for Advanced Materials Processing.

Graduate education in civil and environmental engineering concentrates in the following specialties:

• Environmental Engineering
• Geotechnical Engineering
• Structural and Materials Engineering
• Water Resources Engineering
• Transportation Engineering
• Construction Engineering Management (new ME program)

This Handbook is intended to assist faculty and graduate students with operating procedures, policies, and degree requirements of the Department of Civil and Environmental Engineering.

This handbook is on-line. http://www.clarkson.edu/cee/pdfs/graduate%20handbook%202015_2016.pdf#graduate_handbook

Other useful links are:
• CEE Graduate Programs: http://www.clarkson.edu/cee/graduate/index.html
• School of Engineering (SOE) Graduate Programs: http://www.clarkson.edu/engineering/graduate/index.html
• SOE Graduate Handbook: http://www.clarkson.edu/engineering/graduate/files/generalCSoEgradhandbook_may2014.pdf
II. PEOPLE TO KNOW

The Graduate Committee of the Department of Civil and Environmental Engineering is comprised of full-time faculty members appointed by the Department Chair, and is responsible for the administration of graduate activities. Its primary duties are to review and evaluate all graduate applications, to facilitate communication with the Graduate Office of the School of Engineering and the Clarkson University Graduate School, to advise department faculty on graduate matters, and to ensure timely and proper administration of examinations and defenses. The members are:

- James K. Edzwald, Chair of Graduate Committee, Rowley 140B, jedzwald@clarkson.edu
- John Dempsey, Rowley 240B, jdemsey@clarkson.edu
- Narutoshi Nakata, Rowley 126, nnakata@clarkson.edu
- Khiem Tran, Rowley 234, ktran@clarkson.edu
- Weiming Wu, Rowley 128, wwu@clarkson.edu

Key support staff-persons for graduate students are:

- Norma Woods, CEE, Rowley 140, nwoods@clarkson.edu
- Kelly Sharlow, School of Engineering (SOE), CAMP 102, ksharlow@clarkson.edu
- Tess Casler, International Students and Scholars Office, 2310 ERC, tcasler@clarkson.edu

III. CLARKSON UNIVERSITY APPLICATION PROCEDURES

Applicants for graduate study must apply on-line at http://graduate.clarkson.edu.

Application requirements are spelled out on this web site.

IV. ACADEMIC ADVISING

A. ME, MS, PhD Academic Advisor

Each graduate student is assigned an Academic Advisor upon arrival on campus to assist with Clarkson/department orientation and course scheduling, refer to the Graduate Advisor form.
http://www.clarkson.edu/(S(m0jyyrqzgxcadv55qjdis1as))/engineering/graduate/files/graduateadvisorformfinal.pdf.
A revised submission of that form is required to change academic Advisors.
B. Transfer Credit

Written requests for transfer credit for courses taken at other schools must be recommended for approval by the Academic Advisor, signed by the Chair of the Graduate Committee and Department Chair and then submitted with official transcripts to the Dean of Engineering for approval using the Graduate Transfer Credit Request Form. [http://www.clarkson.edu/sas/forms/gradtransferfillable.pdf](http://www.clarkson.edu/sas/forms/gradtransferfillable.pdf). Graduate credit for courses taken at Clarkson as an undergraduate must be requested on a Graduate Credit Form [http://www.clarkson.edu/(S(m0jyyrqzgxcadv55qjdis1as))/engineering/graduate/files/credit_transferred_from_undergrad.pdf](http://www.clarkson.edu/(S(m0jyyrqzgxcadv55qjdis1as))/engineering/graduate/files/credit_transferred_from_undergrad.pdf). When enrolling in coursework, a student’s academic program for each semester is updated by the departmental staff and recorded on the appropriate Degree Program Form. The form will also show all courses transferred for credit towards degree requirements.

C. Out-of-department Advisor

An out-of-department thesis advisor must either have a courtesy appointment in the CEE Department or serve as a co-advisor with a CEE faculty member.

D. Ph.D. Advisory Committee

The Research Advisor recommends the membership of the PhD Advisory Committee using the Graduate Committee Appointment form [http://www.clarkson.edu/(S(m0jyyrqzgxcadv55qjdis1as))/engineering/graduate/files/graduatecommitteeappointmentform.pdf](http://www.clarkson.edu/(S(m0jyyrqzgxcadv55qjdis1as))/engineering/graduate/files/graduatecommitteeappointmentform.pdf) to go to the Department Chair and the Dean of Engineering for their approval. The committee should be appointed as soon as possible but within twelve months after entry into the Ph.D. program. The Advisory Committee and the Research Advisor will approve the courses required to satisfy the student’s minor. This committee must consist of five members qualified to sit on such a committee, at least one of which must be from outside the candidate’s department. Normally, the Research Advisor will not act as Chair of the committee. The purpose of the committee is to provide guidance to the student for the course work and dissertation research.

E. Certification of ME, MSc, PhD Degree Requirement

The Faculty Advisor submits the Completion of Degree Requirements, [http://www.clarkson.edu/(S(m0jyyrqzgxcadv55qjdis1as))/engineering/graduate/files/GraduateStudentCompletionNotice.pdf](http://www.clarkson.edu/(S(m0jyyrqzgxcadv55qjdis1as))/engineering/graduate/files/GraduateStudentCompletionNotice.pdf), for approval by the Advisory Committee, the Department Chair, Dean of the School, and Dean of the Graduate School.

V. DUTIES AND RESPONSIBILITIES OF EACH STUDENT

All graduate students at Clarkson are required to abide by the rules and regulations of
the University and Department as set forth in the Catalog, Clarkson Regulations, and as contained in this Handbook.

In order to remain enrolled in the department’s graduate program a student must meet an acceptable level of performance in both course work and research. The student’s research will be directed by an advisor in the same area of technical concentration as that expressed by the student in his or her application for admission to the CEE graduate program. Periodic targets for a student’s research accomplishments and the time expected for the student to achieve those accomplishments will be specified by the student’s advisor. Failure to meet those targets provides a basis for dismissal from the graduate program. Grades in courses are expected to be excellent (A; 4 points) or good (B; 3 points). A minimum grade point average for graduation is 3.0. A student whose cumulative grade point average is below 3.0 is also a basis for dismissal.

Students who have received a financial award administered through the University must abide by the Departmental policy permitting the equivalent of two weeks of vacation, plus regular University holidays, during the calendar year.

- **Teaching Assistants.** By University policy, the service requirements of Teaching Assistants amount to the equivalent of 12 hours per week for 50 weeks for a 1-year appointment (600 hours). This means a Teaching Assistant could be asked to work 20 hours per week during each of two 15-week semesters, including time for preparation and grading. Teaching Assistants with such a workload would have no further commitment of time to the Department, including the time between semesters or during the summer.

- **Research Assistants.** By University policy, full time Research Assistants are required to work 40 hours per week for their stipend and tuition, less time spent in class, for the duration of their appointments.

For all graduate students, the Graduate School, Department Chair, and Graduate Committee must be advised in writing of a leave of absence.

All accepted foreign students for whom English is not a first language are required to take English as a Second Language placement exam upon arrival at Clarkson, and complete any recommended requirements. Exceptions are granted to students who complete degree programs in the USA or a country where English is a primary language spoken (e.g. UK, Australia) and subsequently continue their education at Clarkson. Exceptions also apply to applicants that have successfully completed an intensive English language course and received a certificate of completion.

Each acceptance by the Graduate Committee is for one-degree program only. Requests for a change in degree status (e.g. M.E. to M.S. or M.S. to Ph.D.) must be submitted by the student to the CEE Graduate Committee.

Students who have not completed their thesis but have satisfied all other graduation requirements including obtaining the required number of credits (30 for MS and ME,
and 90 for PhD) need to register for at least one credit hour each semester to maintain full-time student status.

Off-Campus students that register for one credit each semester are considered part-time students but do not have to pay health and recreation fees. Such off-campus students registered for one credit are classified as thesis continuum and must begin repaying any student loans.

VI. GRADUATE SCHOOL TUITION POLICY

A. Teaching Assistants

Departments are responsible for providing stipends to designated Teaching Assistants. Appointments should run in at least half-year terms. The Graduate School will allocate funds to cover tuition for the credit hours taken during the term of appointment.

B. Research Assistants

Research Assistants on full stipends are eligible for tuition coverage by the university. See your research advisor, if you have any questions, about the extent of this tuition coverage.

C. Partial Tuition Assistantships and Work Requirements

Partial Tuition Assistantships are available on a merit basis for those students who did not receive full assistantships. This award offers up to a 30% tuition waiver, equivalent to a 10 credit hour waiver for every 30 hours taken. There is no stipend associated with this form of scholarship.

These merit awards require up to 6 hours of Departmental work per week.

VII. SENIOR GRADUATE ASSISTANTS

The designation of Senior Graduate Assistant will be given to Ph.D. students who perform a high level teaching task. The following procedure will be used for such appointments:

- The departmental staff will fill out a Graduate Student Appointment Authorization Form with the designation of Senior Graduate Assistant. Generally, the stipend for a Senior Graduate Assistant is greater than that of a standard Teaching Assistant and reflects the greater level of responsibility held by the Assistant.

- Senior Graduate Assistants can register for up to 15-credit hours/semester.
Their tuition is waived, similar to designated teaching assistants.

- The Graduate Student Appointment Authorization form plus a resume should be sent to the Dean of Engineering for consideration and approval.
- A letter of appointment will be sent stating the conditions of employment.

Requests for exceptions to these requirements must be made in writing to the Department Chair (or his/her designee) for action.

**VIII. REQUIREMENTS FOR THE MASTER OF ENGINEERING DEGREE IN CIVIL and ENVIRONMENTAL ENGINEERING**

**A. Admission Requirements**

BS, BE, or equivalent degree from an accredited program in Civil and Environmental Engineering or other engineering discipline is required. Applicants with degrees in disciplines other than engineering may be required to demonstrate proficiency through additional undergraduate coursework as determined by the departmental Graduate Committee. This may comprise an additional semester of study for which graduate credit cannot be granted.

No minimum grade point average is required for admission; however, a superior record of academic achievement is expected of all applicants.

**B. Program Degree Requirements**

1. The following are minimum requirements:
   - 30 credit hours
   - 18 credit hours of graduate coursework at least 12 credits of these within engineering
   - 1 credit hour of project work
   - 2 credit hours of seminar
   - 2 semesters in residence
   - One-half of the total course credits at graduation must have a CE prefix.

2. An average of B or better for all graduate coursework applied toward the M.E. degree is required for graduation.

3. A maximum of 10 credit hours of transfer graduate credit may be awarded (refer to Section IV B)

4. All work completed in within two calendar years for full-time students.
5. Pass a group of core courses in one of the following professional concentrations comprising a minimum of 15 credit hours: Environmental, Geotechnical, Structural, Water Resources or the new CEM program.

Projects must be completed and approved by the student’s advisor and Department Chair by filling out a completion memo. To receive a diploma at the May commencement, final degree completion paperwork must be submitted to the Coulter School of Engineering office no later than 10 working days before commencement.

For projects completed at the beginning of a new semester, the final approval of the project and completion forms must be received in the Graduate School no later than the second week of classes (last day to register) or the student must register and pay tuition for one credit hour of thesis.

C. Core Courses in Professional Concentrations

Professional concentrations require a minimum of 15 credit hours of relevant coursework. The following core courses are required for each of the professional concentrations. Additional relevant courses may be necessary to complete 15 credit hours:

1. Environmental Engineering

Water and Wastewater Engineering: Satisfied by an appropriate course as an undergraduate OR CE579
CE580 Environmental Chemistry
CE584 Chemodynamics
CE582 Environmental Systems OR CE586 Industrial Ecology

And one of the following:

CE681 Environmental Physico-Chemical Processes
CE682 Environmental Biological Processes
ES534 Air Pollution Control

2. Geotechnical Engineering

Choose three from the following list:

CE512/ME555 Introduction to Structural and Soil Dynamics
CE513 Elastic Waves and Non-Destructive Tests
CE516 Advanced Soil Mechanics
CE519 Advanced Foundation Design
CE527/ME527 Advanced Fluid Mechanics
CE538 Introduction to the Finite Element Method
CE551 Theory of Elasticity
CE554 Continuum Mechanics
ME531 Computational Fluid Dynamics

3. Structural and Materials Engineering

CE549 Experimental Methods in Structures
CE554 Continuum Mechanics

And choose two from the following list:

CE501 Fracture Mechanics of Concrete Structures
CE512 Introduction to Structural and Soil Dynamics
CE520 Computational Methods of Structural Analysis
CE521 Analysis of Advanced Composite Structures
CE538 Introduction to Finite Element Method
CE551 Theory of Elasticity
CE553 Properties and Performance of Concrete Materials
CE631 Cement Chemistry
CE633 Plasticity

4. Water Resource Engineering

Choose four from the following list:

CE527/ME527 Advanced Fluid Mechanics
CE554 Continuum Mechanics
CE569 Watershed Analysis
CE570 Stream Riparian System and Fluvial Morphology
CE571 Computational River Dynamics
CE572 Shallow Water Hydrodynamics
CE573 Sediment Transport
CE574 Hydrodynamic Dispersion
CE575 Coastal Engineering
CE576 Hydraulic Engineering in Cold Regions
ME531 Computational Fluid Dynamics

5. Construction Engineering Management (CEM)

This is a new ME program that has its own curriculum requirements as shown next.

The Masters of Engineering (ME) degree in Civil and Environmental Engineering with a concentration in Construction Engineering Management (CEM) is available for students that have a BS in Civil Engineering or from another engineering discipline. The degree requirements are:

- Total of 30 graduate credits
- Three Core CEM Courses (9 credits)
- Three Civil and Environmental Engineering (CEE) courses taken from our
elective list (9 credits)
- Three Business Management Courses (9 credits)
- ME Project (3 credits)

Courses:

Required Core CEM Courses (9 credits)
- CE 506 Advanced Construction Engineering (even Fall semesters)
- CE 510 Sustainable Infrastructure and Building (all Fall semesters)
- CE 591 Special Topics in Construction Engineering Management (all Spring semesters)

CEE Electives (9 credits): three are required, taken from the following list:
- CE 512 Intro to Structural and Soil Dynamics (on demand)
- CE 513 Elastic Waves and Non-Destructive Testing (even Fall semesters)
- CE 515 Foundations, Stability, and Retaining Structures (all Fall semesters)
- CE 516 Advanced Soil Mechanics (odd Fall semesters)
- CE 519 Advanced Foundation Design (odd Spring semesters)
- CE 520 Computational Methods of Structural Analysis (all Spring semesters)
- CE 521 Analysis of Advanced Composite Structures (on demand)
- CE 538 Introduction to Finite Element Method (all Fall semesters)
- CE 549 Experimental Methods in Structures (all Spring semesters)
- CE 553 Properties and Performance of Concrete Materials (all Spring semesters)
- CE 555 Structural Damage: Assessment, Repair, and Strengthening (odd Spring semesters)
- CE 622 Geo-Structural Design (even Spring semesters)
- CE 631 Cement Chemistry (even Spring semesters)

Three Business Management Courses (9 credits)

Take three courses based on student's interests and approval of the Director of CEM. They are selected from the MBA program that offers courses in the areas of Economics, Ethics, Supply Chain Management, Accounting, Finance, Decision Analysis, Information Systems, and Marketing. For additional information, go to http://www.clarkson.edu/business/graduate/mba/

D. Other Information

M.E. degree students may transfer to the M.S. program no later than the end of the first semester in residence, with the concurrence of the Graduate Committee. Committee concurrence is sought by way of the CEE Graduate Committee Chair. Only under exceptional circumstances will MS students be allowed to transfer to the
ME program. This transfer will require approval by the Graduate Committee and will require detailed written justification by the student and advisor.

ME/MBA Dual Degree Option

Students have the opportunity to earn two master’s degrees in two years, developing both engineering and management skills in a stimulating, project-based environment.

Students first complete a program leading to a 30-credit hour, non-thesis Master of Engineering degree. This program focuses on practical design applications in an environment that can span the boundaries between traditional disciplines. A set of “Management Concepts” courses is then offered to students during the summer between earning the Master of Engineering and beginning the nine month MBA program to cover pre-requisites for the MBA. Up to ten 1.5 credit “Management Concepts” courses can be completed at no tuition cost to participants in this dual degree program. MBA courses completed during the second year emphasize teamwork, leadership and managerial skills.

IX. REQUIREMENTS FOR THE MASTER OF SCIENCE DEGREE IN CIVIL and ENVIRONMENTAL ENGINEERING

A. Admission Requirements

BS, BE, or equivalent degree from an accredited program in Civil and Environmental Engineering or other engineering discipline is required. Applicants with degrees in disciplines other than engineering may be required to demonstrate proficiency through additional undergraduate coursework as determined by the departmental Graduate Committee. This may comprise an additional semester of study for which graduate credit cannot be granted.

No minimum grade point average is required for admission; however, a superior record of academic achievement is expected of all applicants.

B. Program Degree Requirements

1. The following are minimum requirements:
   • 30 credit hours with all coursework approved at the graduate level
   • 6 credit hours of thesis
   • 18 credit hours of coursework
   • 2 credit hours of seminar work
   • 20 of the 30 credit hour minimum must be earned in residence
   • 1 academic year of full time study beyond the B.S.
   • Maximum of 10 credit hours transfer credit (grade of B or better)
   • All work completed in 4 calendar years
   • All students must complete a thesis and defend it orally to a committee consisting of a minimum of three faculty members.
In consultation with your advisor, students should consider taking ES 542 (Fundamentals of Research and Graduate Study), when offered by the University.

2. Pass a group of core courses in one of the following professional concentrations comprising a minimum of 15 credit hours: Environmental, Geotechnical, Structural, and Water Resources Engineering.

C. Core Courses in Professional Concentrations

Professional concentrations require a minimum of 15 credit hours of relevant coursework. The following core courses are required for each of the professional concentrations. Additional relevant courses may be necessary to complete 15 credit hours:

1. Environmental Engineering

Water and Wastewater Engineering: Satisfied by an appropriate course as an Undergraduate OR CE579
CE580 Environmental Chemistry
CE584 Chemodynamics
CE582 Environmental Systems OR CE586 Industrial Ecology

And one of the following:

CE681 Environmental Physico-Chemical Processes
CE682 Environmental Biological Processes
ES 534 Air Pollution Control
A course in applied statistics strongly recommended

2. Geotechnical Engineering

Choose four from the following list:

CE512/ME555 Introduction to Structural and Soil Dynamics
CE513 Elastic Waves and Non-Destructive Tests
CE516 Advanced Soil Mechanics
CE519 Advanced Foundation Design
CE527/ME527 Advanced Fluid Mechanics
CE538 Introduction to the Finite Element Method
CE551 Theory of Elasticity
CE554 Continuum Mechanics
ME531 Computational Fluid Dynamics

3. Structural and Materials Engineering
CE549 Experimental Methods in Structures
CE554 Continuum Mechanics

And choose two from the following list:

CE501 Fracture Mechanics of Concrete Structures
CE512 Introduction to Structural and Soil Dynamics
CE520 Computational Methods of Structural Analysis
CE521 Analysis of Advanced Composite Structures
CE538 Introduction to Finite Element Method
CE551 Theory of Elasticity
CE553 Properties and Performance of Concrete Materials
CE631 Cement Chemistry
CE633 Plasticity

4. Water Resource Engineering

Choose four from the following list:

CE527/ME527 Advanced Fluid Mechanics
CE554 Continuum Mechanics
CE569 Watershed Analysis
CE570 Stream Riparian System and Fluvial Morphology
CE571 Computational River Dynamics
CE572 Shallow Water Hydrodynamics
CE573 Sediment Transport
CE574 Hydrodynamic Dispersion
CE575 Coastal Engineering
CE576 Hydraulic Engineering in Cold Regions
ME531 Computational Fluid Dynamics

5. Non-Traditional Professional Concentration

A student doing research in a non-traditional area of Civil and Environmental Engineering may find it beneficial to have a program of study where the majority of graduate courses would not have a CE prefix. Such students would be required however to take a minimum of two courses with CE prefixes. Classification as a student doing research in a “Non-Traditional Professional Concentration” and the student’s proposed program of study requires the approval of the faculty research advisor and CEE Graduate Committee.

Students in a Non-Traditional Professional Concentration that do not have a Civil and/or Environmental Engineering Degree may be required to demonstrate proficiency through additional undergraduate coursework as determined by the departmental graduate committee. This may comprise an additional semester or more of study for which graduate credit cannot be granted.
D. Other Information

1. Exceptional MS students may be invited to proceed directly to the Ph.D. program without completing a M.S. thesis. The student’s faculty advisor recommends the continuation of the student directly to the Ph.D. program by submitting a memorandum to the Graduate Committee and including a copy of the student’s transcripts. Such students will be awarded the M.S. concurrently with the Ph.D.

2. Only under exceptional circumstances will M.S. students be allowed to transfer to the M.E. program. This transfer will require approval by the Graduate Committee and will require detailed written justification by the student and advisor.

X. REQUIREMENTS FOR THE PH.D. DEGREE IN CIVIL AND ENVIRONMENTAL ENGINEERING

A. Admission Requirements

A MS degree from a program in Civil and Environmental Engineering or other engineering discipline is required for admission. Applicants with degrees in disciplines other than engineering may be required to demonstrate proficiency through additional undergraduate coursework as determined by the departmental Graduate Committee. This may comprise an additional semester of study for which graduate credit cannot be granted.

No minimum grade point average is required for admission; however, a superior record of academic achievement is expected of all applicants.

B. Program Degree Requirements

1. The following are minimum requirements:
   - 90 credit hours beyond the B.S.
   - 39 credit hours of coursework
   - 15 credit hours in the major field
   - 9 credit hours in the minor field
   - 6 credit hours from a department other than the one in which the student is housed (courses double listed in CE and another department do not count in these 6 credit hours)
   - Six credit hours of seminar

   In consultation with your advisor, students should consider taking ES 542 (Fundamentals of Research and Graduate Study), when offered by the University.

2. A maximum of 30 credit hours transfer credit (grade of B or better).
3. All work to be completed within seven years after the candidacy procedure is completed.

4. Pass a group of core courses in one of the following professional concentrations comprising a minimum of 15 credit hours: Environmental, Geotechnical, Structural, and Water Resources Engineering.

C. Core Courses in Professional Concentrations

Professional concentrations require a minimum of 15 credit hours of relevant coursework. The following core courses are required for each of the professional concentrations. Additional relevant courses may be necessary to complete 15 credit hours:

1. Environmental Engineering

Water and Wastewater Engineering: Satisfied by an appropriate course as an undergraduate OR CE579
CE580 Environmental Chemistry
CE584 Chemodynamics
CE582 Environmental Systems OR CE586 Industrial Ecology

And one of the following:

CE681 Environmental Physico-Chemical Processes
CE682 Environmental Biological Processes
ES534 Air Pollution Control

A course in applied statistics strongly recommended.

2. Geotechnical Engineering

Choose four from the following list:

CE512/ME555 Introduction to Structural and Soil Dynamics
CE513 Elastic Waves and Non-Destructive Tests
CE516 Advanced Soil Mechanics
CE519 Advanced Foundation Design
CE527/ME527 Advanced Fluid Mechanics
CE538 Introduction to the Finite Element Method
CE551 Theory of Elasticity
CE554 Continuum Mechanics
ME531 Computational Fluid Dynamics

3. Structural and Materials Engineering
CE549 Experimental Methods in Structures
CE554 Continuum Mechanics

And choose three from the following list:

CE501 Fracture Mechanics of Concrete Structures
CE512 Introduction to Structural and Soil Dynamics
CE520 Computational Methods of Structural Analysis
CE521 Analysis of Advanced Composite Structures
CE538 Introduction to Finite Element Method
CE551 Theory of Elasticity
CE553 Properties and Performance of Concrete Materials
CE631 Cement Chemistry
CE633 Plasticity

4. Water Resources Engineering

Choose four from the following list:

CE527/ME527 Advanced Fluid Mechanics
CE554 Continuum Mechanics
CE569 Watershed Analysis
CE570 Stream Riparian System and Fluvial Morphology
CE571 Computational River Dynamics
CE572 Shallow Water Hydrodynamics
CE573 Sediment Transport
CE574 Hydrodynamic Dispersion
CE575 Coastal Engineering
CE576 Hydraulic Engineering in Cold Regions
ME531 Computational Fluid Dynamics

D. Advisory Committee, Preliminary Exam, Research Proposal, and Dissertation Defense

Additional requirements in CEE for PhD students follow.

1. **Ph.D. Advisory Committee:** The Research Advisor recommends the membership of the PhD Advisory Committee to the Department Chair and the Dean of Engineering for their approval. The committee must be appointed prior to the preliminary examination. The Advisory Committee and the Research Advisor will approve the courses required to satisfy the students’ minor. This committee must consist of five members qualified to sit on such a committee, at least one of which must be from outside the candidate’s department. Normally, the Research Advisor will not act as Chair of the committee. The purpose of the committee is to provide guidance to the student for the course work and research.
2. **Preliminary Exam**: A preliminary examination must be taken within **eighteen months** after entry into the Ph.D. program, as determined by the initial date of matriculation or, for the case of a Master’s student continuing for the Ph.D., the date of acceptance to the Ph.D. program by the Graduate Committee. This examination will have a written portion consisting of a one-week take-home exam with access to research materials, and an oral portion to be administered by the Advisory Committee within one month after the conclusion of the written exam. In the event of failure of the written exam, the Advisory Committee may, at its discretion, elect not to administer the oral portion. The outcome of the exam is determined by a vote of the committee, with no more than one dissenting vote permitted for passage. Failure to pass the preliminary examination twice is grounds for dismissal from the program.

3. **Research Proposal Defense Presentation**:

Within **six months** after the successful completion of the preliminary examination or **24 months** from matriculation, the Ph.D. student must submit and orally present and defend a research proposal to the Ph.D. Advisory Committee. This presentation may be administered simultaneously with the oral portion of the preliminary examination. Upon successful completion of the Engineering PhD Candidacy Exam, [http://www.clarkson.edu/(S(m0jyyrgzgxcadv55qjdis1as))/engineering/graduate/files/Comprehensive_Comp_Procedure.pdf](http://www.clarkson.edu/(S(m0jyyrgzgxcadv55qjdis1as))/engineering/graduate/files/Comprehensive_Comp_Procedure.pdf), the student is admitted to Candidacy for the Ph.D. degree.

The research proposal must:

a) Identify a problem that is worthy of investigation,
b) Provide background materials that demonstrate an understanding of the fundamentals related to the problem,
c) Provide background materials that identify the current state-of-the-art in terms of understanding the problem and clearly identify current gaps or limitations in the research work already completed by others,
d) Establish and justify the goals and objectives,
e) Present any preliminary work to provide confidence that the problem is important and that the research is realistic,
f) Lay out a plan for the research investigation
   i) Experimental materials and methods, equipment used, design of an experimental matrix, quality control, plan for data analysis and interpretation; or
   ii) General mathematical tools used, model development procedure, approach to test or verify model, application of the model, analysis and interpretation of results.
   iii) Proposed timeline and major deliverables or milestones such as technical publications, draft copy of portions of the thesis, etc.
g) Summarize the expected outcomes of the research work and their contribution to the current state of the art.

4. **Defense of the Dissertation**: Refer to the next Section XIV.
XI. PRESENTATION AND PUBLICATION GUIDELINES FOR MS THESIS AND PHD DISSERTATION

The Department of Civil and Environmental Engineering has requirements and standards for M.S. and Ph.D. students to ensure the timely dissemination of research results.

A. Presentations

All students are expected to present their research work on at least one occasion other than their defense. Either departmental seminars or presentations at research conferences would be considered appropriate forums for this presentation.

B. Publications:

It is expected that material presented in a thesis or dissertation is of sufficient quality for publication in a peer-reviewed research journal. Research efforts of Ph.D. students should be sufficient for multiple manuscripts, while at least one is expected of M.S. degree recipients.

With a need to disseminate the research results, it is acceptable and encouraged to organize a thesis or dissertation around manuscripts prepared for submission to appropriate peer-reviewed journals. Dissertations comprised of several manuscripts must also include an overall introduction and conclusion to tie the material together. Additional materials required for the thesis or dissertation (detailed literature review, details of methods, presentation of raw data, etc.) can be included as additional chapters or appendices as appropriate.

When a dissertation or thesis is comprised of manuscripts prepared for a peer-reviewed journal, it is expected that the student be the primary author of these manuscripts. First authorship has important connotations; it implies not only that the student understands all aspects of the work, but also that she/he handled major facets of the research and writing tasks independently.

XII. DOCUMENT PREPARATION AND FORMAT FOR MS THESIS AND PhD DISSERTATION

Preparation of MS Thesis and PhD Dissertations:

Hard copies of this information can be obtained from the CEE Department Secretary. You may also find it via the web at www.clarkson.edu/graduate/thesis.html (MS Procedures) or www.clarkson.edu/.../files/PhD%20dissertation%20procedures.pdf (PhD Procedures).
XIII. MS THESIS DEFENSE AND SUBMISSION PROCEDURES

A. Thesis Defense

Each graduate student is responsible for making arrangements for a room and advertising of the thesis defense. Committee members are normally permitted approximately two weeks to read the thesis.

The defense serves two purposes: examination on specific aspects of the thesis in order to establish the student’s depth of understanding of the subject, and an examination on the broader field of study to determine the general level of mastery. Prior to the defense, the committee will select a Chair (who is not the Advisor) whose duties are to ensure the smooth conduct of the examination procedure. At the conclusion of the defense, the Chair will inform, in writing, the Department Chair and Graduate Committee Chair of the result and any special requirements pertaining to the student and/or thesis. There is no limit to the number of times a thesis may be defended, provided the longevity requirement has not been exceeded (4 years).

B. Submitting the MS Thesis

Two copies of the signed final thesis (once all corrections have been completed) are to be submitted to the Graduate School for the Dean’s signature. The original will not be signed by the Dean and will not be accepted as a copy. The Department should also receive one copy of the final thesis to be kept in the Departmental library. The thesis must be bound in an appropriate manner. The thesis must also be submitted on CD to the SOE Graduate Coordinator and to the Department secretary. The CDs should contain two files: (1) the complete thesis (title page through appendices), and (2) the title page and abstract only.

The following completed items are obtained from the CEE Department Secretary and are to be submitted with the final thesis copies:

a. Degree completion notice (including laboratory clearance)
b. Final degree program form
c. Withdrawal form
d. Termination of appointment form (if applicable)

C. Final Acceptance Date Prior to the Beginning of the Semester

Final copies of the thesis must be received in the Graduate School no later than the second week of classes (last day to register) or the student must register and pay tuition for one credit hour of thesis.
XIV. PH.D. DISSERTATION DEFENSE AND SUBMISSION PROCEDURES

A. Preparation

Specific instructions for the technical content of a Ph.D. dissertation in the Department of Civil and Environmental Engineering are also presented in Sections XI and XII.

The Graduate School requires that the dissertation be in the format shown in the Instructions for PhD Dissertation Preparation and Defense, which include the required title page and signature page. [http://www.clarkson.edu/(S(m0jyyrqzgxcadv55qjdis1as))/engineering/graduate/files/Comprehensive_Comm_Procedure.pdf](http://www.clarkson.edu/(S(m0jyyrqzgxcadv55qjdis1as))/engineering/graduate/files/Comprehensive_Comm_Procedure.pdf).

The web site [http://www.proquest.com/products-services/dissertations/submitting-dissertation-proquest.html](http://www.proquest.com/products-services/dissertations/submitting-dissertation-proquest.html) on preparing your dissertation for ProQuest contains many useful hints on preparing an acceptable dissertation. Since all dissertations are submitted to ProQuest, you should try to follow all guidelines as presented. Particular attention should be paid to the information regarding the Abstract. This brochure is available from either the Graduate School or School of Engineering office upon request.

B. Defense of the Dissertation

Each graduate student is responsible for making arrangements for a room and advertising of the thesis defense. Committee members are normally permitted approximately two weeks to read the thesis.

The defense serves two purposes: examination on specific aspects of the dissertation in order to establish the student’s depth of understanding of the subject, and an examination on the broader field of study to determine the general level of mastery. At the conclusion of the defense, the Chair will inform, in writing, the Department Chair and Graduate Committee Chair of the result and any special requirements pertaining to the student and/or thesis. There is no limit to the number of times a dissertation may be defended, provided the longevity requirement has not been exceeded (Appendix [form L]).

The PhD examining committee shall consist of a minimum of five members. The members should include at least four Clarkson faculty of assistant professor rank or higher and possessing a PhD. At least one of the members must be from a department other than the candidate’s major department. An external examiner from another University or an appropriate industry may also serve as one of the five committee members.

C. Submitting the Ph.D. Dissertation

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One hard copy of the dissertation is to be submitted to the School of Engineering. The hard copy may be bound and double sided. This copy may be used as the Department copy of the final dissertation to be kept in the departmental library. The dissertation must also be submitted on a CD to the SOE Graduate Coordinator and a CD to the Department. The CD should contain two files: (1) the complete dissertation (title page through appendices), and (2) the title page and abstract only. The title page and abstract will be posted on Clarkson’s web site.

The dissertation must be submitted to ProQuest for publishing. The website for submission is [www.etdadmin.com/clarkson](http://www.etdadmin.com/clarkson). There is a set-up fee for this. Two copies must be sent to the Clarkson University library.

In addition to the submission of the dissertation, the Survey of Earned Doctorates must be completed. The website for this survey is [https://sed.norc.org/showRegister.do](https://sed.norc.org/showRegister.do). The proof page should be sent to the Graduate Coordinator or department secretary.

In addition to the above, the following completed items obtained from the CEE Department Secretary (Norma Woods) must be submitted to the Graduate School:

- A degree completion notice (including lab clearance)
- Final Degree Program form
- Withdrawal form
- Terminating appointment (if applicable)

D. Final Acceptance Date Prior to Commencement

Final copies of the dissertation must be received in the Graduate School no later than ten class days prior to a Commencement to qualify you to receive the degree at that Commencement.

E. Final Acceptance Date Prior to Beginning of the Semester

Final copies of your dissertation must be received in the Graduate School no later than the second week of classes (last day to register) or the student must register and pay tuition for one credit hour of thesis.
APPENDIX
FORMS ON-LINE

All forms can be found at:

http://www.clarkson.edu/(S(m0jyyrgzgxcadv55qjdis1as))/engineering/graduate/FormsforGraduateStudents.html