

CLARIKSON

Department of
Civil and
Environmental
Engineering

**Graduate
Student
Handbook**

2011-2012

GRADUATE HANDBOOK PROCEDURES AND GUIDELINES

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GRADUATE HANDBOOK PROCEDURES AND GUIDELINES 2010-2011

I. INTRODUCTION

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

II. DEPARTMENT GRADUATE COMMITTEE

The Graduate Committee of the Department of Civil and Environmental Engineering is comprised of five 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 Graduate School, to advise department faculty on graduate matters, and to ensure timely and proper administration of examinations and defenses. The Department Secretary (x7701) in 140 Rowley Laboratories maintains all records on matriculated students.

III. APPLICATION PROCEDURES AND REQUIREMENTS

Full-time applicants to the graduate program from within the U.S. and Canada are required to pay a \$25 application fee. All other full-time applicants are required to pay a \$35 application fee. This fee cannot be waived or deferred, except as follows. The fee will be waived for applicants from within the U.S. and Canada who apply for admission before December 31 for the following fall semester, or June 30 for the following spring semester. Part-time students are not required to pay an application fee. The full name of the applicant should be written on the front of all checks or money orders. Applications received without the fee are not forwarded to the department for review. They are immediately made inactive until the fee is received. All applications go through the Graduate School for processing.

A. Application Requirements

Applicants are required to provide:

1. Three letters of reference.
2. Official transcripts of all college coursework.
3. International applicants for whom English is not a first language must submit a Test of English as a Foreign Language (TOEFL) score. The minimum TOEFL score required is 550 (paper-based exam) , 213 (computer-based exam) or a TOEFL iBT (Internet Based Test) score of 80 or an ITELS score of 6.5. Test of Spoken English (TSE) scores are recommended for students applying for a Teaching Assistantship.
4. There are no minimum required scores for the Graduate Record Exam (GRE).
5. Supplemental information may also be submitted. This information may include a resume, a statement of purpose outlining goals and objectives, or other information that would help the graduate committee evaluate the applicant's request for admission.

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.

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** (Form A, page 5). 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** (Form B, page 6). Graduate credit for courses taken at Clarkson as an undergraduate must be requested on a **Graduate Credit Form** (Form C, page 7). 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** amongst (Forms F & G, pages 8, 9, and 10). 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** (Form E, page 11) 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 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 in the project-related course work and research.

E. Certification of ME, MSc, PhD Degree Requirement

The Faculty Advisor submits the **Completion of Degree Requirements** (Form D, pg. 12) for approval by the Advisory Committee, the Department Chair, Dean of the School, and Dean of the Graduate school.

Form A

CLARKSON UNIVERSITY
Coulter School of Engineering
Graduate Advisor

DATE_____

Appointment of Faculty Advisor.

Each student in an Engineering graduate program must have a faculty advisor. A student's research advisor will become the student's faculty advisor upon the selection of a research topic. A student's research advisor must be assigned no later than the beginning of the student's second semester of study for ME and MS, or before the student has completed 15 credits of graduate course work for Ph.D. Submit a revised copy of this form to change the faculty advisor.

Ph.D. **M.S.** **M.E.**

Name: _____

STUDENT ID: _____

**STUDENT'S DEGREE/
PROGRAM:** _____

**FACULTY
ADVISOR:** _____

Chair, Dept. Graduate Committee

Advisor Signature

GRADUATE CREDIT FORM

CLARKSON UNIVERSITY

Graduate School

Interoffice Memorandum

To: Dean of the School of Engineering

From: _____, Chairperson or Associate Chair

Department of _____.

Date:

Re: Approval for Graduate credit for courses taken as an Undergraduate Student at Clarkson.

Approval is requested for _____, _____
Student Name Student Number

To be granted credit for the following courses:

Course Number	Course Name	Credit Hours	Grade
---------------	-------------	--------------	-------

I certify that the above courses are in excess of those needed to meet the B.S. requirements.

Signature Dept. Chair or Associate Chair

Approved by the Dean of the School

Original: SAS
Cc: Dept

MASTER OF ENGINEERING PROGRAM FORM

Name: _____ Student #: _____ Date: _____

Course Number & Title	Graduate Course Hrs.	Spec. Proj./ Thesis Hrs.	Seminar Hrs.	Grade
Fall 2006				
Spring 2007				
TOTALS	0	0	0	0
Minimum Credit Total Hours = 30	21	2	1	

Thesis/Special Project Title

PROGRAM APPROVAL

Student Signature

Thesis/Special Proj. Advisor Signature

MASTER'S DEGREE PROGRAM FORM

Name:

Student No.:

Date:

Course Number & Title	Course Hrs.	Spec. Proj./ Thesis Hrs.	Seminar Hrs.	Grade
Fall 2009				
Spring 2010				
Fall 2010				
TOTALS	0	0	0	0
Minimum Credit Total Hours = 30	18	6	2	

Thesis/Special Project Title

PROGRAM APPROVAL

Student Signature

Thesis/Special Proj. Advisor Signature

CLARKSON UNIVERSITY

Coulter School of Engineering
Graduate Committee Appointment

DATE: _____

Appointment of Graduate Committee.

Each student in an Engineering graduate program completing research-based graduate degree must have a graduate committee. The graduate committee oversees the student’s program of study, reviews and evaluates the student’s progress, and conducts the final examination of the thesis or dissertation. Any changes in the composition of the graduate committee must be made prior to scheduling any final examination. Note: When an external member is to be appointed to a PhD graduate committee, a copy of that person’s curriculum vitae must be submitted to the department chair and dean when the graduate committee is appointed. Submit a revised copy of this form to change the membership of the graduate committee.

M.S. Ph.D.

NAME: _____

STUDENT ID: _____

DEPARTMENT/
PROGRAM: _____

FACULTY
ADVISOR: _____

Committee Member:

Committee Member:

Committee Member:

Committee Member:

Committee Member:

Committee Member:

Department Chair

Dean, Coulter School of Engineering

Graduate Student Completion Notice

DATE _____

Ph.D. M.S. M.E. M.B.A. D.P.T.

NAME: _____ STUDENT ID: _____

DEPARTMENT/PROGRAM: _____ FACULTY ADVISOR: _____

Thesis/Special Project Title: _____

Number of Thesis Credit Hours: _____ Date of thesis defense/final examination: _____

Check one if no thesis is required

Passed Comprehensive Examination Date Completed: _____

Completed special project for degree Number of Special Project Credits: _____

For M.S. students, is this student continuing for a Ph.D.? Yes No

The following student has completed all requirements for the degree as noted above. This degree will be awarded at the next commencement exercises.

Committee signatures are required for MS/PhD defense's only

Committee Member: Pass Fail _____
Committee Member: Pass Fail

Committee Member: Pass Fail _____
Committee Member: Pass Fail

Committee Member: Pass Fail _____
Committee Member: Pass Fail

Department Chair/Director DATE

Dean of School DATE

Dean, Graduate School DATE

CC: Registrar

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. 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. Similarly, 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. The Graduate School, Department Chair, and Graduate Committee must be advised in writing of a leave of absence.

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 90 for PhD) only need to register for only 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 will be 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

If a Principal Investigator obtains a full stipend for a Research Assistant and full overhead, the Graduate School will allocate funds to cover tuition for the credit hours taken during the term of appointment up to a maximum of 15 credit hours per academic semester, not to exceed 30 credit hours per calendar year. The student needs to be appointed for at least six months and from funds derived from no more than three research grants.

C. Partial Tuition Scholarships and Work Requirements

Self-paying students may receive a tuition scholarship for up to 40% of the tuition for which the student has registered. The Graduate School, upon recommendation by the Department, provides this scholarship. Full time ME students may receive up to 6 credits of support per semester for 2 semesters; full time MS and full time Ph.D. students may receive up to 4 credits of support per semester for 3 semesters. 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:

- A. Fill out a **Graduate Student Appointment Authorization Form** (Form I, page 15) 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.
- B. Senior Graduate Assistants can register for up to 9-credit hours/semester. Their tuition is waived, similar to designated teaching assistants.
- C. The Graduate Student Appointment Authorization form plus a resume should be sent to the Dean of Engineering for consideration and approval.
- D. A letter of appointment will be sent stating the conditions of employment.

Clarkson University

Graduate Student Appointment Authorization

Date _____

Male Female

NAME _____ **STUDENT/EMPLOYEE NO.** _____
(Last, first, middle, suffix; e.g. James, John Robert Jr.)

COUNTRY OF CITIZENSHIP _____ **VISA TYPE** _____

DEPARTMENT CEE _____ /10700 **ADVISOR** _____
Dept. Number

TYPE OF AWARD TYPE **OF ACTION**

Teaching Assistantship New Appointment
 Research Assistantship Reappointment
 Graduate Assistantship I-9 on file
 Senior Graduate Assistantship Termination as of _____ Date
 Partial Tuition Assistantship
 Partial Tuition Scholarship
 Fellowship Name _____

DATES	AMOUNT	BI-WEEKLY	ACCOUNT
To _____	\$ _____	\$ _____	_____
To _____	\$ _____	\$ _____	_____
To _____	\$ _____	\$ _____	_____
To _____	\$ _____	\$ _____	_____

Does this appointment supersede a previous one: YES NO If yes, please explain)

REMARKS _____

Tuition Amount				Tuition Waived	Paid through Grant
FA _____ Year	Credit Hours _____	Account _____	Amount _____	_____	_____
SP _____ Year	Credit Hours _____	Account _____	Amount _____	_____	_____
SS _____ Year	Credit Hours _____	Account _____	Amount _____	_____	_____

*** DOR will complete**

Date _____ Dean of School, if needed _____ Principal Investigator/Dept. Head _____
 Date _____ Additional Signatures, if necessary _____ Research Approval, if needed _____

I hereby accept the above offer and will be subject to all the rules and regulations governing graduate students at Clarkson University. **This support is contingent on verification of funds and satisfactory performance during the course of this appointment.** Subsequent completion or withdrawal from Clarkson will terminate this contract.

Date _____ Student Signature _____
 cc: Department, Principal Investigator, and Student Date to Payroll: _____

VIII. SUMMER SCHOOL TEACHING REQUIREMENTS

The following requirements must be met for graduate students to become eligible for Summer School teaching assignments:

- A. Conduct at least 3 hours of supervised instruction; preferably in the course the graduate student expects to teach in Summer School. If this is not possible, then the supervised instruction may be in an equivalent course. A person with professorial rank will observe the supervised teaching. Subsequently, this person will write an assessment of the graduate student's teaching ability for placement in the student's departmental file. This assessment should accompany the course teaching recommendation sent to the Department Chair.
- B. Graduate students who do not have English as their native language must first complete the Graduate School ESL requirement.
- C. If the graduate student assigned a summer teaching position is on an assistantship, that assistantship will be terminated during the Summer School session of concern, as the student cannot receive pay for both jobs concurrently.
- D. A graduate student may teach only one course during the ten week Summer School period.
- E. The graduate student will ordinarily use the same text and course outline as utilized during the most recent semester in which the course was taught.
- F. The graduate student must schedule an interview with the Department Chair prior to being assigned to teach a course in Summer School.

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

IX. REQUIREMENTS FOR THE MASTER OF ENGINEERING DEGREE IN CIVIL 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
 - 21 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
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 IV B, page 4)
4. All work completed in within four calendar years.
5. Pass a group of core courses in one of the following specialty areas: Environmental, Geotechnical, Structural, or Water Resources.

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 Specialty Areas

The M.E. core courses in the specialty areas are listed as follows:

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 four from the following list:

CE517 Advanced Soils Laboratory

CE538 Introduction to the Finite Element Method

CE554 Continuum Mechanics

CE512 Introduction to Structural and Soil Dynamics

CE516 Advanced Soil Mechanics

CE519 Advanced Foundation Design

3. Structural and Materials Engineering

Choose four from the following list:

CE538 Introduction to Finite Element Method

CE553 Properties and Performance of Concrete Materials

CE554 Continuum Mechanics

CE501 Fracture Mechanics of Concrete Structures

CE512 Introduction to Structural and Soil Dynamics

CE521 Analysis of Advanced Composite Structures

CE542 Advanced Steel Design

CE544 Advanced Design of Structural Concrete

4. Water Resource Engineering

Choose two from the following list.

CE527/ME527 Advanced Fluid Mechanics

CE554 Continuum Mechanics

CE572 Shallow Water Hydrodynamics

CE570 Advanced Hydrology

CE573 Sediment Transport
CE574 Hydrodynamic Dispersion
CE575 Coastal Engineering
CE576 Hydraulic Engineering in Cold Regions
ME531 Computational Fluid Dynamics

One-half of the total course credits at graduation must have a CE prefix.

D. Other Information

1. A M.S. student has the option of continuing towards a Ph.D. degree if recommended by a member of the faculty and accepted by the Graduate Committee of the Department. This requires notification of the School of Engineering Office of Graduate Programs and formal review by the same process employed in the review of all other Ph.D. applicants.
2. Students in the M.E. program in the CEE Department can be eligible for partial tuition assistance (Section VI, C. page 12).
3. 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.

ME degree requirements are described above. In addition to the ME requirements and management concept courses, the MBA component of this option requires

X. REQUIREMENTS FOR THE MASTER OF SCIENCE DEGREE IN CIVIL 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 Baccalaureate
2. Maximum of 10 credit hours transfer credit (grade of B or better).
3. All work completed in 4 calendar years.
4. All students must complete a thesis and defend it orally to a committee consisting of a minimum of three faculty members.
5. Pass a group of core courses in one of the following specialty areas: Environmental, Geotechnical, Structural, and Water Resources Engineering.

C. Core Courses in Specialty Areas

The MS core courses in the specialty areas are listed as follows:

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

CE517 Advanced Soils Laboratory

CE538 Introduction to the Finite Element Method
CE554 Continuum Mechanics

As well as one from:

CE512 Introduction to Structural and Soil Dynamics
CE516 Advanced Soil Mechanics
CE519 Advanced Foundation Design

3. Structural and Materials Engineering

CE538 Introduction to Finite Element Method
CE553 Properties and Performance of Concrete Materials
CE554 Continuum Mechanics

As well as one from:

CE501 Fracture Mechanics of Concrete Structures
CE512 Introduction to Structural and Soil Dynamics
CE521 Analysis of Advanced Composite Structures
CE542 Advanced Steel Design
CE544 Advanced Design of Structural Concrete

4. Water Resource Engineering

Choose four courses from the following list:

CE527/ME527 Advanced Fluid Mechanics
CE554 Continuum Mechanics
CE572 Shallow Water Hydrodynamics
CE570 Advanced Hydrology
CE573 Sediment Transport
CE574 Hydrodynamic Dispersion
CE575 Coastal Engineering
CE576 Hydraulic Engineering in Cold Regions
ME531 Computational Fluid Dynamics

5. Non-Traditional Specialty Area

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 Specialty Area” 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 Specialty Area 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 students may be invited to proceed directly to the Ph.D. program without completing a M.S. Thesis. The **Ph.D. Program Form** (Form J, pg. 23) is used by the student's faculty advisor for recommending the continuation of the student directly to the Ph.D. program. Such students will be awarded the M.S. concurrently with the Ph.D. The M.S. degree can be awarded upon the approval of the Graduate Committee after completing 40 credit hours, completing a technical report on his/her research, and passing the doctoral qualifying examination.
2. Students in the M.S. program in the CEE Department can be eligible for partial tuition assistance (Section VI. Part C, page 14).
3. Only under exceptional circumstances will MS 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.

CLARKSON UNIVERSITY

Department of Civil and Environmental Engineering

Admittance to PhD Program

Memorandum

To: Graduate Committee

From: _____
Faculty Research Advisor

Date: _____

RE: Admittance to PhD Program

I recommend that _____ be admitted to the PhD Program without completing a MSc Thesis. The student's grade transcripts are attached as well as the list of courses in which the student is currently enrolled. The award of the Masters Degree will be made after completing 40 credit hours and completing a technical report on his/her research and passing the doctoral candidacy requirements.

Approved by:

Chair, Graduate Committee

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

A. Admission Requirements to the Doctoral Programs:

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:
 - 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
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 specialty areas:
Environmental, Geotechnical, Structural, and Water Resources Engineering.

C. Core Courses in Specialty Areas

The Ph.D. core courses in the specialty areas are listed as follows:

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

CE512 Introduction to Structural and Soil Dynamics (ME555)
CE538 Introduction to the Finite Element Method
CE551 Engineering Elasticity
CE554 Continuum Mechanics

3. Structural and Materials Engineering

CE538 Introduction to Finite Element Method
CE551 Theory of Elasticity
CE553 Properties and Performance of Concrete Materials
CE554 Continuum Mechanics

4. Water Resources Engineering

Four courses from the following list:

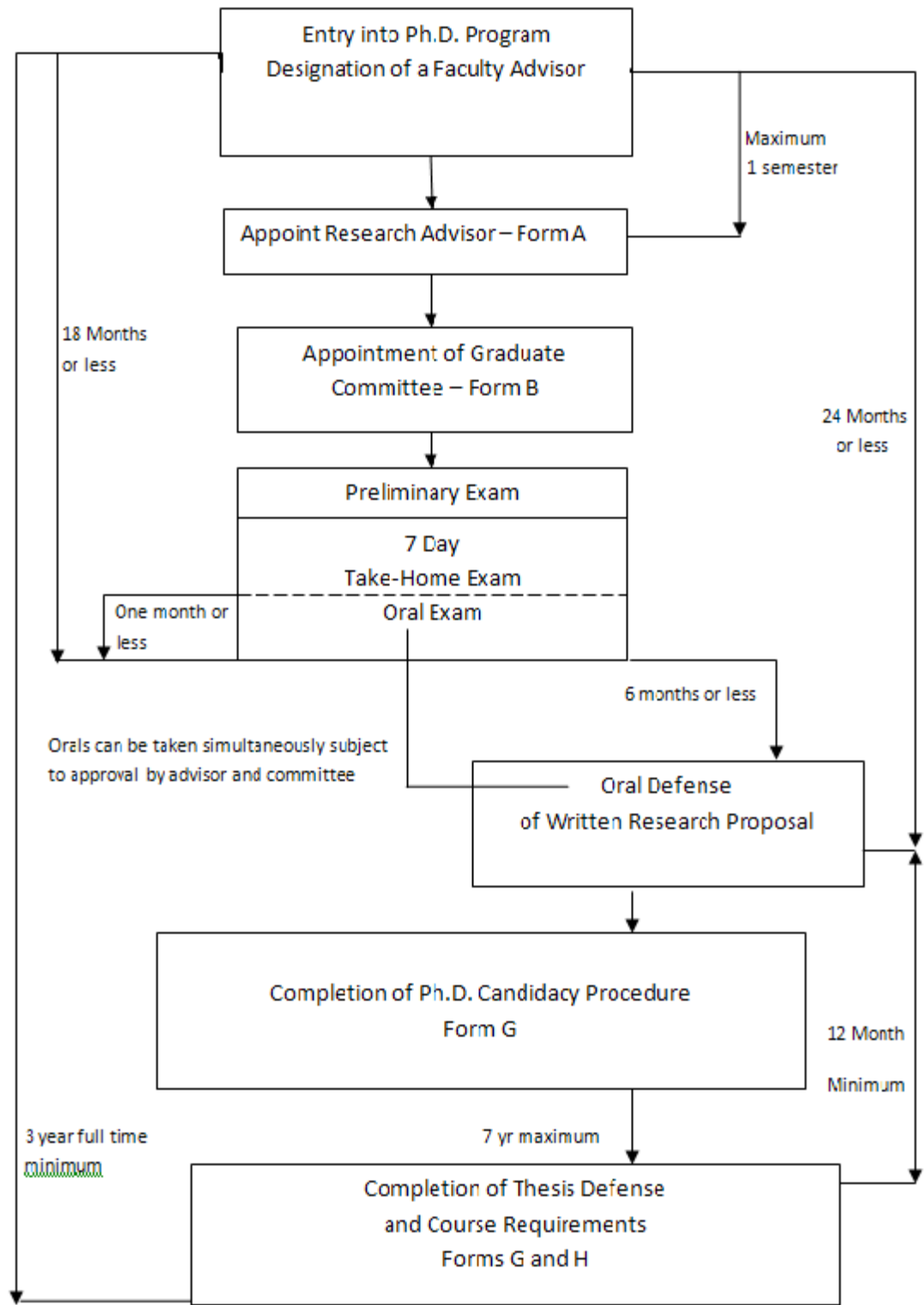
CE527/ME527 Advanced Fluid Mechanics
CE554 Continuum Mechanics
CE572 Shallow Water Hydrodynamics
CE570 Advanced Hydrology
CE573 Sediment Transport
CE574 Hydrodynamic Dispersion
CE576 Hydraulic Engineering in Cold Regions
ME531 Computational Fluid Dynamics

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

The requirements and guidelines for the Doctoral degree are those noted above for the University and the Graduate School, subject to the following additional constraints, which are specific to the CEE Department:

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 in the project-related 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:
 - 3.1 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 **Ph.D. Candidacy Exam** (form G, pg 28), the student is admitted to candidacy for the Ph.D. degree.
 - 3.2 The research proposal must:
 - 1) Identify a problem that is worthy of investigation.
 - 2) Provide background materials that demonstrate an understanding of the fundamentals related to the problem.
 - 3) 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.
 - 4) Establish and justify the goals and objectives.
 - 5) Present any preliminary work to provide confidence that the problem is important and that the research is realistic.
 - 6) Lay out a plan for the research investigation
 - a) Experimental materials and methods, equipment used, design of an experimental matrix, quality control, plan for data analysis and interpretation; or
 - b) General mathematical tools used, model development procedure, approach to test or verify model, application of the model, analysis and interpretation of results.
 - c) Proposed timeline and major deliverables or milestones such as technical publications, draft copy of portions of the thesis, etc.
 - 7) 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 Chapter XV. B (page 31)



Clarkson University

**Coulter School of Engineering
Ph.D. Candidacy Exam**

DATE _____

Each student in a Coulter School of Engineering doctoral program must complete the candidacy procedure within two years after admission to the Ph.D. program. The specific requirements of the candidacy procedure are defined by each degree program. A student may have two attempts to pass the candidacy procedure. A student who does not complete the candidacy procedure within the time allowed could be dropped from the graduate program.

NAME: _____ **STUDENT ID:** _____

**DEPARTMENT/
PROGRAM:** _____ **FACULTY
ADVISOR:** _____

The above named student has completed the Ph.D. candidacy procedure on _____

 Pass
 Fail
Committee Member:

 Pass
 Fail
Committee Member:

 Pass
 Fail
Committee Member:

 Pass
 Fail
Committee Member:

 Pass
 Fail
Committee Member:

 Pass
 Fail
Committee Member:

Department Graduate Representative

Department Chair

(Please send copy to CSOE Graduate Administrator, Box 5700)

XII. 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.

XIII. 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 <http://www.clarkson.edu/graduate/thesis.html> (MS Procedures) or <http://www.clarkson.edu/graduate/dissertation.html> (PhD Procedures).

XIV. 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 ROM to the CSOE Graduate Coordinator. 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. A degree completion memo from the department
- b. Final degree program form file
- c. Withdrawal form
- d. Termination form

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.

XV. 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 were outlined in Section XII (page 29).

The Graduate School requires that the title page of the dissertation be in the format shown as in Exhibit A (page 33). All students are required to include a signature page signed by the appropriate committee members (Exhibit B, page 34).

The brochure *Preparing Your Manuscript for Microfilming* published by University Microfilms International contains many useful hints on preparing an acceptable dissertation. Since all dissertations are microfilmed, 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 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. 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 (refer to page 27).

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

One hard copy of the dissertation is to be submitted to the Coulter 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 two CD ROMs to the CSOE Graduate Coordinator and 1 CD ROM 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 accompanied by a \$90 fee to cover the costs of ProQuest/UMI microfiche and binding.

In addition to the dissertation, the following completed items obtained from the CEE Department Secretary must be submitted to the Graduate School:

- a. A degree completion memo from the department
- b. Proquest/UMI Dissertation Submission Form and Optional order form for bound copies.
- c. Survey of Earned Doctorates
- d. Final Degree Program form
- e. Withdrawal form
- f. Termination form

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.

EXHIBIT A

CLARKSON UNIVERSITY

Title

A Thesis/A Dissertation

by

Name

Department of Civil and Environmental Engineering

Submitted in partial fulfillment of the requirements

for the degree of

Master of Science, Civil Engineering

Doctor of Philosophy, Civil and Environmental Engineering

Date

Accepted by the Graduate School

Date

Dean

EXHIBIT B

The undersigned have examined the thesis/dissertation entitled "**Thesis/Dissertation Title**" presented by **Name**, a candidate for the degree of **Master of Science/Doctor of Philosophy (Degree)**, and hereby certify that it is worthy of acceptance.

Date

Advisor

Examining Committee *

Examining Committee

Examining Committee

Examining Committee

Examining Committee

* Please type each Committee Member's name under their signature line.

COLUMN

The care and maintenance of your adviser

Graduate students bear as much responsibility as their mentors for ensuring that they are well guided through their degrees, say **Hugh Kearns** and **Maria Gardiner**.

Ever since the advent of graduate school, students have complained about their advisers. It is almost an article of faith. The adviser is never available or is too available; gives too much feedback or not enough; is too critical or isn't providing enough direction; and so on. Exchanging horror stories with other students is a great way to bond. But advising goes both ways — and if, after careful reflection on their own studies and progress, students determine that they are not getting the guidance they require, they must address the deficiencies.

It is not surprising that advisers figure large in graduate students' conversations. In 2009, the US Council of Graduate Schools in Washington DC reported survey results showing that 65% of the 1,856 doctoral students who responded identified mentoring or advising as a main factor in PhD completion. Our own research at Flinders University in Adelaide, Australia, and our experience at graduate-student workshops across the world suggest that the adviser-student relationship has a big impact on completion time. It certainly influences whether students are still smiling at the end of their degrees!

Students often assume that once they call someone an adviser, he or she automatically acquires all the skills of advising. After all, if your adviser is the world leader in stem-cell technology, he or she must excel at the seemingly simple task of advising — not to mention possess highly developed interpersonal skills and a keen interest in graduate-student development. Sadly, that is not the case.

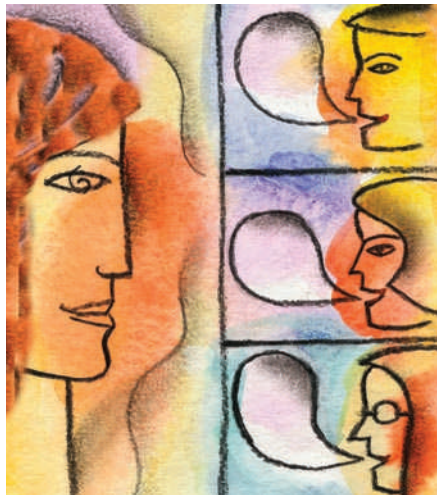
Sometimes, advising is a weakness of an otherwise very accomplished scientist. This is not surprising. Mentoring tends to be a private business, and often the only model available is an adviser's own experience of having been advised. If it was good, they decide to copy that style and methodology; if it was bad, they do the opposite. There is no guarantee that either approach will provide the student with the guidance he or she needs.

A proactive approach is necessary. If your adviser isn't looking after you in the way you need, then you need to look after them. At some point in the PhD journey, most graduate students come to an important realization: "This is my thesis. My name is written on the front of it. I need to become the driver." The sooner the

candidate does this, the better. If you're not getting feedback, clear direction or the necessary resources, then you must do something about it. What does this mean in practice? Let us take some examples.

MEETINGS

A comment we often hear at our workshops is, "My adviser is lovely but he/she is just so busy that we never get to talk about my thesis". And our response is, "Yes, your adviser is busy. All advisers are busy and will continue to be busy. Regardless, you need to organize meetings where you can get real face time and talk about your thesis." We're not recommending a quick chat in the coffee room or a brief word in the lab. Nor do we mean a lab meeting.



We mean regularly scheduled meetings focusing on your thesis. You will probably have to schedule them and follow up to make sure that they happen. And when a meeting is cancelled, you will have to reschedule it and persist until it happens.

In our experience, just scheduling the meeting isn't enough. You can't assume that your adviser hosts productive meetings or can intuit what you need to know. You need a specific, uncomplicated agenda that could include such action items as what you've done in the past two weeks; feedback on written work; what you'll

do in the next two weeks; the next meeting.

This all sounds very straightforward. But if more students followed these steps, many adviser-student issues could be resolved.

FEEDBACK

Again, in an ideal world, your adviser would be skilled at providing supportive comments, delicate in pointing out areas for improvement and deft at intuitively knowing the level of feedback you seek. But this is a fantasy. One student described her feedback experience as similar to being a victim in a drive-by shooting — she handed over her work, it was riddled with bullets and she was left with a bloodied mess as the shooter drove off.

To be fair, e-mailing a chapter to an adviser and saying "Give me feedback" is like walking into a restaurant and saying "Give me food." You need to be a bit more specific. When handing over your work, identify the type of feedback you are looking for. You might say, "This is an early draft, so I just want feedback on the overall direction," or "Please focus on the discussion on page six." If the feedback you get isn't helpful, ask for more detail. Maintaining your adviser means asking for what you need rather than hoping that he or she will know what to provide.

MANAGING UP

One of the secrets of looking after your adviser is working out what they want — and what most advisers want is a student who comes to them with suggestions and solutions as well as problems, gets things done and makes the job of advising easier. In business this is called 'managing up'. When we work with graduate students we call it the 'care and maintenance' of your adviser.

So although it is natural to complain about your adviser — and can even be cathartic — it is not enough. If your adviser is not giving you what you need, you need to go out and get it. ■

Hugh Kearns and Maria Gardiner lecture and research in psychology at Flinders University in Adelaide, Australia, and run workshops for graduate students and advisers (see ithinkwell.com.au).