

MAE GRADUATE HANDBOOK

General Procedures & Guidelines



**Department of Mechanical and Aeronautical
Engineering (MAE)**

Fall 2010

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Introduction

This handbook contains the degree requirements for graduate programs in the Mechanical and Aeronautical Engineering (MAE) Department at Clarkson University. It is the responsibility of the degree candidate, working in conjunction with his/her faculty advisor, to choose a plan of study, including coursework and thesis/project work that will lead to the completion of a graduate degree. The student should read these requirements carefully and become familiar with the requirements for his/her degree.

Also contained in this handbook are various forms that must be completed at various times and procedures for M.S. and Ph.D. theses. The student should become familiar with this information and insure that all of the forms are completed in a timely manner and that proper procedures are followed for completing his/her thesis.

Graduate Degree Requirements in Mechanical Engineering

The departmental graduate program in Mechanical Engineering is structured to provide the student with a series of goals to be attained in an orderly fashion throughout the course of study. The ultimate goal in this sequence is the granting of the Master of Engineering (M.E.), Master of Science (M.S.) or Doctor of Philosophy (Ph.D.) degree, following a successful completion of the program. The general requirements of the Graduate School are described in the university catalog. The formal requirements for the M.E., M.S. and Ph.D. in Mechanical Engineering are set forth as follows:

I. Requirements for the M.E. Degree

A. UNIVERSITY REQUIREMENTS

1. 30 credit hours minimum: All work counted in the 30 credit hours must be graduate courses, seminar, or project (to conform to New York State (NYS) Standards).
2. 20 credit hours must be earned in residence
 - a. A maximum of 10 credit hours of transfer credit (B grade or better).

B. MECHANICAL ENGINEERING REQUIREMENTS

(in addition to the above University requirements)

1. Prerequisites: BS in engineering or equivalent. Students applying from other disciplines will be handled on a case by case basis. Those students who are not fully prepared to pursue graduate work in mechanical engineering may be required to take additional courses for which graduate credit will not be given. Admission to the M.E. program will be given only after the required prerequisite coursework has been completed.
2. Program Duration: One year (two semesters and summer)
3. Requirements:
 - a. 24 credits of course work (see item c below)
 - b. 2 credits of seminar
 - c. 4 credits of project work (ME 616 – Special Projects) with an MAE faculty advisor. All students must complete a project and are encouraged to defend it orally. A written report approved by the graduate committee is required. With the faculty advisor's approval, students enrolled in industrially sponsored distance learning programs may accomplish 7 credits of project work and 21 credits of course work.

The course work must satisfy the following requirements:

- a. A minimum of two MAE graduate courses must be taken.
- b. At least one mathematics course must be taken. The following is a list of suggested courses:
CH561 Engineering Analysis
ME515 Finite Element Methods

ME529 Stochastic Processes in Engineering
ME554 Continuum Mechanics
MA501 Advanced Engineering Mathematics I
MA502 Advanced Engineering Mathematics II
MA531 Initial and Boundary Value Problems
MA572 Finite Element Methods
MA577 Numerical Methods

Other courses may also be acceptable with the written approval of the MAE Graduate Committee.

- c. At least two graduate engineering courses with focus on practice and design. The following is a list of suggested courses:

ME517 Advanced Conduction Heat Transfer
ME527 Advanced Fluid Mechanics
ME531 Computational Fluid Dynamics
ME543 Advanced Optimal Design
ME544 Advanced CAD
ME555 Advanced Mechanical Vibrations
ME557 Advanced Mechanics of Composite Materials
ME590 Advanced Welding Metallurgy
ME595 Principles of Physical Metallurgy

Other courses may also be acceptable with the written approval of the MAE Graduate Committee.

- d. No more than two courses may be selected from this group.

ME591 Selected Topics in Materials Engineering
ME594 Selected Topics in Manufacturing
ME618 Selected Topics in Heat Transfer
ME628 Special Topics in Fluid Mechanics
ME657 Selected Topics in Solid Mechanics

Only reading or lecture courses are acceptable. Other courses may also be acceptable with the written approval of the MAE Graduate Committee.

- e. At least 15 course credit hours must be in engineering.

The M.E. student has the option of continuing towards a Ph.D. degree if accepted as a candidate by the MAE Graduate Committee.

II. Requirements For the Dual M.E/M.B.A. Degree: Detailed information on the dual ME/MBA Program is available at http://www.clarkson.edu/engineering/graduate/ME_MBADualDegreeOption.html

A. MECHANICAL ENGINEERING REQUIREMENTS

1. Prerequisites: BS in mechanical engineering or equivalent
2. Program Duration: Two years. During the first year the student completes ME degree requirements. During the second year the MBA requirements are completed.
3. ME requirements: Requirements for the ME degree listed under item I must be accomplished

B. SCHOOL OF BUSINESS REQUIREMENTS

1. Check with the School of Business for the most recent requirements for the MBA degree.

III. Requirements For The M.S. Degree

A. UNIVERSITY REQUIREMENTS (Consult Clarkson Catalog for complete details)

1. 30 credit hours minimum
 - a. Minimum of 6 credit hours of thesis that counts toward the degree
 - b. Minimum of 20 credit hours of course and seminar work
2. 20 credit hours earned in residence
 - a. NYS requires minimum of 1 academic year of full time study for the M.S. beyond B.S.
 - b. Maximum of 10 credit hours transfer credit (B grade or better)
 - c. Official transcripts needed before transfer credits will be awarded
3. All work completed in 5 calendar years
4. All work counted in 30 credit hours minimum must be graduate course work (to conform to NYS Standards)

B. SCHOOL OF ENGINEERING REQUIREMENTS (in addition to above University requirements)

1. All students must complete a thesis and defend it orally to a committee consisting of a minimum of three faculty members. However, exceptional students may be invited to proceed directly to the Ph.D.; such students will be awarded the M.S. upon completing 40 credit hours and passing the doctoral qualifying examination with a superior grade.

2. All students will be required to take 30 credit hours, which should contain 2 credit hours of seminar, a minimum of 18 credit hours of graduate course work, and a minimum of 6 credit hours of thesis.
3. Those students who are not fully prepared to pursue graduate work in engineering may be required to take additional course work for which graduate credit will not be given.

C. MECHANICAL ENGINEERING REQUIREMENTS (in addition to the above University and School of Engineering Requirements)

1. Prerequisites: BS in engineering or equivalent. Students applying from other disciplines will be handled on a case by case basis. Those students who are not fully prepared to pursue graduate work in engineering may be required to take additional courses for which graduate credit will not be given. Admission to the M.S. program will be given only after the required prerequisite coursework has been completed.
2. Program Duration: One and one-half year (three semesters and summer)
3. Requirements:
 - 18 credits of course work
 - 2 credits of seminar
 - 10 credits of research project work (ME 612 – Thesis/Dissertation) with a MAE faculty advisor. One credit may be ES 542 – Fundamentals of Research and Graduate Study
 - a. A minimum of two ME graduate courses must be taken.
 - b. At least one mathematics course must be taken. The following is a list of suggested courses:

CH561 Engineering Analysis
ME515 Finite Element Methods
ME529 Stochastic Processes in Engineering
ME554 Continuum Mechanics
MA501 Advanced Engineering Mathematics I
MA502 Advanced Engineering Mathematics II
MA531 Initial and Boundary Value Problems
MA572 Finite Element Methods
MA577 Numerical Methods

Other courses may also be acceptable with the written approval of the MAE Graduate Committee

- c. No more than two courses may be selected from this group.

ME591 Selected Topics in Materials Engineering
ME594 Selected Topics in Manufacturing
ME618 Selected Topics in Heat Transfer
ME628 Special Topics in Fluid Mechanics
ME657 Selected Topics in Solid Mechanics

Other courses may also be acceptable with the written approval of the MAE Graduate Committee.

- d. At least 15 course credit hours must be in engineering. No more than two dual numbered courses may be taken for graduate credit.

The M.S. student has the option of continuing towards a Ph.D. degree if accepted as a candidate by the MAE Graduate Committee.

IV. Requirements for the Ph.D. Degree

A. UNIVERSITY REQUIREMENTS (consult Clarkson Catalog for complete details)

1. 90 credit hour's minimum (beyond the B.S.)
 - a. Minimum of 24 credit hours of course work
 - (1) Minimum of 15 credit hours in the major field
 - (2) Minimum of 9 credit hours in the minor field
 - (3) Minimum of 6 credit hours from a department other than the one in which the student is housed
 - b. Minimum of 6 credit hours of seminar
2. 60 credit hours earned in residence at Clarkson
 - a. Two years of full-time study in residence at Clarkson.
 - b. Maximum of 30 hours of graduate transfer credit (B grade or better).
 - c. Official transcripts need to be provided before transfer credit is awarded.
3. All work must be completed within 7 years after the student is identified as a PhD candidate. A minimum of three academic years of full-time graduate study or the equivalent in part-time study is required.
4. The comprehensive examination (qualifying examination and research proposal defense examination) for admission to candidacy must be taken within two years after admission to the PhD program. A student will be dropped from the program if the exam is failed twice.

5. A dissertation must be submitted and defended orally before an examining committee. The examining committee will consist of a minimum of five members, four of whom must be Clarkson faculty members. At least one of the faculty must be from a department other than your advisor's department. With the approval of the Provost, the fifth member may be any person with appropriate credentials from either inside or outside the University.
 6. The program for research assistants (RA) and teaching assistants (TA) will include at least 1 credit hour of thesis each semester.
 7. A student in the Ph.D. program who has not yet passed the comprehensive examination will be called a Ph.D. student. After the examination is passed the student will be called a Ph.D. candidate.
- B. MECHANICAL ENGINEERING REQUIREMENTS (in addition to the above University Requirements)
1. A minimum of 39 credit hours of course work.
 2. At least two additional ME courses beyond the M.S. degree course requirements (part of the 39 course credit hours required).
 3. In order to monitor a student's progress toward a Ph.D., the following sequence of examinations and presentations are required (the exact form and timing of these are presented in separate sections of these requirements):
 - a. Qualifying Examination
 - b. Research Proposal Defense Examination
 - c. Examination on the Dissertation
- Note: A student is considered a Ph.D. candidate after passing both the Qualifying and Research Proposal Defense Examinations
4. A qualifying examination based on general preparation in the major field, must be taken at the first offering after the student completes one semester in the Ph.D. program. M.S. students may take the exam one time prior to completion of their M.S. thesis with written permission from their advisor. This is a written examination covering a general background in the area of mechanical engineering. If a Ph.D. student fails any portion of this exam, studies cannot proceed until approval is obtained from the Department Chairman and from the Dean of the Graduate School. If a Ph.D. student fails the qualifying exam twice, the student will be dropped from the Graduate School.

The Qualifying Examination is composed of two written parts:

- a. Mathematics: Calculus, differential equations, partial differential equations, matrices, linear algebra, Laplace and Fourier transforms and numerical methods.
- b. Mechanical Engineering Science: Statics, dynamics, fluid mechanics, strength of materials, thermodynamics, heat transfer, vibration and material science/metallurgy.

The exam is closed book. The two parts of the exam are scheduled within a one week time period. Missing an exam counts as failing the exam. The MAE Graduate Committee is responsible for administering and making arrangements for grading the exams.

5. In order to provide guidance to Ph.D. students, a Degree Committee must be selected prior to the student's Research Proposal. In consultation with the student, the Committee will be selected by the student's Major Professor, who also serves as the dissertation advisor. Approval for the Degree Committee must be obtained from the MAE Department Chair and the Dean of the Graduate School. The Committee will consist of a minimum of five members, of which a minimum of three must be faculty members from Clarkson's MAE Department and at least one must be from a department at Clarkson other than MAE. This Committee will judge the technical competence of the Research Proposal, the dissertation and other oral presentations. With the Provost's approval, additional Committee members may be appointed from outside the faculty as necessary.
6. A formal oral presentation of a Research Proposal must be made to the Degree Committee within two years after enrollment in the Ph.D. program. It is also required that this proposal be made at least one year prior to the completion date of the research work. The major purpose of the proposal defense examination is to provide an opportunity for the Degree Committee to evaluate the technical competency of the student and the scientific merit of the proposed research, and to make critical but constructive suggestions regarding the proposed work. The proposal may be brief, but must describe clearly the proposed research as well as the research carried out so far. It is required that the proposal be distributed to the Degree Committee prior to the formal presentation. The Research Proposal must be accepted by the Degree Committee for successful completion of the proposal defense examination.
7. Before the final dissertation examination can be taken, the candidate must submit at least two research articles to academic journals. At the time of the examination, these papers must be either under review or accepted by the journal.
8. A final dissertation examination must be passed. This examination will include, as a minimum, an oral examination based on the dissertation. The candidate will present and defend his dissertation. The Degree Committee and the Dean of the Graduate School must approve the thesis.

9. The chronological sequence and corresponding administrative responsibility are listed in the following table:

	MAE Graduate Committee	Dept. Chair	Degree Committee	Dean Graduate School	Time Limits	Forms
Admission to Program	X	X		X		A1,A2,A3
Completion of Qualifying Examination	X			X	Must take first offering after one semester of enrollment in the Ph.D. program. 1 attempt allowed prior to completion of M.S. with advisors permission.	
Approval of Degree Committee		X		X	Prior to Research Proposal	B1
Approval of Research Proposal	X		X	X	Within 24 months of matriculation in Ph.D. program. (Part time students see note 3)	B2
Approval of Dissertation	X		X	X	At least 1 year after research proposal, but within 7 years of becoming a PhD candidate	C1,C4

NOTES

1. Final copies of accepted dissertations or thesis must be received by the Graduate School no later than ten days before commencement to qualify a student to receive a degree at the end of the spring semester (May commencement).
2. The copy of the thesis or dissertations must be distributed to the members of degree committee at least one week before the date of oral examination.
3. For part time students, the 24 month rule is replaced by “before 33 credit hours are completed toward the Ph.D.”

V. Thesis Advisor

The thesis/project advisor for M.E., M.S. and Ph.D. students in Mechanical Engineering must be a full time mechanical engineering faculty member. A faculty member from another department who has a courtesy/research appointment in MAE Department could co-advise a mechanical engineering student with a full time departmental faculty.

New graduate students with TA support will be assigned advisors based on their research interests and those of the faculty that qualify for a TA position. Students should meet with every MAE faculty member and indicate their four choices of faculty. This is done using the “Research Meetings with MAE faculty” form available in the MAE Department (257 CAMP).

VI. Additional Requirements

For a graduate student to continue a minimum of B average is required. A graduate student who obtains more than two C or lower grades (although he/she may have a B average) will be subjected to a MAE Graduate Committee review before the student is allowed to continue. The Graduate Committee will request bi-annual progress reports from the graduate student regarding his/her performance in course work, seminar and research.

Teaching Assistantship, Research Assistantship, Fellowship, Instructorship, etc. are awarded on a competitive basis. To receive consideration for TA support, the student must have a B or better average. For M.S. degree students, the departmental support will be limited to a total of three semesters. For Ph.D. degree students the departmental support will be limited to a total of two years. Support for the Ph.D. student during the first year should be from an RA (except for newly hired tenure track faculty). Financial assistance in the form of a partial tuition waiver may be given to M.E. or M.S. students on a competitive basis.

Qualifying foreign students with M.S. degrees from foreign countries will be admitted to the Ph.D. program provisionally. Each of these students are required to take the Ph.D. qualifying examination the first time it is given after his/her tentative admission to the Ph.D. program. If the student does not pass this exam, he/she will automatically be required to pursue a M.S. degree before being considered again for admission to the Ph.D. program.

The Graduate School may grant permission to a graduate student to participate in a Co-op experience. Eligibility for Co-op is limited to those graduate students who have matriculated (i.e., been accepted and enrolled) as a full-time student in residence in one of Clarkson’s graduate degree programs for at least one regular semester and have maintained a GPA of at least 3.0 for all graduate coursework. The graduate students’ request for permission to participate in the Co-op experience must include (1) a written acknowledgement that she or he has discussed the program with a Career Center counselor; (2) documentation that indicates the Co-op experience is appropriate to the professional and educational objectives of the student, including a statement from the student’s graduate program advisor; and (3) a coursework and project/thesis plan that indicates the student’s intended path to completing degree requirements.

Seminar Attendance: Graduate students are expected to attend the MAE seminar series every semester. Students should register for one credit of seminar until the seminar credit requirements for the degree have been met. After their first year in the Ph.D. program, under some circumstances, Ph.D. students may register for two seminar credits in one semester. The student must obtain written permission from the seminar coordinator to register for two seminar credits, and a copy of the permission memorandum must be presented to the MAE graduate coordinator for inclusion in the

student's graduate record. The permission memorandum must include specific activities that the student must accomplish to receive the second credit. Typically, these activities could include attending ten additional seminars from other departments and documenting the attendance using the form at Appendix D, or presenting a full-length seminar. The seminar coordinator will make the final decision concerning what activities will be required to earn the second credit. With prior approval of the seminar coordinator, off-campus students can receive seminar credit by attending ten professional presentations and documenting their attendance using the form at Appendix D.

VII. Fees

The departmental administrative fees are listed below. Upon completion of your degree the following fee must be paid plus one copy of your thesis:

M.E.: \$15.00; M.S.: \$25.00; Ph.D.: \$45.00

VIII. Additional Forms

Attached are forms that need to be completed upon your arrival on campus:

1. Student Personal Information Form
2. "Research Meetings with MAE Faculty" Form
3. ID Form (requiring either your passport or your driver's license and social security card)
4. W-4 Form

Attached are the forms that need to be processed upon your completion of your degree:

1. Completion Notice Form
2. Degree Program Form
3. If you are receiving a Ph.D. there is a survey booklet that needs to be filled out which is located in the Graduate Office.

Also attached is the TA/RA Stipend form. If you have an assistantship, this needs to be completed by your advisor each time your assistantship appointment expires and renewal is required. See the "Dates of Appointment" on the form. Typically appointments are for a maximum of one year.

M.E., M.S. and Ph.D. thesis procedures that will help you in the preparation and completion of your thesis are attached. These procedures are also located on the web at www.clarkson.edu/graduate.

Revised July 2010

Appendix A: Forms that Must be Completed Upon Arrival on Campus

Clarkson University

Student Personal Information

Student No: _____

<u>General Information</u>					
Full Legal Name:	_____				
	Last	Middle	First		
Permanent Home Address:	_____				
	Street	City	State	County	Postal Code
Local Mailing Address:	_____				
	Street	City	State	County	Postal Code
Home Phone Number:	(____)	_____	SSN:	____-____-____	
Campus Box #	5725		Campus Phone #	_____	
Are you a United States Citizen? <input type="checkbox"/> Yes <input type="checkbox"/> No If No, What is your country of citizenship _____					
Foreign Address	_____				

Foreign National Visa: <input type="checkbox"/> F <input type="checkbox"/> H <input type="checkbox"/> J <input type="checkbox"/> Green Card/Permanent Residency					
Gender: <input type="checkbox"/> MALE <input type="checkbox"/> FEMALE <input type="checkbox"/> UNKNOWN Marital Status: _____					
Date of Birth:	____/____/____	Location of Birth: _____			
		City	State	Country	
If born in NY, what county: _____					
Department: _____ MAE					

SIGNATURE _____ DATE

Internal Use Only (check when complete)	
_____ I-9	_____ Personal Information Form
_____ W-4	_____ Copy Social Security Card
C.U. Employee <u>Rhonda Sharpe</u> Department <u>MAE</u>	

Department of Homeland Security
U.S. Citizenship and Immigration Services

Form I-9, Employment Eligibility Verification

Please read instructions carefully before completing this form. The instructions must be available during completion of this form.

ANTI-DISCRIMINATION NOTICE: It is illegal to discriminate against work-authorized individuals. Employers CANNOT specify which document(s) they will accept from an employee. The refusal to hire an individual because the documents have a future expiration date may also constitute illegal discrimination.

Section 1. Employee Information and Verification. (To be completed and signed by employee at the time employment begins.)

Print Name: Last	First	Middle Initial	Maiden Name
Address (Street Name and Number)		Apt. #	Date of Birth (month/day/year)
City	State	Zip Code	Social Security #

I am aware that federal law provides for imprisonment and/or fines for false statements or use of false documents in connection with the completion of this form.

I attest, under penalty of perjury, that I am (check one of the following):

- A citizen or national of the United States
- A noncitizen national of the United States (see instructions)
- A lawful permanent resident (Alien #) _____
- An alien authorized to work (Alien # or Admission #) _____ until (expiration date, if applicable- month/day/year)

Employee's Signature	Date (month/day/year)
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Preparer and/or Translator Certification. (To be completed and signed if Section 1 is prepared by a person other than the employee.) I attest, under penalty of perjury, that I have assisted in the completion of this form and that to the best of my knowledge the information is true and correct.

Preparer's/Translator's Signature	Print Name
Address (Street Name and Number, City, State, Zip Code)	Date (month/day/year)

Section 2. Employer Review and Verification. (To be completed and signed by employer. Examine one document from List A OR examine one document from List B and one from List C, as listed on the reverse of this form, and record the title, number and expiration date, if any, of the document(s).)

List A	OR	List B	AND	List C
Document title: _____		_____		_____
Issuing authority: _____		_____		_____
Document #: _____		_____		_____
Expiration Date (if any): _____		_____		_____
Document #: _____		_____		_____
Expiration Date (if any): _____		_____		_____

CERTIFICATION - I attest, under penalty of perjury, that I have examined the document(s) presented by the above-named employee, that the above-listed document(s) appear to be genuine and to relate to the employee named, that the employee began employment on (month/day/year) _____ and that to the best of my knowledge the employee is eligible to work in the United States. (State employment agencies may omit the date the employee began employment.)

Signature of Employer or Authorized Representative	Print Name	Title
Business or Organization Name and Address (Street Name and Number, City, State, Zip Code)		Date (month/day/year)

Section 3. Updating and Reverification. (To be completed and signed by employer.)

A. New Name (if applicable)	B. Date of Rehire (month/day/year) (if applicable)
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C. If employee's previous grant of work authorization has expired, provide the information below for the document that establishes current employment eligibility.

Document Title: _____	Document #: _____	Expiration Date (if any) _____
I attest, under penalty of perjury, that to the best of my knowledge, this employee is eligible to work in the United States, and if the employee presented document(s), the document(s) I have examined appear to be genuine and to relate to the individual.		
Signature of Employer or Authorized Representative		Date (month/day/year)

LISTS OF ACCEPTABLE DOCUMENTS

All documents must be unexpired

LIST A

**Documents that Establish Both
Identity and Employment
Authorization**

LIST B

**Documents that Establish
Identity**

LIST C

**Documents that Establish
Employment Authorization**

OR

AND

<p>1. U.S. Passport or U.S. Passport Card</p>	<p>1. Driver's license or ID card issued by a state or outlying possession of the United States provided it contains a photograph or information such as name, date of birth, gender, height, eye color and address.</p>	<p>1. Social Security Account Number card other than one that specifies on the face that the issuance of the card does not authorize employment in the United States</p>
<p>2. Permanent Resident Card or Alien Registration Receipt Card (Form I-551)</p>	<p>2. ID card issued by federal, state or local government agencies or entities, provided it contains a photograph or information such as name, date of birth, gender, height, eye color and address.</p>	<p>2. Certification of Birth Abroad issued by the Department of State (<i>Form FS-545</i>)</p>
<p>3. Foreign passport that contains a temporary I-551 stamp or temporary I-551 printed notation on a machine-readable immigrant visa</p>	<p>3. School ID card with a photograph.</p>	<p>3. Certification of Report of Birth issued by the Department of State (Form DS-1350)</p>
<p>4. Employment Authorization Document that contains a photograph (Form I-766)</p>	<p>4. Voter's registration card</p>	<p>4. Original or certified copy of birth certificate issued by a State, county, municipal authority, or territory of the United States bearing an official seal.</p>
	<p>5. U.S. Military card or draft record</p>	<p>5. Native American Tribal document</p>
<p>5. In the case of a nonimmigrant alien authorized to work for a specific employer incident to status, a foreign passport with Form I-94 or Form I-94A bearing the same name as the passport and containing an endorsement of the alien's nonimmigrant status, as long as the period of endorsement has not yet expired and the proposed employment is not in conflict with any restrictions or limitations identified on the form.</p>	<p>6. Military Dependent's ID card</p>	<p>6. U.S. Citizen ID Card (<i>Form I-197</i>)</p>
	<p>7. U.S. Coast Guard Merchant Mariner Card</p>	
	<p>8. Native American tribal document</p>	<p>7. Identification Card for Use of Resident Citizen in the United States (<i>Form I-179</i>)</p>
	<p>9. Driver's license issued by a Canadian government authority</p>	
<p>6. Passport from the Federated States of Micronesia (FMS) or the republic of the Marshall Islands (RMI) with Form I-94 or form I-94A indicating nonimmigrant admission under the Compact of Free Association Between the United States and the FMS or RMI.</p>	<p>For persons under age 18 who are unable to present a document listed above:</p>	
	<p>10. School record or report card</p>	
	<p>11. Clinic, doctor or hospital record</p>	
	<p>12. Day-care or nursery school record</p>	
		<p>8. Employment authorization document issued by Department of Homeland Security.</p>

Illustrations of many of these documents appear in Part 8 of the Handbook for Employers (M-274)

Form W-4 (2010)

Purpose. Complete Form W-4 so that your employer can withhold the correct federal income tax from your pay. Consider completing a new Form W-4 each year and when your personal or financial situation changes.

Exemption from withholding. If you are exempt, complete **only** lines 1, 2, 3, 4, and 7 and sign the form to validate it. Your exemption for 2009 expires February 16, 2010. See Pub. 505, Tax Withholding and Estimated Tax.

Note. You cannot claim exemption from withholding if (a) your income exceeds \$950 and includes more than \$300 of unearned income (for example, interest and dividends) and (b) another person can claim you as a dependent on their tax return.

Basic instructions. If you are not exempt, complete the **Personal Allowances Worksheet** below. The worksheets on page 2 adjust your withholding allowances based on itemized deductions, certain credits, adjustments to income, or two-earner/multiple job situations. Complete all worksheets that apply. However, you may claim fewer (or zero)

allowances. For regular wages, withholding must be based on allowances you claimed and may not be a flat amount or percentage or wages.

Head of household. Generally, you may claim head of household filing status on your tax return only if you are unmarried and pay more than 50% of the costs of keeping up a home for yourself and your dependent(s) or other qualifying individuals. See Pub. 501, Exemptions, Standard Deduction, and Filing Information, for information.

Tax credits. You can take projected tax credits into account in figuring your allowable number of withholding allowances. Credits for child or dependent care expenses and the child tax credit may be claimed using the **Personal Allowances Worksheet** below. See Pub. 919, How Do I Adjust My Tax Withholding, for information on converting your other credits into withholding allowances.

Nonwage income. If you have a large amount of nonwage income, such as interest or dividends, consider making estimated tax payments using Form 1040-ES, Estimated

Tax for Individuals. Otherwise, you may owe additional tax. If you have pension or annuity income, see Pub. 919 to find out if you should adjust your withholding on Form W-4 or W-4P.

Two earners or multiple jobs. If you have a working spouse or more than one job, figure the total number of allowances you are entitled to claim on all jobs using worksheets from only one Form W-4. Your withholding usually will be most accurate when all allowances are claimed on the Form W-4 for the highest paying job and zero allowances are claimed on the others. See Pub. 919 for details.

Nonresident alien. If you are a nonresident alien, see Notice 1392, Supplemental Form W-4 Instructions for Nonresident Aliens, before completing this Form W-4.

Check your withholding. After your Form W-4 takes effect, use Pub. 919 to see how the amount you are having withheld compares to your projected total tax for 2010. See Pub. 919, especially if your earnings exceed \$130,000 (Single) or \$180,000 (Married).

Personal Allowances Worksheet (Keep for your records.)

- A** Enter "1" for **yourself** if no one else can claim you as a dependent A _____
 • You are single and have only one job; or
- B** Enter "1" if: { B _____
 • You are married, have only one job, and your spouse does not work; or }
 • Your wages from a second job or your spouse's wages (or the total of both) are \$1,500 or less.
- C** Enter "1" for your **spouse**. But, you may choose to enter "-0-" if you are married and have either a working spouse or more than one job. (Entering "-0-" may help you avoid having too little tax withheld.) C _____
- D** Enter number of **dependents** (other than your spouse or yourself) you will claim on your tax return D _____
- E** Enter "1" if you will file as **head of household** on your tax return (see conditions under **Head of household** above) E _____
- F** Enter "1" if you have at least \$1,500 of **child or dependent care expenses** for which you plan to claim a credit (Note. Do not include child support payments. See Pub. 503, Child and Dependent Care Expenses, for details.) F _____
- G** **Child Tax Credit** (including additional child tax credit). See Pub. 972, Child Tax Credit, for more information. G _____
 • If your total income will be less than \$61,000 (\$90,000 if married), enter "2" for each eligible child.
 • If your total income will be between \$61,000 and \$84,000 (\$90,000 and \$119,000 if married),
 Child plus "1" **additional** if you have 4 or more eligible children.
- H** Add lines A through G and enter total here. (Note. This may be different from the number of exemptions you claim on your tax return.) ► H _____
 For accuracy **complete all Worksheets that apply.**
 • If you plan to **itemize or claim adjustments to income** and want to reduce your withholding, see the **Deductions and Adjustments Worksheet** on page 2.
 • If you have **more than one job** or are **married and you and your spouse both work** and the combined earnings from all jobs exceed \$18,000 (\$32,000 if married), see the **Two-Earners/Multiple Jobs Worksheet** on page 2 to avoid having too little tax withheld.
 • If **neither** of the above situations applies, **stop here** and enter the number from line H on line 5 of Form W-4 below.

-----Cut here and give Form W-4 to your employer. Keep the top part for your records.-----

Form W-4 Department of the Treasury Internal Revenue Service	<h2 style="margin: 0;">Employee's Withholding Allowance Certificate</h2> <p style="margin: 0;">► Whether you are entitled to claim a certain number of allowances or exemption from withholding is subject to review by the IRS. Your employer may be required to send a copy of this form to the IRS.</p>	OMB No. 1545-0074 2010
1 Type or print your first name and middle initial.	Last name	2 Your social security number
Home address (number and street or rural route)		3 <input type="checkbox"/> Single <input type="checkbox"/> Married <input type="checkbox"/> Married, but withhold at higher Single rate. Note. If married, but legally separated, or spouse is a nonresident alien, check the "Single" box.
City or town, state, and ZIP code		4 If your last name differs from that shown on your social security card, check here. You must call 1-800-772-1213 for a replacement card. ► <input type="checkbox"/>
5 Total number of allowances you are claiming (from line H above or from the applicable worksheet on page 2)		5 _____
6 Additional amount, if any, you want withheld from each paycheck		6 \$ _____
7 I claim exemption from withholding for 2010, and I certify that I meet both of the following conditions for exemption. • Last year I had a right to a refund of all federal income tax withheld because I had no tax liability and • This year I expect a refund of all federal income tax withheld because I expect to have no tax liability.		
If you meet both conditions, write "Exempt" here ► 6 _____		
Under penalties of perjury, I declare that I have examined this certificate and to the best of my knowledge and belief, it is true, correct, and complete.		
Employee's signature (Form is not valid unless you sign it.) ►		Date ► _____
8 Employer's name and address (Employer: Complete lines 8 and 10 only if sending to the IRS.)		9 Office code (optional) Employer identification number (EIN)

Deductions and Adjustments Worksheet

Note. Use this worksheet *only* if you plan to itemize deductions, claim certain credits, adjustments to income or an additional standard deduction

1 Enter an estimate of your 2009 itemized deductions. These include qualifying home mortgage interest, charitable contributions, state and local taxes, medical expenses in excess of 7.5% of your income, and miscellaneous deductions.	1 \$ _____
\$11,400 if married filing jointly or qualifying widow(er)	
2 Enter: \$ 8,400 if head of household \$ _____	2 \$ _____
\$ 5,700 if single or married filing separately	
3 Subtract line 2 from line 1. If zero or less, enter "-0-"	3 \$ _____
4 Enter an estimate of your 2010 adjustments to income, and any additional standard deduction. (Pub. 919)	4 \$ _____
5 Add lines 3 and 4 and enter the total. (Include any amount for credits from <i>Worksheet 6</i> in Pub. 919)	5 \$ _____
6 Enter an estimate of your 2010 nonwage income (such as dividends or interest)	6 \$ _____
7 Subtract line 6 from line 5. If zero or less, enter "-0-"	7 \$ _____
8 Divide the amount on line 7 by \$3,650 and enter the result here. Drop any fraction	8 _____
9 Enter the number from the Personal Allowances Worksheet , line H, page 1	9 _____
10 Add lines 8 and 9 and enter the total here. If you plan to use the Two-Earners/Multiple Jobs Worksheet , also enter this total on line 1 below. Otherwise, stop here and enter this total on Form W-4, line 5, page 1	10 _____

Two-Earners/Multiple Jobs Worksheet (See *Two earners or multiple jobs* on page 1.)

Note. Use this worksheet *only* if the instructions under line H on page 1 direct you here.

1 Enter the number from line H, page 1 (or from line 10 above if you used the Deductions and Adjustments Worksheet)	1 _____
2 Find the number in Table 1 below that applies to the LOWEST paying job and enter it here. However , if you are married filing jointly and wages from the highest paying job are \$65,000 or less, do not enter more than "3."	2 _____
3 If line 1 is more than or equal to line 2, subtract line 2 from line 1. Enter the result here (if zero, enter "-0-") and on Form W-4, line 5, page 1. Do not use the rest of this worksheet	3 _____
Note. If line 1 is <i>less than</i> line 2, enter "-0-" on Form W-4, line 5, page 1. Complete lines 4–9 below to calculate the additional withholding amount necessary to avoid a year-end tax bill.	
4 Enter the number from line 2 of this worksheet	4 _____
5 Enter the number from line 1 of this worksheet	5 _____
6 Subtract line 5 from line 4	6 _____
7 Find the amount in Table 2 below that applies to the HIGHEST paying job and enter it here	7 \$ _____
8 Multiply line 7 by line 6 and enter the result here. This is the additional annual withholding needed	8 \$ _____
9 Divide line 8 by the number of pay periods remaining in 2010. For example, divide by 26 if you are paid every two weeks and you complete this form in December 2009. Enter the result here and on Form W-4, line 6, page 1. This is the additional amount to be withheld from each paycheck	9 \$ _____

Table 1

Table 2

Married Filing Jointly		All Others		Married Filing Jointly		All Others	
If wages from LOWEST paying job are—	Enter on line 2 above	If wages from LOWEST paying job are—	Enter on line 2 above	If wages from HIGHEST paying job are—	Enter on line 7 above	If wages from HIGHEST paying job are—	Enter on line 7 above
\$0 – \$7,000	0	\$0 – \$6,000	0	\$0 - \$65,000	\$550	\$0 - \$35,000	\$550
7,001 - 10,000	1	6,001 - 12,000	1	65,001 – 120,000	910	35,001 – 90,000	910
10,001 - 16,000	2	12,001 – 19,000	2	120,001 – 185,000	1,020	90,001 – 165,000	1,020
16,001 - 22,000	3	19,001 - 26,000	3	185,001 – 330,000	1,200	165,001 – 370,000	1,200
22,001 - 27,000	4	26,001 - 35,000	4	330,001 and over	1,280	370,001 and over	1,280
27,001 - 35,000	5	35,001 - 50,000	5				
35,001 - 44,000	6	50,001 - 65,000	6				
44,001 - 50,000	7	65,001 - 80,000	7				
50,001 - 55,000	8	80,001 - 90,000	8				
55,001 - 65,000	9	90,001 - 120,000	9				
65,001 - 72,000	10	120,001 and over	10				
72,001 - 85,000	11						
85,001 - 105,000	12						
105,001 - 115,000	13						
115,001 – 130,000	14						
130,001 and over	15						

Privacy Act and Paperwork Reduction Act Notice. We ask for the information on this form to carry out the Internal Revenue laws of the United States. Internal Revenue Code requires sections 3402(f)(2) and 6109 and their regulations require you to provide this information; your employer uses it to determine your federal income tax withholding. Failure to provide a properly completed form will result in your being treated as a single person who claims no withholding allowances; providing fraudulent information may also subject you to penalties. Routine uses of this information include giving it to the Department of Justice for civil and criminal litigation, to cities, states, and the District of Columbia for use in administering their tax laws, and using it in the National Directory of New Hires. We may also disclose this information to other countries under a tax treaty, to federal and state agencies to enforce federal nontax criminal laws, or to federal law enforcement and intelligence agencies to combat terrorism.

You are not required to provide the information requested on a form that is subject to the Paperwork Reduction Act unless the form displays a valid OMB control number. Books or records relating to a form or its instructions must be retained as long as their contents may become material in the administration of any Internal Revenue law. Generally, tax returns and return information are confidential, as required by Code section 6103.

The average time and expenses required to complete and file this form will vary depending on individual circumstances. For estimated averages, see the instructions for your income tax return.

If you have suggestions for making this form simpler, we would be happy to hear from you. See the instructions for your income tax return.

Appendix B: Forms pertaining to the Ph.D. proposal

**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.** **ME**

NAME: _____

STUDENT NO.: _____

**DEPARTMENT/
PROGRAM:** _____

**FACULTY
ADVISOR:** _____

Committee Member (Name/signature)

Committee Member (Name/signature)

Committee Member (Name/signature)

Committee Member (Name/signature)

Committee Member (Name/signature)

Committee Member (Name/signature)

Department Chair (Name/signature)

Chair, Dept Graduate Committee: Name/Signature)

Dean, Coulter School of Engineering

Provost (if an external committee member is included)

cc: Dept. File
CSOE File

Revised: 2/11/10

**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. candidate procedure on _____
-

The following examining committee has reviewed the examination results.

_____ <input type="checkbox"/> Pass <input type="checkbox"/> Fail Committee Member: (Name/Signature)	_____ <input type="checkbox"/> Pass <input type="checkbox"/> Fail Committee Member: (Name/Signature)
_____ <input type="checkbox"/> Pass <input type="checkbox"/> Fail Committee Member: (Name/Signature)	_____ <input type="checkbox"/> Pass <input type="checkbox"/> Fail Committee Member: (Name/Signature)
_____ <input type="checkbox"/> Pass <input type="checkbox"/> Fail Committee Member: (Name/Signature)	_____ <input type="checkbox"/> Pass <input type="checkbox"/> Fail Committee Member: (Name/Signature)

Chair, Department Graduate Committee (Name/signature)

Department Chair: (Name/signature)

Dean, Coulter School of Engineering

Cc: Dept. Files
CSOE Graduate Administrator, Box 5700

Appendix C: Forms that Must be Completed to Finalize Degree

Clarkson University
Graduate Student
Completion Notice

DATE _____

Ph.D. M.S. M.E. M.B.A. D.PT.

NAME: _____ STUDENT ID: _____

PROGRAM PLAN: _____ FACULTY ADVISOR: _____

Thesis, Dissertation or 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.? : No Yes

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 defenses only:

_____ <input type="checkbox"/> Pass	_____ <input type="checkbox"/> Pass
_____ <input type="checkbox"/> Fail	_____ <input type="checkbox"/> Fail
Advisor: (Name/signature)	Committee Member: (Name/signature)
_____ <input type="checkbox"/> Pass	_____ <input type="checkbox"/> Pass
_____ <input type="checkbox"/> Fail	_____ <input type="checkbox"/> Fail
Advisor: (Name/signature)	Committee Member: (Name/signature)
_____ <input type="checkbox"/> Pass	_____ <input type="checkbox"/> Pass
_____ <input type="checkbox"/> Fail	_____ <input type="checkbox"/> Fail
Advisor: (Name/signature)	Committee Member: (Name/signature)

Department Chair/Director: (Name/signature) _____ DATE _____

Dean of School: (Name/signature) _____ DATE _____

Dean, Graduate School _____ DATE _____

cc: Registrar, Departments, Coordinators, Jenna Stone – Box 5557, Alumni & Parents-Box 5525 Revised 2/11/10

Appendix D: Other Forms

Appendix E: Miscellaneous Information

School of Engineering

General Areas of Graduate Study Specialization

<p>Organized By Department:</p> <p>Chemical & Biomolecular Engineering</p> <ul style="list-style-type: none"> • Atmospheric Science • Bioengineering • Computer-aided process engineering and control • Electrochemistry and Electrochemical Engineering • Energy Systems • Fluid mechanics and transport phenomena • Green Manufacturing • Materials processing • Separation processes • Surface/interfacial phenomena, characterization and Transport <p>Civil and Environmental Engineering</p> <ul style="list-style-type: none"> • Environmental • Geotechnical • Structural mechanics and design • Transportation • Water resources <p>Electrical and Computer Engineering</p> <ul style="list-style-type: none"> • Advanced visualization • Biomedical signal processing • Communication systems • Computer engineering • Micro- and nano-electronics • Power systems and machines • Software engineering <p>Mechanical and Aeronautical Engineering</p> <ul style="list-style-type: none"> • Engineering systems & design • Environmental Science and Engineering • Fluid mechanics & thermal science • Material science and engineering • Solid mechanics and materials processing 	<p>Organized By Interdisciplinary Areas:</p> <p>Biomedical and Rehabilitation Science and Engineering (example options available through Engineering departmental degrees)</p> <ul style="list-style-type: none"> • Bio-entrepreneurship • Biomaterials • Biometrics • Biomolecular engineering • Biosensors • Biosignal processing • Neural engineering <p>Environment and Energy (example options available through Env. Sci. & Engrg. degree or from an Engineering departmental degree)</p> <ul style="list-style-type: none"> • Atmospheric science • Assessment of environmental impacts • Fate of contaminants in air, water, soil • Indoor and outdoor air quality • Renewable/sustainable energy engineering • Waste treatment and energy recovery technologies • Water quality monitoring and modeling <p>Material Science & Engineering (example options available from within engineering department degrees and soon from Mat'l Sci. & Engrg. degree)</p> <ul style="list-style-type: none"> • Composite materials • Fracture mechanics • Materials processing • Materials testing and characterization • Nano-mechanics and nano-materials • Surface/interfacial phenomena and transport <p>Simulation-Based Science and Engineering (examples of tools used throughout departments and problem areas)</p> <ul style="list-style-type: none"> • Advanced visualization and computer graphics • Computational fluid dynamics • Finite & boundary element methods • Information technology
---	---

Instructions for Masters Thesis Preparation and Defense

The following instructions are basic guidelines to be used in the preparation of your thesis. Please also review your departmental handbook and contact your graduate school coordinator for clarification or questions.

Thesis Advisor

In the Coulter School of Engineering, each graduate student is assigned a thesis advisor during the first semester.

University Requirements

The Coulter School of Engineering requires all Master of Science students to complete a thesis. It must be defended orally to a committee consisting of a minimum of three faculty members. This committee is recommended by the thesis advisor and approved by the chair of the candidate's department.

Responsibilities of the Student in Preparing a Thesis:

The content of the thesis should follow all ethical guidelines and represent original work as required by the university. This includes the following

- **Code of Student Conduct**, which prohibits all forms of academic dishonesty, including cheating, fabrication, plagiarism and aiding and abetting of a dishonest act.

(<http://www.clarkson.edu/studentaffairs/regulations/v.html>)

- **Intellectual Property Policy**, which applies to graduate students and the work produced by graduate students. Details of the IP policy are included on the University's web site

(http://www.clarkson.edu/dor/documents/IP_Policy_092505.pdf)

- **Copyright Laws**, which pertain to how to avoid infringing on someone else's copyright and how to protect the student's own copyright. The book by Kenneth Crew¹ thoroughly addresses copyright law and should be consulted for detailed explanations. Some general guidelines include

- The thesis may include quotations, pictures, charts, standard tests, or other materials created by other authors. Permission to use such materials from the copyright owner is often required before borrowing the "expression" of other works. Giving full credit and citations **does not** exempt the thesis author from the obligations of copyright law. Copyright law provides a right of "fair use" that allows limited copying-such as short quotations-without consent. However, **the student is required to obtain proper permission from the copyright owner for the following materials** that might be included in a thesis or dissertation²:
 - Long quotations from pre-existing materials that extend for more than one and one-half single-spaced pages.
 - Reproduced publications. Examples include copies of standard survey instruments or questionnaires, and the student's OWN journal articles already published.
 - Unpublished materials. Extensive reference to unpublished works raises a variety of issues about copyright and about privacy and access to collections.

¹ Crew, K.D., Copyright Law and Graduate Research: New Media, New Rights and Your Dissertation, ProQuest Information and Learning, Ann Arbor MI, 2002. Available for free download http://www.proquest.com/products_umi/dissertations/copyright/

² From PQ/UMI® GradWorks Guide F2006. http://www.il.proquest.com/products_umi/dissertations/submitted_authors.shtml

- Graphic or pictorial works. For example, copies of graphs or schematic diagrams included in your dissertation from previously published works.
 - Computer Software. Dissertations embodied in new media, such as on a website or on CD-ROM, may incorporate reader programs or other application software to make the new work accessible or useful. Reproducing such programs to accompany your dissertation will almost invariably require permission. Consult any license agreement, including those for “Shareware,” that may apply to the programs, and prepare to seek permission from the copyright owner.
 - Sources located on the Internet. Easy availability does not change copyright status. Materials on the Web are protected by copyright just as if they appeared in a book or on tape.
- Copyright permissions are generally given readily for student’s use of their own works. However fees are sometimes charged for permission to use materials originally generated by a different author. See **Exhibit C** for a sample letter requesting permission to use copyrighted material.
 - Receipt of permission to use copyrighted materials needs to be noted in the thesis or dissertation. For example, a footnote stating: “Reproduced (or “Reproduced in part”) with permission from [FULL REFERENCE CITATION]. Copyright [YEAR] [COPYRIGHT OWNER].”
 - Materials on the internet are automatically copyrighted by the person posting the materials. Care should be taken in posting research results prior to their publication elsewhere since some journals consider materials posted on the web to be “prior publication” and will not consider the manuscript for journal publication. Consult the author guide for the journals pertinent for publication of the student’s research prior to posting information on the web. This includes conference publications or presentations that conference organizers might post on the web as well.
 - Copyright laws pertain to MS theses as well as PhD dissertations. The rules are enforced for PhD dissertations when they are submitted to ProQuest/UMI®. Although this same enforcement does not happen for MS Theses, it is still expected that they obtain required permissions for the use of copyrighted materials in their theses. In addition to complying with the laws, enforcing this requirement also helps to teach our students about the appropriate use of intellectual property.
 - The thesis author automatically and immediately owns the copyright of materials in the thesis (or has obtained permission to use the material by current copyright holders). However, students can include a copyright notice in their thesis/dissertation. The notice, which can be included on the page just after the title page should state: “Copyright [YEAR], [STUDENT NAME]”, OR “© [YEAR], [STUDENT NAME].” Registering the copyright with the Library of Congress is technically optional. However, you have limited rights to protect your copyright (e.g., to file an infringement lawsuit) unless it was registered before the infringement occurred.

Preparation:

Thesis copy should be printed on a laser printer. The text of the thesis should be double spaced with the exception of long quotations. A one and one-half (1½) inch margin on the left-hand side and one (1) inch margin on all other sides is required. Print should appear on only one side of the paper.

Each page in your thesis should be assigned a number. Page numbering may be done on the top right-hand corner or bottom center; numbering should be consistent throughout the thesis. For the preliminary pages, generally small Roman numerals are used (i, ii, iii). The numbering begins with ii; the title page counts as page i, but the number does not appear. The remainder of the thesis, including text, illustrations, appendices, and bibliography are numbered in Arabic numerals (1,2,3).

The University requires that the title page of the thesis be in the format shown as Exhibit A. All students are required to include a signature page signed by the appropriate committee members (see Exhibit B).

If actual photographs are used in the thesis, original photos are required in both copies submitted to the graduate school coordinator. Photographs should be dry mounted, secured to the page using a glue stick.

Digital photographs and all graphics must be included at a high (600 dpi) resolution. Fuzzy graphics will not be accepted. The use of color in graphics is acceptable as long as black and white reproduction of the graphic can still be interpreted.

Numbers and captions for figures should appear under the figure. Figures bound horizontally should be placed such that the top is at the bound edge of the thesis. Horizontally bound figures should be captioned on the edge opposite the bound edge of the thesis.

Table captions should be included above tables.

Common order of the thesis contents are:

- Title Page
- Committee Signature Page
- Abstract
- Acknowledgments
- Table of Contents
- List of Tables
- List of Illustrations
- Text
- References
- Appendices

Thesis Defense

You or your advisor/department are responsible for making arrangements for a room and advertising of your thesis defense. Thesis copies should be submitted to committee members 10 working days prior to the scheduled defense date so a proper review can be made.

Submitting your Thesis

Once all corrections have been completed and the committee, departmental and school signatures obtained, two copies of the signed final thesis are to be submitted to the Graduate School for the Graduate 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 departmental thesis copy 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 Departmental Graduate Coordinator and are to be submitted with the final thesis copies:

- A Graduate Student Completion Notice
- Final degree program form
- Withdrawal form (including International Withdrawal Form if an International student)
- Termination form

Exhibit A – Title page for master's thesis

CLARKSON UNIVERSITY

<TITLE>

A Thesis

By

<Name>

Department of <XXX>*

Submitted in partial fulfillment of the requirements

for the degree of

Master of Science, <XXX>**

Date

Accepted by the Graduate School

_____, _____
Date, Dean

*Chemical and Biomolecular Engineering, Civil and Environmental Engineering, Electrical and Computer Engineering, Mechanical and Aeronautical Engineering or replace "Department of ____" with "Center for the Environment" for ESE or "Coulter School of Engineering" for Engineering Science.

**Chemical Engineering, Civil Engineering, Electrical Engineering, Mechanical Engineering, Engineering Science, Environmental Science and Engineering.

Exhibit B – Signature page

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

Date Advisor

Examining Committee*

Examining Committee

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

³ From: Crew, K.D., Copyright Law and Graduate Research: New Media, New Rights and Your Dissertation, ProQuest Information and Learning, Ann Arbor MI, 2002. http://www.proquest.com/products_umi/dissertations/copyright/

Exhibit C: Sample Letter requesting permission to use copyrighted materials³ [letterhead stationery or return address]

[Date]

[Name and address of addressee]

Dear _____:

[Optional beginning sentence: This letter will confirm our recent telephone conversation.] I am completing a doctoral dissertation at _____ University entitled " _____." I would like your permission to reprint in my dissertation excerpts from the following:

[Insert full citation and description of the original work.]

The excerpts to be reproduced are: [insert detailed explanation or attach copy].

The requested permission extends to any future revisions and editions of my dissertation, including non-exclusive world rights in all languages, and to the prospective publication of my dissertation by UMI. These rights will in no way restrict republication of the material in any other form by you or by others authorized by you. Your signing of this letter will also confirm that you own [or your company owns] the copyright to the above-described material.

If these arrangements meet with your approval, please sign this letter where indicated below and return it to me in the enclosed return envelope. Thank you very much.

Sincerely,

[Your name and signature]

PERMISSION GRANTED FOR THE USE REQUESTED ABOVE:

_____ [Type name of addressee below signature line]

Date _____

Instructions for PhD Dissertation Preparation and Defense

Preparation

All PhD dissertations are submitted to ProQuest/UMI® Dissertation Publishing and need to be formatted and prepared in a manner that meets their requirements. In addition, Clarkson has specific requirements for the title and signature pages of the dissertation (**Exhibits A and B**).

Details summarizing the preparation of a PhD dissertation can be found at:

http://www.il.proquest.com/products_umi/dissertations/submitted_authors.shtml

http://www.il.proquest.com/products_umi/dissertations/UMI_PreparingYourManuscriptGuide.pdf

These procedures should be reviewed carefully. Please note especially:

- **General Format:** 8.5 x 11 inch paper with 1.5” margins on the left and 1” margins on top, right and bottom. ALL figures, tables, footers, headers etc. must be contained within these margins Page numbers must be 0.75” from the edge of the page, but do not need to be included within the margins.
 - Numbers and captions for figures should appear under the figure. Figures bound horizontally should be placed such that the top is at the bound edge of the thesis. Horizontally bound figures should be captioned on the edge opposite the bound edge of the thesis.
 - Table captions should be included above tables
 - Common order of the dissertation contents are

Title Page

Committee Signature Page

Abstract (350 word limit)

Acknowledgments

Table of Contents

List of Tables

List of Illustrations

Text

References

Appendices

- Each page in your thesis should be assigned a number. Page numbering may be done on the top right-hand corner or bottom center; numbering should be consistent throughout the thesis. For the preliminary pages, generally small Roman numerals are used (i, ii, iii). The numbering begins with ii on the second page; the title page counts as page i, but the number does not appear. The remainder of the thesis, including text, illustrations, appendices, and bibliography are numbered in Arabic numerals (1,2,3)
- Double space all except the following, which should be single spaced: quotations as paragraphs, captions, items in tables, lists, graphs, footnotes/endnotes, bibliography.
 - Black and white preferred (at least for ProQuest); color images will be reproduced as gray scale in microfiche or prints from microfiche.
 - Graphics – at least 600 dpi resolution expected.
 - Copyright (see also details below)–

- The author of the dissertation must obtain permission to include any material previously published (including your own work) and adequately cite that permission per the copyright owner's requirements.
- The dissertation author automatically owns the copyright of materials in the dissertation (or has obtained permission to use the material by current copyright holders). However, registering the author's claim as the copyright owner with the U.S. Copyright Office would provide the author with greater legal clout should you have any need to contest the copyright ownership. ProQuest/UMI® can complete the required paperwork to register the copyright.
 - Open Access publishing - ProQuest/UMI® allows the author to make their dissertation freely available to others through the internet, thereby maximizing its potential dissemination and use. This option should be used only very carefully, however, if the results are also planned for publication as a book or through proceedings or journal papers. In that case, the copyright restrictions imposed by the journal generally do not allow internet publication. The author should check with the journals that he/she expects to publish the manuscripts in prior to choosing this option.
 - Embargo – If the author is in the process of patenting or publishing material from the dissertation as journal manuscripts, he/she can select to embargo the dissertation for six months to two years, thereby putting the microfiche or open access dissemination of the dissertation on hold for the embargo period. This allows the author time to submit related patent applications or to finalize manuscript submission and acceptance without infringing on journal copyright requirements.

Defense of the Dissertation

Each graduate student is responsible for working with his/her departmental Graduate Coordinator to make arrangements for a room and advertising the thesis defense at least one week before the scheduled date. Committee members should be provided a period of ten working days to examine the dissertation. Questioning during the defense will ascertain that the student has completed sufficient research work to be worthy of a PhD, that the student understands not only the subject matter to a sufficient depth, but also the broader implications and importance of the research, and that the research is original and was completed independently.

Submitting the PhD Dissertation

Once all corrections have been completed and committee, and departmental signatures obtained, two copies of the dissertation (- not originals) are to be submitted in loose form without holes drilled. The student may place folders around each copy for protection. The Department should also receive one 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. 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 \$110 fee (subject to change) to cover the costs of ProQuest/UMI microfiche and binding.

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

A degree completion notice

ProQuest/UMI® Dissertation Submission Form and Optional order form for bound copies

(http://www.il.proquest.com/dissertationagree/dissertation_publishing_agreement.pdf)

Survey of Earned Doctorates

Responsibilities of the Student in Preparing a Dissertation:

The content of the dissertation should follow all ethical guidelines and represent original work as required by the university. This includes the following

- **Code of Student Conduct**, which prohibits all forms of academic dishonesty, including cheating, fabrication, plagiarism and aiding and abetting of a dishonest act.

(<http://www.clarkson.edu/studentaffairs/regulations/v.html>)

- **Intellectual Property Policy**, which applies to graduate students and the work produced by graduate students. Details of the IP policy are included on the University's web site

(http://www.clarkson.edu/dor/documents/IP_Policy_092505.pdf)

- **Copyright Laws**, which pertain to how to avoid infringing on someone else's copyright and how to protect the student's own copyright. The book by Kenneth Crew¹ thoroughly addresses copyright law and should be consulted for detailed explanations. Some general guidelines include

- The dissertation may include quotations, pictures, charts, standard tests, or other materials created by other authors. Permission to use such materials from the copyright owner is often required before borrowing the "expression" of other works. Giving full credit and citations **does not** exempt the dissertation author from the obligations of copyright law. Copyright law provides a right of "fair use" that allows limited copying-such as short quotations-without consent. However, **the student is required to obtain proper permission from the copyright owner for the following materials** that might be included in a thesis or dissertation:

- Long quotations from pre-existing materials that extend for more than one and one-half single-spaced pages.
- Reproduced publications. Examples include copies of standard survey instruments or questionnaires, and the student's OWN journal articles already published.
- Unpublished materials. Extensive reference to unpublished works raises a variety of issues about copyright and about privacy and access to collections.
- Graphic or pictorial works. For example, copies of graphs or schematic diagrams included in your dissertation from previously published works.
- Computer Software. Dissertations embodied in new media, such as on a website or on CD-ROM, may incorporate reader programs or other application software to make the new work accessible or useful. Reproducing such programs to accompany your dissertation will almost invariably require permission. Consult any license agreement, including those for "Shareware," that may apply to the programs, and prepare to seek permission from the copyright owner.
- Sources located on the Internet. Easy availability does not change copyright status. Materials on the Web are protected by copyright just as if they appeared in a book or on tape.

¹ Crew, K.D., *Copyright Law and Graduate Research: New Media, New Rights and Your Dissertation*, ProQuest Information and Learning, Ann Arbor MI, 2002. Available for free download http://www.proquest.com/products_umi/dissertations/copyright/

² From PQ/UMI® GradWorks Guide F2006. http://www.il.proquest.com/products_umi/dissertations/submitted_authors.shtml

- Copyright permissions are generally given readily for student’s use of their own works. However fees are sometimes charged for permission to use materials originally generated by a different author. See **Exhibit C** for a sample letter requesting permission to use copyrighted material.
- Receipt of permission to use copyrighted materials needs to be noted in the thesis or dissertation. For example, a footnote stating: “Reproduced (or “Reproduced in part”) with permission from [FULL REFERENCE CITATION]. Copyright [YEAR] [COPYRIGHT OWNER].”
- Materials on the internet are automatically copyrighted by the person posting the materials. Care should be taken in posting research results prior to their publication elsewhere since some journals consider materials posted on the web to be “prior publication” and will not consider the manuscript for journal publication. Consult the author guide for the journals pertinent for publication of the student’s research prior to posting information on the web. This includes conference publications or presentations that conference organizers might post on the web as well.
- Copyright laws pertain to MS theses as well as PhD dissertations. The rules are enforced for PhD dissertations when they are submitted to ProQuest/UMI®. In addition to complying with the laws, enforcing this requirement also helps to teach our students about the appropriate use of intellectual property.
- The dissertation author automatically and immediately owns the copyright of materials in the thesis (or has obtained permission to use the material by current copyright holders). However, students can include a copyright notice in their thesis/dissertation. The notice, which can be included on the page just after the title page should state: “Copyright [YEAR], [STUDENT NAME]”, OR “© [YEAR], [STUDENT NAME].” Registering the copyright with the Library of Congress is technically optional. However, you have limited rights to protect your copyright (e.g., to file an infringement lawsuit) unless it was registered before the infringement occurred.

Exhibit B – Signature page

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

Date Advisor

Examining Committee*

Examining Committee

Examining Committee*

Examining Committee

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

³ From: Crew, K.D., Copyright Law and Graduate Research: New Media, New Rights and Your Dissertation, ProQuest Information and Learning, Ann Arbor MI, 2002. http://www.proquest.com/products_umi/dissertations/copyright/

Exhibit C: Sample Letter requesting permission to use copyrighted materials³ [letterhead stationery or return address]

[Date]

[Name and address of addressee]

Dear _____:

[Optional beginning sentence: This letter will confirm our recent telephone conversation.] I am completing a doctoral dissertation at _____ University entitled "_____." I would like your permission to reprint in my dissertation excerpts from the following:

[Insert full citation and description of the original work.]

The excerpts to be reproduced are: [insert detailed explanation or attach copy].

The requested permission extends to any future revisions and editions of my dissertation, including non-exclusive world rights in all languages, and to the prospective publication of my dissertation by UMI. These rights will in no way restrict republication of the material in any other form by you or by others authorized by you. Your signing of this letter will also confirm that you own [or your company owns] the copyright to the above-described material.

If these arrangements meet with your approval, please sign this letter where indicated below and return it to me in the enclosed return envelope. Thank you very much.

Sincerely,

[Your name and signature]

PERMISSION GRANTED FOR THE USE REQUESTED ABOVE:

_____ [Type name of addressee below signature line]

Date _____

Appendix E: Publication and Presentation Guidelines

Publication and Presentation Guidelines

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

1. 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.
2. 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 from M.S. degree recipients.

Although there are exceptions for some types of projects, the standard requirements for research manuscripts include:

1. An *introduction* that defines the problem and a review of the current literature to provide a basis for the completion of the research work and identification of the contribution made by the results.
2. An adequate description of the *material and methods* employed in the research such that another researcher could replicate the work. If it is desired to include very detailed procedures or computer methods, these can be appended to the thesis.
3. A presentation of the *results* of the work in tabular and graphical form. This requires synthesis and possibly statistical analysis of the data, and identification of the most pertinent results to be included in the manuscript. Presentation of the raw data is not appropriate for the main text of either a thesis or manuscript, although this information could be included as an appendix to the thesis.
4. Some means of *verifying the accuracy of data* collected in the laboratory or through computer methods to the extent possible for the particular project.
5. A thorough *analysis and discussion* of the results as they pertain to fundamental scientific or engineering phenomena is encouraged where appropriate.
6. A discussion that clearly *identifies the significance* or importance of the research results in a broader context of engineering or scientific applications.
7. A *summary of the conclusions* specifically derived from the completed research.
8. An identification of *future research needs*.

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.