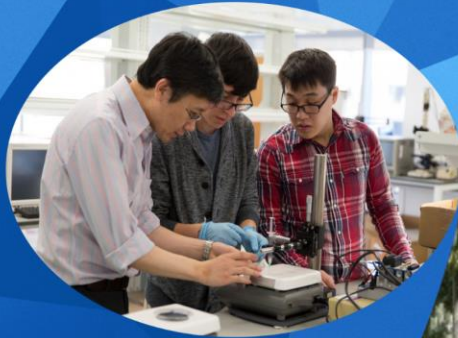


School of Engineering & Applied Science

THE GEORGE WASHINGTON UNIVERSITY



DOCTORAL HANDBOOK

2019-2020

TABLE OF CONTENTS

Welcome from the Dean of the School of Engineering and Applied Science.....	iii
The Academic Calendar 2019-2020.....	iv
Quick Reference.....	v
School and Department Contacts.....	vi
SEAS Computing Facility.....	vi
Introduction.....	vii
Graduate Degree Programs	<i>Pages</i>
1. Doctoral Degree Program (Ph.D.)	1
Entrance Requirements.....	1
Program Requirements	1
Department Specific Requirements	2
Transfer of Credit	3
Time Limits	3
Continuing Research.....	3
Continuous Enrollment and Maintaining Residence.....	4
Termination of the Program.....	4
2.1. Pre-candidacy	5
Academic Advisor	5
Program Plan of Study: DegreeMap	5
Minimum Course and Research Requirements.....	6
Grading.....	7
Changes to the Program Plan of Study	7
Exploration of Possible Dissertation Topics	7
Preliminary/Qualifying Examination	7
2.2. Candidacy	8
Dissertation Research.....	8
Research Advisor.....	8
Dissertation Research Proposal.....	9
Dissertation Committee.....	9
Guidelines for the Dissertation	9
Enrollment in doctoral research courses 398, 399	10
2.3. Dissertation Defense	11
Planning and Procedures	11
2.4. Graduation	11
Application for Graduation.....	11
Graduation Clearance / Checklist.....	11
Commencement.....	13
Graduation Survey.....	14
After Graduation.....	14
3. Academic Department Specific Rules	16

3.1.	Department of Biomedical Engineering	16
3.2.	Department of Civil and Environmental Engineering	16
3.3.	Department of Computer Science	16
3.4.	Department of Electrical and Computer Engineering	16
3.5.	Department of Engineering Management and Systems Engineering ..	16
3.6.	Department of Mechanical and Aerospace Engineering	16
4.	Registration Procedures	17
	Late Registration.....	17
	Adding / Dropping courses.....	17
	Withdrawal / Incompletes	18
	Late Withdrawal	18
	Complete Withdrawal from the University	19
5.	Financing Your Graduate Education	19
5.1	Financial Support	19
	Office of Graduate Student Assistantships and Fellowships.....	19
	Assistantships	19
	Fellowships, Scholarships, and Related Programs.....	19
	External Funding Opportunities for Graduate Students.....	20
	Loan Funds	22
	Student Employment	22
	International Students	22
	Veteran Students.....	23
5.2	Financial Information	24
	Tuition Fees	24
	Voluntary Library Fee	24
	Past Due Accounts.....	24
	Withdrawals and Refunds.....	24

Appendices

Appendix A:	Forms.....	26
Appendix B:	Doctoral Student Checklist.....	42
Appendix C:	Dissertation Guidelines.....	45
Appendix D:	ETD - Electronic Submission Requirements.....	47
Appendix E:	Ph.D. Dissertation Completion Checklist.....	72

Welcome from Your New Dean
John Lach
Dean, School of Engineering and Applied Science



In 1884, William W. Corcoran transformed science and engineering education in the District of Columbia when he founded the Corcoran Scientific School, now known as The George Washington University's School of Engineering and Applied Science (SEAS). Corcoran was a retired banker who saw the world's growing confidence in scientific discovery in the late 1800s and marveled at the impact of technological advances in his own lifetime. Not wanting the District to be without such a center of scientific discovery—at a time when the first steel frame skyscraper was constructed, when gas powered automobiles were first being designed and built, when electric lighting was becoming commercially available—Corcoran paved the way for future discoveries and transformation by providing the founding gift for the School.

Today, GW continues to transform science and engineering education and research in Washington, DC—now in our state-of-the-art Science and Engineering Hall (SEH). This 500,000 gross-square-foot, 14-story structure opened in 2015 and includes new labs and core facilities that enable students and faculty to conduct on-campus, state-of-the-art research across many disciplines. It also provides collaborative learning spaces and facilities appropriate for hosting major symposia and workshops.

The School's academic programs provide top-notch opportunities for learning, equal to the quality of the new facilities that host them. Through its six departments—Biomedical Engineering; Civil and Environmental Engineering; Computer Science; Electrical and Computer Engineering; Engineering Management and Systems Engineering; and Mechanical and Aerospace Engineering—SEAS offers graduate study leading to the degrees of Master of Science, Master of Engineering, Doctor of Philosophy, and Doctor of Engineering. The School also offers many graduate level certificate programs through its departments.

Research labs, centers, and institutes offer opportunities for student and faculty research, strengthening ties with counterparts in government and industry and contributing to the development and harnessing of emerging technologies. The School is also centrally positioned within GW—a world-class comprehensive university—providing opportunities that connect engineering to health, policy, international affairs, and other critical aspects of society.

As you embark on your Ph.D., I welcome you on behalf of the GW community, of which you are now a part. Your research—as evidenced through publications, presentations, innovations, and impact on your field and our broader society—will not only reflect well on you but will also bring recognition to SEAS and GW. Best wishes for an enriching, successful, and impactful Ph.D. experience in SEAS at GW!

A handwritten signature in black ink that reads "John Lach". The signature is fluid and cursive, with the first letters of "John" and "Lach" being capitalized and prominent.

GW Academic Calendar: 2019-2020

Please note that these dates are subject to change. <http://bulletin.gwu.edu/academic-calendar/>

Offices Closed During Winter Holiday

Fall 2019		
CLASSES BEGIN	(M) August 26	
Labor Day (no classes)	(M) September 2	
Thanksgiving Break	(W-F) November 27-30	
Last Day of Fall Semester Classes	(F) December 9	
Reading Days	(R) December 11	
Final examinations	December 12-20	

Spring 2020		
CLASSES BEGIN	(M) January 13	
Martin Luther King Day	(M) January 20	
Presidents' Day	(M) February 17	
Spring Break	(M-S) March 16-21	
Last Day of Classes	Monday, April 27	
Make-up Reading Days	(T) April 28	
Designated Monday	(W) April 29	
FINAL EXAMINATIONS	(M-T) May 4-May 12	
Commencement Weekend	(Fri-Sun) May 14-17	
Spring Degree Conferral	Sunday, May 17	

Quick Reference

School of Engineering and Applied Science
The George Washington University
Science and Engineering Hall – 800 22nd Street, NW
Washington, D.C. 20052

Office of the Dean

John Rach	Dean of SEAS	202-994-6080	jlach@email.edu
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Michael Veedock	Receptionist	202-994-6080	mfv@gwu.edu

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Can Korman	Associate Dean for Research & Graduate Studies	202-994-2245	korman@gwu.edu
Brittany Wright	Director, Graduate Admissions & Enrollment Management	202-994-6533	bgw@gwu.edu
Matthew Kuder	Associate Director Graduate Advising & Student Services	202-994-1802	mkuder@gwu.edu

Graduate Career Services

Chalvonna Smith	Director of Graduate Career Services at SEAS	202-417-6970	chalvonnasmith@gwu.edu
Kendra Northington	Career Development Coordinator	202-994-4205	Krn7@email.gwu.edu

Departments & Chairs

Department	Name	Title	Phone	Email
<i>Biomedical Engineering</i>	<i>Igor Efimov</i>	Chairperson	202-994-6083	irefimov@gmail.com
	J'aime Elskoe Drayton	Department Operations Lead	202-994-2152	jaimedrayton@email.gwu.edu
<i>Civil & Environmental Engineering</i>	<i>Majid T. Manzari</i>	Chairperson	202-994-5970	manzari@gwu.edu
	Doreen Walters-Brooks	Department Operations Lead	202-994-4194	dwbrooks@gwu.edu
<i>Computer Science</i>	<i>Robert Pless</i>	Chairperson	202-994-0388	pless@gwu.edu
	Catina DeBord	Department Operations Lead	202-994-0388	debordci@gwu.edu
<i>Electrical & Computer Engineering</i>	<i>Suresh Subramaniam</i>	Chairperson	202-994-9380	suresh@gwu.edu
	Robert Baden	Department Operations Lead	202-994-5905	robbaden@gwu.edu
<i>Engineering Management & Systems Engineering</i>	<i>Thomas Mazzuchi</i>	Chairperson	202-994-4820	mazzu@gwu.edu

	Shakoya Hicks	Department Operations Lead	202-994-4892	shicks@gwu.edu
<i>Mechanical & Aerospace Engineering</i>	<i>Michael W. Plesniak</i>	Chairperson	202-994-9800	plesniak@gwu.edu
	Zephra Coles	Department Operations Lead	202-994-9800	sizac@gwu.edu

SEAS Computing Facility

<http://seascf.seas.gwu.edu>

Science and Engineering Hall, B1 Level

The SEAS Computing Facility (*SEASCF*) is the academic computing service unit of the School of Engineering and Applied Science at GW. It was chartered to provide instructional computing facilities to the school. The computing laboratories of the school are available based on availability between classes. The server systems, including Unix shell access and computational grid are available around the clock.

Software is available for use in the laboratories of the school. These packages are purchased based on academic needs, either for specific class use or for general curriculum requirements. Some of these packages may not be licensed for general or sponsored research, and as such may not be available for use outside of the laboratories. In some cases the software may be installed on SEAS workstations outside of the laboratories. These are not licensed for individual or personal use. SEAS have various software licensing agreements in conjunction with certain vendors. These provide access to discounts for personal use or purchase.

Details are available on the <http://seascf.seas.gwu.edu/softwarepackages/>

Introduction

Welcome to the School of Engineering and Applied Science (SEAS) and to the start of the 2019-20 Academic Year. We are confident that your studies at GW will be rewarding for you intellectually and personally. We are excited to have you join our vibrant program and are eager to help your graduate educational experience be an enjoyable and rewarding one.

The Doctoral Student Handbook introduces the philosophy underlying doctoral study at the School of Engineering and Applied Science (SEAS), describes the stages of progression through the doctoral program, states applicable policies and procedures, provides advice, and includes copies of the forms that need to be filed as students' progress through the program. The stated policies and procedures apply to all doctoral degree programs. However, each department may impose additional requirements and those are listed in Chapter 3 under *Academic Department Specific Rules or found on the bulletin*.

GWU and SEAS reserve the right to make changes to the policies, requirements, and procedures stated in this handbook. Students will be informed of important changes that affect them if they have provided the Departmental Office with current contact information. Changes will generally be applicable to all students at a specified date of implementation, but some changes will be applicable only to subsequently admitted students.

This SEAS handbook complements the Student Support webpage for graduate students, which contains essential GW-wide information and regulations. The *Student Support webpage* and the Graduate programs website contain the details on university policies, student services, tuition and fees, career and employment opportunities at <https://graduate.admissions.gwu.edu/student-support>

SEAS *Office of Academic Affairs* and the *Office of Graduate Admissions and Students Services* provide overall administration and support of all SEAS doctoral programs. Students are strongly encouraged to keep their contact information in this office up-to-date. Please note that updates of your contact information with the Registrar's Office, which you can make when registering through the web, are not transmitted to SEAS Office of Graduate Admissions and Student Services.

We hope the SEAS Doctoral Student Handbook will provide you with the information you need about The George Washington University School of Engineering and Applied Science doctoral programs during your studies. Please feel free to contact us or any other office listed in this handbook with your suggestions, comments, and for assistance.

Wishing you a successful and happy journey with SEAS,



Professor Rumana Riffat
Associate Dean for Academic Affairs



Professor Can Korman
Associate Dean for Research & Graduate Affairs

GRADUATE DEGREE PROGRAM

1. DOCTORAL DEGREE PROGRAM (Ph.D.)

Doctoral programs are oriented toward preparing students to make original contributions to knowledge in a field, and entail writing a dissertation. The SEAS doctoral program is designed to prepare the student for a career of creative scholarship by providing a broad but balanced background of knowledge and guidance in the performance of research.

The doctoral Ph.D program is divided into two stages. The first comprises a study of related fields of learning that support the general area of research concentration and culminates in the preliminary or qualifying examination. The second, composed of original research and the presentation of findings in a written dissertation, culminates in the final examination. Upon successful defense of the dissertation and satisfying all the other requirements for the doctoral degree, the student will be awarded the doctoral degree.

Entrance Requirements

Admission to the Ph.D. program requires an appropriate bachelor's or master's degree from a recognized institution, evidence of a strong academic or relevant professional background, course work designated by the department as pertinent to the field to be studied, and capacity for research. With the exception of applicants from SEAS B.S. and M.S programs, applicants must submit scores from the Graduate Record Examination (GRE) general test. All applicants must submit a minimum of three letters of recommendation, at least one of which should be from the advisor and/or faculty members at the institution(s) from which a degree was earned. Students for whom the bachelor's is the highest earned degree must have a minimum GPA of 3.3 (on a 4.0 scale) in undergraduate work. Students for whom the master's is the highest earned degree, departmental requirements for the GPA in course work leading to that degree are as follows (on a 4.0 scale): Civil and Environmental Engineering, Electrical and Computer Engineering, and Mechanical and Aerospace Engineering—3.4; Computer Science, and Engineering Management and Systems Engineering—3.5. Consult the department concerned for field-specific admission requirements.

Program Requirements

The admission requirements for the doctoral program are provided on SEAS website:

www.seas.gwu.edu/graduate-students

Upon admission to the first stage of the program (that is, study of related fields culminating in the preliminary/qualifying examination), the student is assigned a faculty advisor who directs his or her studies. In some departments a faculty committee may be appointed instead of a single advisor. Programs of study are structured to include a major field and two minor or supporting fields. Check with the department concerned for requirements.

A minimum of 30 credit hours in a formal program of study at the graduate level beyond master's study or, for students without a master's degree, a minimum of 54 credit hours in a formal program of study at the graduate level beyond the baccalaureate, is required. These credit hours will include both course credits and Dissertation Research credits. Individual requirements vary by department. Check with the department concerned for details. In many cases, particularly when the student undertakes a doctoral program in a field other than that in which the earlier degree was obtained, the

program of study exceeds the minimum number of credit hours. Consult the department concerned for specific curriculum requirements.

Department Specific Requirements

- **Biomedical Engineering:**
 1. Students with an MS degree must take a minimum of 30 credits, of which at least 18 must be from graduate courses, and at least 12 must be dissertation research credits. The courses to be taken by the student must be approved by the student's advisor
- **Civil & Environmental Engineering:**
 1. Students with an MS degree must take a minimum of 30 credits, of which at least 18 must be from graduate courses, and at least 12 must be dissertation research credits. The courses to be taken by the student must be approved by the student's advisor.
 2. Students with a BS degree must take a minimum of 54 credits, of which at least 42 must be graduate course credits, and at least 12 must be dissertation research credits. The courses to be taken by the student must be approved by the student's advisor.
- **Computer Science:**
 1. Students with an MS degree must take a minimum of 18 credit hours of courses available for graduate credit and 12 credit hours of dissertation research. For students without an MS degree, an additional 24 credit hours have to be completed, that may be divided between courses available for graduate credit and dissertation credit hours, subject to the approval of the student's advisor.
- **Electrical & Computer Engineering:**
 1. Students with an MS degree must take a minimum of 30 credits, of which at least 18 must be credits from courses available for graduate credit, and at least 12 must be dissertation research credits. The courses to be taken by the student must be approved by the student's advisor.
 2. Students with a BS degree must take a minimum of 54 credits, of which at least 36 must be credits from courses available for graduate credit, and at least 12 must be dissertation research credits. The courses to be taken by the student must be approved by the student's advisor.
- **Engineering Management & Systems Engineering:**
 1. Students with an MS degree must take a minimum of 54 credits, of which at least 30 must be credits from courses available for graduate credit, and at least 24 must be dissertation research credits. The courses to be taken by the student must be approved by the student's advisor.
 2. Students with a BS degree must take a minimum of 54 credits of graduate coursework and at least 24 credits of dissertation research. The courses to be taken by the student must be approved by the student's advisor.
- **Mechanical & Aerospace Engineering:**
 1. For students with an MS degree, a minimum of 30 credits is required, of which at least 12 credits are graduate course credits.
 2. For students with a BS degree, a minimum of 54 credits is required, of which at least 36 credits are graduate course credits.

Departments may establish a tool requirement, such as an examination in a computer language.

Students admitted to doctoral study are encouraged to undertake one year of full-time study on campus.

To be admitted to the preliminary/qualifying examination, the student must have an overall grade-point average of 3.2. The Department of Mechanical and Aerospace Engineering and the Department of Engineering Management and Systems Engineering require a cumulative grade-point average of at least 3.4.

Transfer of Credit

With the approval of the student's advisor and department chair, graduate credit may be transferred, when applicable, to meet degree requirements of the School. For a doctoral candidate whose highest earned degree is a master's, up to 6 credit hours may be transferred. For a Ph.D candidate whose highest earned degree is a bachelor's degree, up to 24 credit hours may be transferred from another doctoral program. The credit must have been completed with grades of *A* or *B* at another accredited and recognized institution, at a level of study equivalent to that being pursued at GW. The professional and Ph.D degree programs require that the credit be earned no more than five years prior to admission to the GW program, and some departments require that it be earned more recently. Credit applied toward a previous degree may not be transferred. Transfer of credit regulations apply to courses taken as a non-degree student through GW's Office of University Students; that is, up to 6 credit hours may be taken in non-degree status before applying for admission to degree status. For purposes of transfer of credit, SEAS graduate certificate programs are not considered prior degrees; at the discretion of the department concerned, the credit hours earned in a SEAS certificate program may be applied to a subsequent master's degree program.

Time Limits

In general, one year of study is the minimum amount of time to be spent in preparation for the qualifying / preliminary examination, although the student may apply for the examination whenever he or she feels properly prepared. Some departments might have time limits for taking the exam after matriculation. The qualifying examination is administered according to specific departmental regulations, and the entire degree program must usually be completed within seven years. A minimum of two years of full-time study and research should be expected in meeting the requirements for the degree. The time period for completion of the degree will be adjusted for an approved leave of absence. All time periods listed above are increased by two years for a student entering the Ph.D. program without a master's degree.

Continuing Research

All master's and Ph.D. students who have completed their required number of credits (including course work and dissertation research) must register each subsequent fall and spring semester for 1 credit hour of Continuing Research until ALL requirements are met.

Continuous Enrollment and Maintaining Residence

Students must be continuously enrolled in the School of Engineering and Applied Science unless the Dean grants a leave of absence. Failure to register each semester of the academic year will result in lapse of candidacy. Subsequent readmission is subject to whatever new conditions and regulations have been established by the School. *See* Continuous Enrollment Status under University Regulations.

All work for the degree must be done in residence unless an exception is granted by the department chair. A student in a degree program is expected to be registered and maintain continuous enrollment each semester in the School, until the degree is conferred. A student who breaks his or her registration must apply for readmission to the degree program under whatever conditions and regulations are in force at that time. To maintain continuous enrollment, a student may register in one of the following categories:

Leave of Absence applies to students temporarily transferred out of the area (i.e. short-time military or business transfer to another location) and students hospitalized or under a physician's care for medical problem which prevents study (documentation is required). Continuous Enrollment/Leave of Absence form is required.

Continuous Enrollment applies only to students having completed all requirements for graduation, and awaiting graduation at the end of the semester. Paper registration is required. Continuous Enrollment/Leave of Absence form is required.

Continuing Research students who have completed their research credits, but are not yet ready to defend a thesis or dissertation, must register for 1 credit of Continuing Research each semester until ALL requirements are met. This status also applies to students who are preparing their Dissertation, or prepare to take the doctoral qualifying/preliminary examination.

Termination of the Program

If a Ph.D. student receives two grades of *F* or three grades below *B-*, graduate study is terminated and further enrollment prohibited. Courses in which the student earns grades below *B-* are not included in the total credit-hour requirement for the degree. Students who receive any grade below *B-* are required to review their programs of study with their advisors.

If a Ph.D. student fails to register in any semester for any SEAS courses, the candidacy is automatically terminated and the student loses GW status. If the student wants to continue studies in the program, she/he must apply for readmission under whatever conditions and regulations are in force at that time.

If a Ph.D. student wants to terminate the program of studies, she/he has to withdraw completely from GW; otherwise financial consequences might result from unauthorized withdrawal.

2.1. Pre-candidacy

Upon admission to the first stage of the program (that is, study of related fields culminating in the preliminary or qualifying examination), the student is assigned a faculty advisor who directs his or her studies. Programs of study are structured to include a major field and two minor or supporting fields. Check with the department concerned for requirements.

Academic Advisor

When applying for graduate study, the applicant may request on the application a specific professor to serve as academic advisor; in general, the department will honor such a request. If the advisor is not specified, one will be assigned based on the applicant's research interests and the interests of the faculty member. In some departments a faculty committee may be appointed instead of a single advisor. The letter of admission will indicate the academic advisor. It is strongly recommended to establish contact with the assigned advisor as soon as possible.

The student should depend upon the academic advisor to explain all questions relating to the preparation and administration of the individualized degree program, and to assist in resolving problems which may arise during the course of study. In registering for courses, the advisor's signature is required only for the first time after enrollment. On the other hand, the student should feel free to consult the advisor as appropriate during the stay at GW, as that professor has the experience in the field, and is able to give very useful guidance. Do not expect the advisor to serve as a tutor in coursework, however.

It is important to develop a smooth working relationship with the advisor. If for any reason a student wishes to change to a different advisor, filling out a simple form will accomplish this. (See Appendix A: Forms)

Professorial Advisor

In addition to their faculty/academic advisor, all students completing doctoral, program have the opportunity to meet with a Graduate Professional Advisor who can assist with:

- **Degree requirements**
- **Course registration**
- **Navigating DegreeMAP**
- **Dissertation paperwork**
- **Graduation clearance**

Please visit: www.seas.gwu.edu/academic-advising-services to set up an appointment if necessary.

Program of Study

In consultation with the academic advisor, each student develops a program of study and enters it into the Degree MAP that governs the student's degree requirements, and that must be approved by the advisor and department chair. The form should be established soon after matriculation, and the program must be completed according to Education Planner in Degree MAP before the student is approved for graduation.

Minimum Course and Research Requirements

A minimum of 30 credit hours in a formal program at the graduate level beyond master's study or, for students without master's degrees, a minimum of 54 credit hours in a formal program at the graduate level beyond the baccalaureate, is required. These credit hours will include both course credits and Dissertation Research credits. See Department specific requirements on page 4.

Grading

Grades are made available to students through the Office of the Registrar after the close of each semester. The following grading system is used: *A*, Excellent; *B*, Good; *C*, Satisfactory; *F*, Fail; other grades that may be assigned are *A*, *B+*, *B*, *C+*, *C*. and *C-* Symbols that may appear include *AU* Audit; *I* Incomplete; *IPG* In Progress; *W* Authorized Withdrawal; *Z* Unauthorized Withdrawal; *P* Pass; *NP* No Pass.

Except for courses that specifically state repetition for credit is permitted, a candidate for a degree at this University may not repeat a course in which a grade of *C-* or better was received, unless required to do so by the department concerned. A written statement to this effect must be submitted to the student's dean by the appropriate department chair.

No course repeated without the explicit written request for permission to repeat a course for credit by the Department Chair to the Associate Dean for Academic Affairs will count toward the program requirements, GPA, and/or the degree of the student.

The symbol *Z* is assigned when students are registered for a course that they have not attended or have attended only briefly, and in which they have done no graded work. At the end of the academic year, students' records are reviewed; if there is more than one *Z* per semester, a student's record will be encumbered until released by the student's advisor or academic dean. The symbol *Z* is not a grade, but an administrative notation.

Incompletes The symbol *I* (Incomplete) indicates that a satisfactory explanation has been given the instructor for the student's inability to complete the required coursework during the semester of enrollment. At the option of the instructor, the symbol *I* may be recorded if a student, for reasons beyond the student's control, is unable to complete the work of the course, and if the instructor is informed of, and approves, such reasons before the date when grades must be reported. This symbol may be used only if the student's prior performance and class attendance in the course have been satisfactory. Any failure to complete the work of a course that is not satisfactorily explained to the instructor before the date when grades must be turned in will be graded *F*, Failure. If acceptable reasons are later presented to the instructor, that instructor may initiate an appropriate grade change, which in all cases will include the symbol *I*. The course work must be completed within the designated time period agreed upon by the instructor and student, but no more than one calendar year from the end of the semester in which the course was taken. When work for the course is completed, the instructor will complete a grade change form with the new grade, and turn it in to the Associate Dean. If work for the course is not completed within the designated time, the grade will be automatically converted to a grade of *F*, Failure, 0 quality points, and the grade-point average and academic standing recalculated. The form to *Request an Incomplete* is available in the Departmental Offices.

The Grade-Point Average—Scholarship is computed in terms of the grade-point average, obtained by dividing the number of quality points by the number of credit hours for which the student has registered, both based on his or her record in this University. The grade-point average is computed as

follows: A, 4.0; A-, 3.7; B+, 3.3; B, 3.0; B-, 2.7; C+, 2.3; C, 2.0; C-, 1.7; F, 0, for each credit hour for which the student has registered as a degree-seeking student.

Although credit value for a course in which a grade of *F* is earned appears on the transcript for the purpose of calculating the grade-point average, no academic credit is awarded. In the case of a student who is allowed to repeat a course, the first grade received remains on the student's record and is included in the cumulative grade-point average. Courses marked *AU*, *CR*, *I*, *IPG*, *W*, or *Z* are not considered in determining the average, except that courses marked *I* will be considered when a final grade is recorded. With the exception of Consortium courses, grades in courses taken at other institutions are not considered in computing the grade-point average.

Changes to the Program of Study

To make changes to the program of study, an *Educational Planner – Degree Map* has to be completed, which must be approved by the current academic advisor and either the secondary or third faculty advisor who signed the original Educational Planner. When requesting a course-waiver, additional approvals may be necessary.

Exploration of Possible Dissertation Topics

During the coursework, the student is advised to do preliminary research into fields and/or topics of potential areas for dissertation research, and get acquainted with the research areas covered by the program faculty. Direct consultation with program faculty might lead to a dissertation research topic sponsored by an external agency, or to useful contacts with local research organizations and corporations. The student, admitted to candidacy for the Ph.D degree, chooses the faculty member under whom he or she wishes to conduct research, according to the student's professional interest and to the field of expertise of the faculty. The faculty member may accept or reject the request to serve as the student's research advisor. The original academic advisor might serve as the research advisor, but this is not required. The research area is approved by the research advisor, and throughout the remainder of the doctoral program the candidate conducts dissertation research under the direction of the research advisor. However, the student may consult other members of the faculty on an informal basis.

Preliminary/Qualifying Examination

The qualifying examination is the principal means of determining whether a student will qualify as a candidate for the doctoral degree and progress to the second stage of the program. Its purpose is to ascertain that the student's background and intellectual development are adequate to support doctoral research in the central field. (Some departments may administer a pre-qualifying examination prior to completion of the program of study. See the specific department requirements).

Preliminary/qualifying examinations cover the core curriculum; they may be written or oral, or both, and might be scheduled over a period of several days. They are conducted on dates established by the departments and are administered by a faculty committee. The student must register for the qualifying examination by the deadline, as specified by the program. The program's examinations committee evaluates the results, reports its recommendations to the department, and upon favorable report of the examiners, to the Dean through the department chair, and then the student is admitted to candidacy for the degree. The student then begins specialized study and research under the supervision of a designated member of the faculty. The Preliminary/Qualifying examinations are graded on a *Pass/No Pass* basis.

At the discretion of the committee that prepared the examination, a student who fails any part of the qualifying examination may be given a second opportunity to qualify for candidacy. Usually, the entire examination must be retaken.

Students who fail to qualify for candidacy in a doctoral program of the School will be considered to have failed on a School-wide basis and will not be admitted to further doctoral study within the School. The EMSE department will default he/she to the professional degree program. All credit earned through the Dissertation Research courses will be lost.

Dissertation Research

The candidate should have a full-time SEAS faculty research advisor who directs the dissertation research leading to the dissertation, reviews the dissertation for presentation to the dissertation examining committee, and serves as the advocate to that committee. The candidate works closely with the research advisor and may look to her/him for financial support from sponsored research. The research advisor need not be the same individual as the academic advisor.

Normally, the student completes the course work and the qualifying examination before beginning research for the dissertation. If circumstances warrant, the student may begin research for the dissertation earlier in the program. To do so, first obtain permission from the research advisor and from the department.

In the performance of the dissertation research and in any published and public results, the candidate must obey GW policies regarding research misconduct and the use of copyrighted material. Details are available at:

research.gwu.edu/research-integrity

<http://library.gwu.edu/etd/copyright>

Research Advisor

The principal criterion for selection of the research advisor by the student is that the area of research in which the advisor works should be of interest to the student. Having decided that an individual faculty member has a suitable research interest, the student may ask the individual to serve as his/her research advisor. The individual is not obliged to accept, in which case the student may select another faculty. Inability to find a research advisor means that the candidate is unable to continue in the program. Normally the research advisor is a member of the faculty in the department; although some other individual, for example industrial partners or research collaborators of the advisor may serve as a co-advisor with a full time department faculty being the primary research advisor. The department chair

must approve all co-advisor requests. When an outside co-advisor is allowed, the GW faculty co-advisor should make a substantive contribution to the supervision process.

The research advisor serves on the examining committee both as advocate and as a committee member. The committee will elect its own chairperson, who should not be the research advisor, as its first order of business. The dissertation examining committee must be approved by the department chairperson prior to the date of the defense.

Dissertation Research Proposal

After being involved with the research selected as the dissertation topic, the candidate sets up a preliminary research plan, a dissertation research proposal. Students are required to present the written dissertation proposal to a committee. As the first phase of dissertation work, the dissertation proposal is to indicate what the candidate will study, why, and how. The proposal serves at least three purposes. It allows the dissertation committee to examine the plan of the research and suggest improvements that will enhance the merit of the research and dissertation. With the revisions suggested by the committee, it becomes a blueprint for the research work. It also can serve as a draft of the chapters of the dissertation.

Dissertation Committee

The dissertation research committee helps the student to define a research idea, provides feedback as it is developed, and ultimately approves the research proposal. As such, it plays a critical role in determining the quality of the final product. The student and the dissertation advisor should propose the membership of the dissertation research committee. In most cases, a departmental representative such as the department chair then signs off on the committee's membership. Final approval rests with the Dean's office. At least three individuals should serve on the dissertation committee; the research advisor is the dissertation director (also called the advocate) and two others. Students are required to present the written dissertation proposal to the committee (two of the members must be full-time faculty). The *Form 5 Dissertation Form* (See Appendix A: Forms) will be completed and included in the student's records.

Guidelines for Dissertation

A dissertation is required as evidence of ability to perform original scholarly research and to present and interpret the results. The student is solely responsible for the content of the dissertation. Complying with copyright and academic integrity policies is the responsibility of the student.

The dissertation should embody the results of an extended original study and include material deemed worthy of publication in recognized scientific and engineering journals. The student is expected to attempt to have the results of the research published as soon as possible after he or she receives the degree and to submit copies of the published material to the dean. The Departments of Computer Science, and Engineering Management and Systems Engineering require submission of a conference paper or an article to a refereed journal prior to completion of degree requirements. The Department of Electrical and Computer Engineering requires the submission of a paper to a refereed journal and its acceptance for publication prior to the completion of degree requirements. Credit must be given in the publication to the fact that the material is abstracted, summarized, or developed from a dissertation submitted to The George Washington University in partial fulfillment of the requirements for the Ph.D. degree.

Detailed regulations regarding the form of the dissertation and preparation of the abstract are available in department offices. Accepted dissertations are submitted electronically, with a processing fee paid

directly to Proquest/UMI. The dissertation, with accompanying drawings, becomes the property of the University. (Refer to Appendix C: Dissertation Guidelines)

Enrollment in Doctoral Research Courses

Doctoral candidate students have to register for dissertation research courses in their program (designated as 8998 and 8999 courses). The registration requires departmental approval, and the Registration Transaction Form (RFT) is submitted to the Associate Dean's office. The grade assigned for these courses is *IPG* (In Progress) confirming the progress of the candidate toward the doctoral degree. After students have taken all of their required dissertation research credits, they should take Continuing Research course(s) for 1 credit hour each fall and spring until they complete their program. The *IPG* grades are converted to *CR* automatically in the graduation clearance process.

2.3 The Dissertation Defense

The research advisor, with the advice offered by the dissertation committee, may decide that the research achieved by the doctoral student is sufficient to satisfy the requirement of the degree. The dissertation should embody the results of an extended original study and include material deemed worthy of publication in recognized scientific and engineering journals. It provides evidence of the ability of the candidate to perform significant original scholarly research and to present and interpret the results.

Each member of the examining committee, no later than 3 weeks prior to the defense, should receive a copy of the dissertation. At the same time, the candidate must provide a 350 word long abstract and other information to the department office for the purpose of preparing an announcement of the defense. A packet of forms and information is provided by the department to prepare for the defense. The candidate should consult his/her research advisor about scheduling the examination.

Upon acceptance of the dissertation by the advisory committee, an examining committee is formed for the purpose of administering the final dissertation examination (dissertation defense). The committee of examiners must consist of no fewer than five members, at least three of whom will normally be full-time faculty members with scholarly specialties within the area of concentration. It is required that an external examiner be invited, and serve on the committee. The research advisor serves on the examining committee both as advocate and as a non-voting committee member. The dissertation examining committee must be approved by the department Chair prior to the date of the defense.

The dissertation defense is an oral examination, which is open to the public. The candidate must demonstrate a mastery of the area of concentration, and of the materials and techniques used in the research. When the examining committee is convinced of the high quality and originality of the candidate's contribution to knowledge, the committee recommends the degree of Doctor of Philosophy (Ph.D.). The Chair of the department holds the recommendation until such time as conditions placed upon the dissertation by the examining committee have been fulfilled.

When the dissertation is accepted as complete, it should be submitted electronically no later than the date specified by the Registrar's Office. Detailed instructions for the format and submission instructions of the dissertation are given in Appendix C: Dissertation Guidelines.

A dissertation fee is required and it covers the expenses the handling and storing of the Dissertation.

The dissertation copyright is governed by library.gwu.edu/etd/copyright

2.4. *Graduation*

Application for Graduation

VERY IMPORTANT: *You must apply to graduate.*

Graduation applications are found online. Please visit: www.registrar.gwu.edu, and are due **October 1** for graduation at the end of the **Fall semester**, and **February 1** for graduation at the end of the **Spring semester**. Before applying, the student has to contact the professional advisor to ascertain that all graduate courses have been completed satisfactorily, and all other requirements for the degree are satisfied. The graduate professional advisor the list of all graduate courses taken with grades, to the list of courses appearing on the *Degree MAP* and checks for all other necessary documentation. Discrepancies will hinder the graduation process.

The deadline for graduation applications for *Spring 2020* for graduates is **February 1**. If you have any questions or concerns, please contact Jaime Bromley in the Graduation Services Office at registrar.gwu.edu/diplomas-and-certificates

An additional \$35 late processing fee will be charged for late submission of the application to the department after the posted deadlines; ***Please apply on line***. Do not submit payment with the application. This fee will be charged to your student account upon receipt of the application in the Office of the Registrar and is due immediately.

Graduation clearance / Checklist

After a successful final examination and thesis defense the departmental advance degree program coordinators assembles all the necessary documentation for final graduation clearance.

Degrees are conferred in January, May, and August. To be recommended by the faculty for graduation a student must have met the admission requirements of the school in which registered; completed satisfactorily the scholarship, curriculum, residence, and other requirements for the degree; filed an application for graduation by the published deadline date; and be free from all indebtedness to the University. Enrollment is required for the semester or summer at the close of which the degree is to be conferred, and all degree requirements must be completed by the last day of final examinations for that semester or summer session.

Scholarship and Residence - Students must meet the scholarship and residence requirements for the degree for which they are registered.

Walk Through Policy - Doctoral candidates who have not successfully defended their dissertation may not participate in either the May commencement or hooding ceremony.

www.library.gwu.edu/etd/checklist

The following clearance documentation should be submitted by the professional advisor to the OGA:

1. *Apply to Graduate*

Signed by the person responsible for the validity of the data (designated faculty and Graduate Records Coordinator) of the department.

2. *Dissertation Completion Certificate*

Signed by committee members and department chair.

If any revision to the dissertation was required at the time of the defense, then the advisor should approve that the revisions are made and accepted

3. A copy of the *dissertation defense announcement* should be in the students folder
4. *ETD approval form*
Properly filled out (list of uploaded FINAL files, filenames, date of upload of the *final* dissertation)
This is a **legal** form, and must be signed by the research advisor and the graduating student, and initialed by the SEAS ETD representative (Marilyn Shazier-Shields), certifying that the uploaded files are the final version of the dissertation
5. *Application for graduation form*
6. *Dissertation Form (Form 5)*
7. *Degree MAP*

When proper documentation is provided, permission for the SEAS ETD representative (Marilyn Shazier-Shields) to submit the dissertation will be given to the ADAA for final approval, and then the approved clearance package is returned to SEAS Office of Graduation Admission department for final submission to GW Graduation Services. After the GW Office of the Graduation Services receives the clearance form, the degree will be awarded and the diploma will be ordered.

Diploma Mailing Information - Diplomas are mailed 8-12 weeks following the date of degree conferral, barring any unforeseen circumstances. Diplomas will be mailed to the Diploma Address in the records. The candidate is responsible for entering this address via the GWeb information system and for making any updates should they be necessary. Instructions are included on the *Application for Graduation*. This address must be entered BEFORE submitting the application for graduation.

If the diploma is not received 8-12 weeks after your graduation date, the online transcript should be checked to see if the degree was conferred. If it was conferred, the missing diploma needs to be reported to the Registrar's Graduation Services Office within 6 months. After that time period a fee will be charged for a replacement diploma. It should also be checked to see if there are any financial holds on the account. A diploma will only be sent if the amount of balance owed is less than \$500. If the degree was not conferred, it should be checked with the SEAS Deans Office.

Commencement

Participation in the Commencement Ceremony

Participation in the annual commencement ceremony held in May is open to students who have applied to graduate in the current spring semester or who graduated the preceding fall semester or summer session. Doctoral candidates who need to complete their degree requirements may not participate in May commencement ceremonies.

Doctoral candidates who have not successfully defended their dissertation and completed their ETD Approval form by **1 April** may not participate in either the May commencement or hooding ceremony. The commencement program does not include names and dissertation titles of doctoral candidates who have not successfully defended their dissertation by the end of March.

Students who apply after the published deadlines are not guaranteed commencement materials and may not be listed in the commencement program.

Hooding Tickets - will be distributed at the SEAS Dean's Office starting March, in exchange for a paper copy of the completed student graduation survey, or a copy of the email confirming completion. The survey can be found at www.seas.gwu.edu/graduation. Each doctoral graduate may receive a maximum of four (4) tickets. If a student needs more than four, his/her name will be on the waiting list. If there are any tickets left over, they will be distributed to SEAS doctoral graduates who request more; however, we cannot guarantee that there will be any more to distribute. Each graduate will still be issued one parking pass upon request.

SEAS Celebrations -The SEAS Celebration is a formal cap & gown event. Caps & gowns may be ordered at the Commencement Fair or online at www.herffjones.com/college/graduation. (Please note when ordering online, there will be a \$20 shipping fee). After that date, online ordering closes and graduates may purchase regalia from the GW Bookstore. Regalia differ according to the degree. All regalia pre-ordered at Commencement Fair must be picked up from the GW Bookstore. Online orders are shipped to address provided at time of purchase.

At the SEAS Celebration the graduating student's name will be called and the graduate will walk across the stage and receive the Dean's personal congratulations, as well as the personal congratulations of faculty from the department. A professional photographer will be taking a photo of each graduate, recording the handshake with the Dean. The web site to order a photo is at www.photograds.com.

Tickets for the SEAS Celebration will be distributed from the Dean's Office, in the SHE building, starting March of that spring semester.

The Commencement Web site www.commencement.gwu.edu, will be up and operating as graduation approaches. Check regularly for updates and answers to frequently asked questions.

Graduation Survey

Each graduate should hand in a paper copy of the completed student graduation survey or a copy of the email confirming completion of the survey in exchange for SEAS tickets. The survey can be found at survey.gwu.edu/graduation-survey there will be no shortage of tickets for the SEAS Celebration. At distribution you may ask for as many tickets as you need, but please be considerate and do not ask for more than you will actually use. Each graduate will also be issued one (and only one) parking pass for the evening of the Celebration. Please encourage the guests to use Metro if at all possible.

There will be a reception for graduates, their guests, and SEAS faculty and staff. This is a great opportunity for the family and friends to meet the professors who have made such a big difference in your lives.

After graduation

Stay in Touch

As a graduate of SEAS, you will join a group of more than 22,000 living alumni - a strong community of engineers, computer scientists, entrepreneurs, managers, researchers and many others. After you graduate, help maintain your connection with SEAS and other engineering alumni by keeping your profile up to date through the *GW Alumni Online Directory*
<http://alumni.gwu.edu/connect/directory/index.html>

Accurate and up to date information allows SEAS to keep you informed of school news and events happening in your area; it lets classmates reconnect with you; and it helps us to better serve you. A GW login is required and can be obtained through the Login/Registration link. You can also send an e-mail to the *SEAS Office of Development and Alumni Relations* (seas@gwu.edu) to have your information updated for you.

Office of Development and Alumni Relations
School of Engineering and Applied Science
The George Washington University
Science and Engineering Hall
800 22nd Street, N.W.
Washington, DC 20052
Phone: 202/994-8474
Fax: 202/994-2684
seasalum@gwu.edu

3. ACADEMIC DEPARTMENT SPECIFIC RULES

3.1. *Department of Biomedical Engineering*

For BME specific rules and regulations consult the BME website.

<http://www.bme.seas.gwu.edu>

3.2. *Department of Civil and Environmental Engineering*

For CEE specific rules and regulations consult the CEE Graduate handbook.

<http://www.cee.seas.gwu.edu>

3.3. *Department of Computer Science*

For CSci specific rules and regulations consult the CSci Graduate handbook.

<http://www.cs.gwu.edu>

3.4. *Department of Electrical and Computer Engineering*

For ECE specific rules and regulations consult the website:

<http://www.ece.seas.gwu.edu/>

3.5. *Department of Engineering Management and Systems Engineering:* <http://www.emse.seas.gwu.edu>

In the EMSE Ph.D. program, if a student requires less than 9 credits (3 courses) to finish his or her program of study coursework, and desires to register as a full time student, he or she may register for additional credits of EMSE 8998 (Independent Study). EMSE 8998 credits over and above the program of study will be converted to EMSE 8999 (Dissertation Research) when the student's clearance letter is signed by the Department Chair.

Doctoral students may include 6000 and 8000 level courses in their program of study.

No more than nine (9) hours of independent study (EMSE 8998) may be included in the program of study, and no more that six (6) independent study credits may be taken with an individual faculty member.

Further details are available in the EMSE Doctoral handbook.

3.6. *Department of Mechanical and Aerospace Engineering*

<http://www.mae.seas.gwu.edu>

For MAE specific rules and regulations consult the MAE Graduate handbook.

4. REGISTRATION PROCEDURES

The Registration Transaction Form (RTF)

The RTF (*see* Appendix A: Forms) serves for paper registration whenever the on-line or telephone registration is not allowed; for example, when departmental approval is required for a course registration; for research course registrations, for add/drop; late registration; change of grading option; or any corrections to an existing registration. The RTF has to be completely filled out and dated by the student, and after obtaining the necessary signatures it has to be submitted to the ADAA Office, Science and Engineering Hall, Suite 2885.

For simple registration transactions (add/drop, late registration, withdrawal) an Easy **RTF-EZ** can be used. It has to be completely filled out by the student, and after the necessary signatures are obtained, the student has to take it to the *Registrar's Office Student Services* at the *Colonial Central* in the Marvin Center Ground Floor. Colonial Central is open Fall & Spring Semesters Monday – Thursday: 8:30am – 7:00pm, Friday: 8:30am – 5:30pm. ADAA approval is **not** required for RTF-EZ.

The RTF is typically submitted together with a *Petition for Exception to Stated Academic Policies*, or other documentation, as required to support the action on the RTF. The supporting documentation is included into the student's folder, and no action by the Registrar is completed unless the corresponding RTF is submitted to the Registrar by the ADAA.

Late Registration

For the Fall 2019 semester late registration takes place from August 26, through September 8, 2019. During the late registration period, an \$80.00 Late Fee is assessed for any initial registration. Registration ends at 8:00 pm on September 8, 2019.

Adding and Dropping Courses

Beginning with the first week of classes, students who wish to add a course(s) and drop a course(s) as an even exchange may do so without financial loss if these transaction requests are made during the same calendar week for an equal number of credit hours. Individual program adjustments may incur tuition charges and/or fees if they are not even exchanges, or involve courses other than those at the Foggy Bottom or Mount Vernon campuses.

During the registration period (before the end of the second week of classes) students may add or drop courses using GWeb. After the second week of classes, students who wish to add or drop a course must complete a Registration Transaction Form (RTF-EZ) and submit the form to Colonial Central. Adding a course after the second week requires a signature of the instructor or other authorized member of the department.

A course dropped during the first four weeks of classes will not appear on the student's transcript. A course dropped after the fourth week but before the end of the eighth week will be assigned a notation of *W* (Authorized Withdrawal).

The deadline for dropping a course without academic penalty is the end of the eighth week of classes in the fall and spring semesters. After the end of the eighth week of classes, dropping a course without academic penalty is only possible after the student presents a petition to the Dean and receives written permission.

All charges for courses from which the student withdraws are subject to the refund policy listed under *Fees and Financial Regulations* in the Bulletin. Failure to withdraw by these procedures can result in an extended financial obligation and the recording of a grade of *F* (Failure) or a notation of *Z* (Unauthorized Withdrawal).

Withdrawals and Incompletes

The student may withdraw from a course at any time, without academic penalty, before the last day of classes by submitting a properly signed drop/add form through the proper channels. Upon withdrawal after the official end of the drop/add period (normally after the fourth week of classes), the grade of *W* will appear on the transcript. This has no effect on the grade-point average. See the *Bulletin* regarding the amount of tuition to be refunded. Tuition refunds are the responsibility of the University administration; SEAS has no control over these.

A grade of Incomplete carries with it a non-negotiable obligation to complete the course. The grade of *I* cannot be removed by registering for the course a second time at GW, or by taking its equivalent elsewhere. The only way to remove the *I* is to complete the course. An incomplete that is not removed within one calendar year is automatically changed to an *F*.

The School recommends that a student seek to remove an incomplete grade as soon as possible. The student must submit a formal request in writing to request receiving an incomplete grade. The instructor will state the work to be completed and the date by which it is to be completed in order to remove the grade of *I*. Only the instructor who granted the grade of *I* may change the grade.

Late Withdrawal

Students who wish to drop, add or withdraw from a course must complete a *Registration Transaction Form* (RTF); obtain approval from the instructor or department (only to *ADD*); and submit the completed form to the Dean's Office of the school in which the student is enrolled. A note from an instructor is NOT an acceptable form of dropping or withdrawing.

RTF's are available at all departments, deans' offices and the Office of the Registrar. The deadline for dropping a course without academic penalty is the end of the fourth week during the Fall and Spring semesters. A course dropped during the first four weeks of classes will not appear on a student's transcript. A course dropped after the fourth week but before the end of the eighth week will be assigned a grade of *W* (Authorized Withdrawal). Any withdrawals after the eighth week of classes require a petition to the ADAA office.

Complete Withdrawal From the University

A degree-seeking student who wishes to withdraw from all courses during a given semester must complete a *Complete Withdrawal Form* and submit it to the Office of the Registrar. Forms are available online, at Deans' Offices, and in the Office of the Registrar. The deadline for complete withdrawal from all courses without academic penalty is the end of the ninth week of classes. Complete withdrawal after the ninth week requires a petition to the dean.

All charges for courses from which the student withdraws are subject to the refund policy listed under *Fees and Financial Regulations* in the Bulletin. Failure to complete a *Complete Withdrawal Form* can result in an extended financial obligation and the recording of grades of *F* (Failure) or notations of *Z* (Unauthorized Withdrawal).

5. FINANCING GRADUTE EDUCATION

5.1 *Financial Support*

The George Washington University offers a program of financial support for students which includes assistantships, fellowships, traineeships, graduate scholarships, research appointments, part-time employment, the Federal Work-Study Program, and loans. Several forms of aid, not based on financial need, are available. In general, consideration for financial aid is restricted to students in good academic standing who meet the minimum grade-point average for particular awards and are not financially encumbered by any other University office.

The University reserves the right to ask for documentation necessary to determine aid eligibility. Documents submitted as part of aid applications become the property of the University and cannot be returned. Federal regulations require that the University report suspected cases of fraud or misrepresentation to the appropriate federal, state, and local authorities.

Gift aid (scholarships, grants, fellowships, assistantships, tuition awards, etc.) is taxable to the extent that it exceeds the allowable costs of tuition, fees, and required books and supplies or is dedicated to other costs, such as room and board. Federal grants may be taxable if, together with other gift assistance, they exceed the allowable costs.

Application and correspondence concerning assistantships, fellowships, traineeships, or graduate scholarships should be sent directly to the department. Unless otherwise specified, application and supporting credentials should be submitted no later than February 1 proceeding the academic year for which the award is made. Application for admission to graduate study is a prerequisite for consideration.

Information in this section is accurate at the time this Handbook is prepared for press. Future changes in federal regulations or institutional policies may alter the application requirements or program guidelines.

Office of Graduate Student Assistantships and Fellowships

The Office of Graduate Student Assistantships and Fellowships provides information on awards that may be available in support of graduate study. These awards are generally sponsored by foundations, professional and learned societies, industries, and other organizations. Services are provided to entering and enrolled graduate students. Detailed information is available at graduate.seas.gwu.edu/

Assistantships

Research Assistantships (RA) May be available in departments with faculty who are participating in sponsored research.

Graduate Teaching Assistantships (GTA) Available to graduate students in masters and doctoral programs in most departments of the University. A graduate teaching assistant receives financial compensation for a designated unit of service to the assistant's major department of instruction. All new graduate teaching assistants must attend an orientation program and complete an on-line course.

Fellowships, Scholarships, and Related Programs

University Fellowships Available to graduate students in masters and doctoral programs in most departments of the University. Fellowships are based on scholarship and each fellow may receive a stipend and/or tuition allowance.

External Funding Opportunities for Graduate Students

The Office of Graduate Student Assistantships and Fellowships provides information about endowed fellowships, for SEAS students only and about national fellowships. Some of these are listed below:

National Science Foundation Graduate Research Fellowship Program Fellowship Competition

Potential applicants should consult the NSF's website for the Graduate Research Fellowship Program for more information and specific application instructions at: www.nsf.gov/grfp. Potential applicants should consult the NSF FastLane website for the availability of the Graduate Research Fellowship online application and deadlines are found at: www.fastlane.nsf.gov.

National Defense Science and Engineering Graduate Fellowship Department of Defense Fellowship

The Department of Defense (DOD) is committed to increasing the number and quality of our nation's scientists and engineers. Usually, these students are supported wholly by the DOD grant or contract. Applications and deadlines can be found at: <https://www.asee.org>

The National Academies Ford Foundation Fellowships/Diversity Fellowships

The Fellowship Office administers predoctoral, dissertation, and postdoctoral fellowship programs in research-based fields of study. Apply online at: <http://national-academies.org/fellowships>.

Hertz Foundation Graduate Fellowships

Open to students of the applied physical sciences who are citizens or permanent residents of the United States. College seniors wishing to pursue the Ph.D. degree in any of the fields of particular interest to the Foundation, as well as graduate students already in the process of doing so, may apply at:

<http://www.hertzfoundation.org/awards.html>.

American Association of University Women Selected Professions Fellowships (AAUW)

Awarded to women who intend to pursue a full-time course of study during the fellowship year in one of the designated degree programs where women have been traditionally underrepresented. Applicants must be U.S. citizens or permanent residents. Candidates in all programs except the master's in engineering and medicine are eligible to apply for support for the final year of study only and are expected to receive their degrees at the end of the fellowship year. Apply at: http://www.aauw.org/fga/fellowships_grants/selected.cfm.

National Consortium for Graduate Degrees for Minorities in Engineering and Science, Inc. GEM Fellowship

The GEM Fellowship Program is designed to offer opportunities for underrepresented students to obtain MS and PhD degrees in engineering and the natural and physical sciences through a program of paid summer internships and graduate financial assistance. To apply and for further information including deadline dates please visit:

www.gemfellowship.org/students/gem-fellowship-program/.

Department of Homeland Security Graduate Fellowships

Open to US citizens and permanent residents. Areas of study include: physical, biological, social and behavioral sciences including science policy, engineering, mathematics, and computer science. For information on applying and deadline dates go to:

<http://www.dhs.gov/homeland-security-careers/students>.

Bell Labs Graduate Research Fellowship Program

Open to women and members of minority groups underrepresented in the sciences who are U.S. citizens or permanent residents:

<http://www.bell-labs.com/fellowships/>

Society of Women Engineers (SWE)

Various fellowship/scholarship opportunities open to U.S. citizens:

<http://www.societyofwomenengineers.swe.org>

Henry Luce Foundation Clare Booth Luce Graduate Fellowship Program

The Clare Boothe Luce Program promotes the advancement of American women through higher education in the sciences, engineering, and mathematics. Preference is given for those expressing a career interest in academia. Open to women who are U.S. citizens:

<http://www.hluce.cblprogram.aspx>

Women In Engineering Programs and Advocates Network (WEPAN)

This database provides contact information for organizations that provide scholarships and fellowships for women in engineering and science. There is also a list of corporations, foundations and government agencies that offer grants to women pursuing degrees in the engineering fields:

<http://www.wepan.org/funding.html>.

Loan Funds

The Office of Student Financial Assistance offers financial aid in the form of Federal Stafford, Graduate PLUS, and alternative loans to students who have been admitted to one of GW graduate degree or approved graduate certificate programs. The information found in the website provides a brief description of our loan programs as well as an overview of the process involved in applying for these types of loans. Information about financial aid for graduate students is at: <http://financialaid.gwu.edu>

The Office of Graduate Student Assistantships and Fellowships also provides information about federal and private loans available to graduate students that may be used in support of graduate study. For additional information please contact Geri Rypkema by email: rypkema@gwu.edu or by phone at: 202-994-6822 on awards. Detailed information is available at www.gwu.edu/~fellows/.

Student Employment

Inquiries should be addressed to the Office of Fellowships and Graduate Student Support. In addition, the Career Center maintains a registry of both full-time and part-time positions available in the Washington area for undergraduate and graduate students. After registration, students may apply at the Center for interviews and referrals to positions for which they are qualified. For additional information please contact Chalvonna Smith or Courtney McClain by email: seascareers@gwu.edu.

International Students

The International Services Office (ISO): <http://internationalservices.gwu.edu/> provides assistance and information to international students, scholars and faculty at The George Washington University. Particularly, ISO offers guidance regarding questions that concern the student stay at GW. Some of these include:

- Immigration advising and information on immigration regulations.
- Social and recreational activities and programs to foster intercultural relationships and learning.
- Cultural adjustment workshops and support groups.
- Orientation programs for international students new to GW.
- International students applying from outside the University may be appointed to graduate teaching assistantships (GTA) but must successfully complete an orientation and evaluation program held prior to registration.

For additional information please contact the Office of SEAS Graduate Admissions & Student

Services by email: seasgrad@email.gwu.edu

International students applying for graduate teaching assistantships must have minimum TOEFL scores of 600 (paper-based) or 250 (computer-based) or 100 (Internet-based) or an overall band score of 7.0 on the academic IELTS with no individual band score below 6.0. Those found to have difficulties with English will be required to enroll in specified courses in English for Academic Purposes and/or will be referred to the Speech and Hearing Center's speech enhancement program; such students will be assigned non-teaching duties in place of classroom instruction. They will be reevaluated each semester. If they are not designated as qualified to give classroom instruction by the end of one academic year, the teaching assistantship will not be renewed.

Graduate students who are presently enrolled at GW and have been proposed as candidates for graduate teaching assistantships by their departments must pass the Test of English for Academic Purposes at the levels indicated above and will be required to complete successfully an oral interview and the orientation and evaluation program before they will be considered for graduate teaching assistantships.

Students who wish to study in the United States should have sufficient funds available to cover expenses for one full year before attempting to enter a college or university. The cost at this University for one academic year (September 2019 – May 2020) is \$1,965/credit hour, (9 credits per semester) plus fees; \$19,520 housing, meals, transportation, and personal expenses, \$500 books and supplies, \$1,977 health insurance. Generally speaking, expenses for international students are about \$2,000 over the stated figure, which includes room and board, tuition, books, clothes, and incidental expenses, but not travel, holiday, or medical expenses. Details at:

http://www.gwu.edu/~gradinfo/TuitionFees_On-Campus_2019-2020.pdf

Veteran Students

Information regarding veterans' education benefits may be obtained from the Veterans Benefits Office, located in Colonial Central, Marvin Center Ground Floor, (202) 994-9570, vetserve@gwu.edu.

When feasible, students entitled to educational benefits as active-duty personnel, veterans, or dependents of veterans should consult with the veterans' counselor prior to submitting applications to the Veterans Administration. All such students should obtain the instruction sheet issued by the veterans' counselor; it sets forth requirements to be fulfilled before certification of enrollment can be made to the Veterans Administration and includes other information of general interest. Eligible students should be aware they must be admitted to a degree seeking program by the start of their third semester in order to continue receiving veterans' benefits.

A signed certificate attesting to the student's status must be obtained from the appropriate Dean's Office and mailed with the registration schedule and statement at the time of payment. Those students who are veterans and are requesting benefits must communicate their status to the Veterans Benefits Office, at least 30 days prior to course start date, in order to obtain an advance payment from the VA. Payment takes approximately 6-8 weeks. The Veterans Benefits office assists students entitled to educational benefits as active-duty personnel, veterans, or as widows or children of deceased or totally disabled veterans with any problems that may arise concerning their benefits. This office also processes certification of enrollment and attendance to the Veterans Administration so that educational allowances will be paid.

5.2 Financial Information

Tuition Fees

The following fees and financial regulations were adopted for on-campus programs for the academic year 2018-19. For students enrolled in graduate degree programs on the main campus of the School of Engineering and Applied Science tuition is charged at the rate of \$ 1,490 per credit hour.

<http://studentaccounts.gwu.edu/graduate-tuition> 2019-20.

The following fees may apply:

Registration for Continuous Enrollment (<i>CE</i>)	\$ 35
Course fees, if applicable (<i>listed in the Schedule of Classes</i>)	varied
Late registration fee (<i>see Schedule of Classes for dates</i>)	\$ 80
Late payment fee	\$ 75
Matriculation Fee (charged each entering student)	\$495.

Voluntary Library Fee

Each semester, the Registration Schedule and Invoice includes a voluntary gift for the University libraries. Check the box labeled *Library Gift Decline* and omit the amount from your payment if you do not wish to include the library gift in your reimbursement to the University.

Past Due Accounts

Accounts that are past due are encumbered by the University. A student whose account is encumbered may not register for future semesters and may not receive diplomas or transcripts. Late payment fees and interest may also be assessed each month that the account has an overdue outstanding balance. Please see the University's Tuition Payment Disclosure Statement at

<http://colonialcentral.gwu.edu/billing/Disclosures/> for more information on those fees and billing practices.

Accounts that are more than 90 days past due are referred to an agency and/or attorney for collection. The student is then responsible for all charges, costs, and fees due to, or incurred by, the University as well as all costs, fees, and charges incurred by the agency and/or attorney, including attorney's fees. Students whose registrations have been revoked or canceled for failure to make timely payments are not permitted to attend class and may not occupy University housing.

Withdrawals and Refunds

Applications for withdrawal from the University or from a course after the registration period must be made in accordance with procedures outlined under University Regulations in the sections Complete Withdrawal from the University, and Adding and Dropping Courses, respectively. Financial aid recipients must notify the Office of Student Financial Assistance in writing. In authorized withdrawals and changes in schedule, cancellations of semester tuition charges and fees will be made in accordance with the following schedule for the fall and spring semesters:

1.	<i>Complete withdrawal from all courses (on-campus students) (Fall 2019-Spring 2020):</i>	
	Withdrawal dated on or before the end of the first week of the semester	90%
	Withdrawal dated on or before the end of the second week of the semester	60%
	Withdrawal dated on or before the end of the third week of the semester	40%
	Withdrawal dated on or before the end of the fourth week of the semester	25%
	Withdrawal dated after the fourth week of the semester	None
2.	<i>Partial withdrawal:</i> If the change in program results in a lower tuition charge, the refund schedule above applies to the difference.	
3.	Regulations governing student withdrawals as they relate to residence hall and food service charges are contained in the specific lease arrangements.	
4.	<i>Summer Sessions:</i> In cases of authorized withdrawals from courses, refunds of 85% of tuition and fees will be made for courses dropped within the first seven calendar days of the start of a session. No refund will be made for courses dropped thereafter.	

Courses that do not follow the traditional semester may have different refund policies.

Refund policies of the University are in conformity with guidelines for refunds as adopted by the American Council on Education. Federal regulations require that financial aid recipients use such refunds to repay financial aid received for that semester's attendance. This policy applies to institutional aid as well.

In no case will tuition be reduced or refunded because of absence from classes. Authorization to withdraw and certification for work done will not be given to a student who does not have a clear financial record.

APPENDIX A: Forms

Academic and Administrative Forms

The following chart explains the purpose of administrative forms that are needed during GW education. The following forms are available on the Registrar's website (<https://www.seas.gwu.edu/forms>) by clicking on the Online Forms menu at the left side of the screen, including:

- Address Change
- Application for Graduation
- Certification Services
- Complete Withdrawal
- Confidentiality Flag
- Consortium Registration
- Credit Card Payment
- Diploma Replacement
- Grade Mailer
- Name / Student ID Change
- Notification of Diploma Address
- Student Consent

The following academic forms are available from the Professional Advisors, in the departmental offices, in the ADAA office, and online at: <https://www.seas.gwu.edu/forms>

Form	Purpose/use	Procedure
Form 1 Graduate Program of Studies	Graduate advising form For planning the academic program with the advisor (core courses, prerequisites and electives)	Begin the process with the academic advisor Forms are available via GWEB info system Degree Map
Application for Graduate Transfer Credit	Students may transfer in approved credits of courses taken no more than five years ago from an accredited university A maximum of 6 credits may be transferred into the doctoral program (check with your advisor)	Begin the process with the academic advisor Forms are available in the department.
Registration Transaction Form (RTF)	To be used for special registration	Forms are available in the Office of the Registrar (<i>Colonial Central</i>), in the departments, and in the ADAA Office
RTF-EZ	For standard registration transactions (add/drop, late registration, simple withdrawal) Apply on-line. See page 16 of this handbook	Forms are available in the Office of the Registrar (<i>Colonial Central</i>), in the departments, and in the ADAA Office
Request for Certification for Half-time/Full-Time Student Status	Certifies student status as a half-time or full-time for a requesting agency or organization	Begin the process with the advisor Forms are available in the department.
Continuous Enrollment/ Leave of Absence	See page 5 of this handbook	Must be submitted along with an RTF Available in the department
Late Withdrawal Form	To be used in the event a student withdraws from one or more classes after the end of the 9 th week	Must be submitted along with an RTF and a Petition Form. Available in your department
Request for an Incomplete Grade	Request for additional time to complete course requirements	Available in the department
Petition for Exception to Stated Academic Policies	Request for exception to academic policies	Must be submitted along with an RTF Available in the department
Research course registration form BME, CEE, CS, ECE, EMSE, MAE	To register for 8998,399,8999 courses	Available in the department
Form 4 Notification For Doctoral Qualifying Examination	The intent to take the Qualifying Exam	Available in the department
Form 5 Ph.D. dissertation Form	Formal declaration of the title of the dissertation	Start with the research advisor

**THE GEORGE
WASHINGTON
UNIVERSITY**
WASHINGTON, DC

Office of the Registrar
**Graduate
REGISTRATION TRANSACTION FORM**
<http://registrar.gwu.edu> • registrar@gwu.edu

Semester	Year
<input type="checkbox"/> Fall	_____
<input type="checkbox"/> Spring	_____
<input type="checkbox"/> Summer	_____

GWid	LAST NAME	FIRST NAME	EMAIL ADDRESS

ADD

CRN	SUBJECT	COURSE NUMBER	SECTION	CREDITS	TITLE	GRADE MODE*	INSTRUCTOR SIGNATURE

DROP or WITHDRAW (please circle one)

CRN	SUBJECT	COURSE NUMBER	SECTION	CREDITS	TITLE

TIME CONFLICT APPROVAL
<input type="checkbox"/> YES <input type="checkbox"/> NO

***GRADE MODE OPTIONS:**
 A= AUDIT
 C= LETTER GRADE
 P= PASS/NO PASS (undergraduates only)
 R= CREDIT/NO CREDIT (graduates only)

I request the above action be performed.

 Student Signature

 Date

AUTHORIZED SCHOOL OFFICIAL USE ONLY

Prior to start of the semester OR Effective Date: ____ / ____ / ____

Signature: _____ Today's Date: _____



RETURN TO COLONIAL CENTRAL, MARVIN CENTER GROUND FLOOR.

RTF-EZ

REGISTRATION TRANSACTION FORM

WHO CAN USE FORM RTF-EZ? You can use this form if:

- the request is for the current term or a future term;
- the requested action is not one which could be performed through GWeb;
- Dean's Office approval is not required for the requested action;
- if adding a course, it is before the end of the 4th week of classes in a fall or spring term, or before the end of the 2nd week of classes in summer; and
- if withdrawing from a course, it is before the end of the 8th week of classes in a fall or spring term, or before the end of the 4th week of classes in summer.

TERM

- Spring
- Summer
- Fall

Date

GWid

Name

LAST FIRST MI

REGISTER/ADD

A student is not guaranteed enrollment in any course until the request is approved and processed by the Office of the Registrar. Confirmation of enrollment may be viewed through GWeb.

CRN SUBJ CRSE SEC COURSE TITLE INSTRUCTOR/DEPT APPROVAL

DROP/WITHDRAW

Students should be aware that dropping or withdrawing from a course may have an impact upon eligibility for athletic participation, campus housing or financial aid. International students need to be particularly aware of the enrollment requirements associated with their visa. Students are advised to consult with their advisor or the appropriate office before requesting a course drop or withdrawal.

CRN SUBJ CRSE SEC COURSE TITLE

I request that the above action be performed. I understand and acknowledge that the forgery, unauthorized alteration or unauthorized use of any University document is considered non-academic dishonesty under the Code of Student Conduct, and such misconduct is subject to disciplinary action.

REGISTRAR'S USE ONLY

Student Signature

Initials/Date





Academic History Update Form

Student Information			
Last Name		First Name	
GWID		GW Email	@gmail.gwu.edu
SEAS Major/Field of Study		Degree	<input type="checkbox"/> B.A. <input type="checkbox"/> B.S. <input type="checkbox"/> M.S./MEng <input type="checkbox"/> Ph.D

Please check the box to indicate which category you are updating. You may check one or more boxes if updating multiple categories.

LEVEL CHANGE								
SEMESTER	CRN	SUBJ	COURSE#	SEC	CR	GRADE	LEVEL	
							FROM	TO

EXCLUDE FROM DEGREE GPA							
SEMESTER	CRN	SUBJ	COURSE#	SEC	CR	GRADE	REASON

TRANSCRIPT COMMENTS						
Student Level (check one):			Semester:			
<i>Non-Degree (00)</i>	<i>Undergrad (01)</i>	<i>Grad (02)</i>	<i>Law (04)</i>	<i>Med (05)</i>		
Comment Type (check one):		TERM		LEVEL		
COMMENTS:						

Read before signing: I have reviewed the information on this form and authorize the update to the student academic history.

Required Signatures			
Authorized Signature		Dept.	Date

For Advising Office Use Only

Submit forms to:
 SEAS Student Services and Advising
 Science & Engineering Hall, Suite 2501
 Undergraduate seasadvising@gwu.edu
 Graduate seasgrad@gwu.edu



Contract for Incomplete Course Grade

Student Information			
Last Name		First Name	
GWID		GW Email	@gwmail.gwu.edu
SEAS Major/Field of Study		Degree	<input type="checkbox"/> B.A. <input type="checkbox"/> B.S. <input type="checkbox"/> M.S/MEng <input type="checkbox"/> Ph.D

The symbol I (Incomplete) indicates that a satisfactory explanation has been given the instructor for the student's inability to complete the required course work during the semester of enrollment. At the option of the instructor, the symbol I may be recorded if a student, for reasons beyond the student's control, is unable to complete the work of the course, and if the instructor is informed of, and approves, such reasons before the date when grades must be reported. This symbol may be used only if the student's prior performance and class attendance in the course have been satisfactory. The symbol I cannot be changed by reregistering for the course at GWU or by taking its equivalent elsewhere. **Note: Along with the course syllabus, this contract must be turned in to the SEAS Student Services and Advising Office. A copy will be sent afterward to the departmental office.**

Semester	Year	Required For Degree?
Fall / Spring / Summer		Yes / No

Subject	Course No.	Credit Hrs	Course Title	Instructor Name

What work must the student do to complete the course? Identify, specifically, the type of work product (e.g. paper, exam) and the number of assignments. *(If additional space is needed, attach typed sheet):*

How will the semester grade be computed? Identify all elements in the final grade and attach any necessary materials so that the grade can be computed in your absence. *(If additional space is needed, attach typed sheet):*

All work to be completed by date*: _____
**May not exceed one calendar year*

I have reviewed the conditions above and as stated in the current *University Bulletin* by which I will be assigned an Incomplete and understand what I must do to meet them.

Required Signatures					
Student Signature			Date		
Instructor Signature		Last Name		Date	
If Part-time Instructor, Chair Signature		Last Name		Date	

For Advising Office Use Only Received Date: _____ Initials: _____ <input type="checkbox"/> DegreeMap Note

Submit forms to:
SEAS Student Services and Advising
Science & Engineering Hall, Suite 2500
Undergraduate -seasadvising@gwu.edu
Graduate- seasgrad@gwu.edu



Research Course Registration Form

Student Information			
Last Name		First Name	
GWID		GW Email	@gwmail.gwu.edu
SEAS Major/Field of Study		Degree	<input type="checkbox"/> B.A. <input type="checkbox"/> B.S. <input type="checkbox"/> M.S/MEng <input type="checkbox"/> Ph.D
Semester (Fall/Spring/Summer)		Academic Year	

Subject	Course No.	Credit Hrs	Course Title	Instructor Name

Web registration does not apply for these courses. In order to register, complete a Registration Transaction Form in addition to this and obtain approval from you advisor on each.

Required Signatures				
Student Signature			Date	
Faculty Advisor Decision	<input type="checkbox"/> Approve <input type="checkbox"/> Disapprove			
Faculty Advisor Signature		Last Name	Date	
<i>Submit to Student Services and Advising Office for Processing</i>				
Chair Decision	<input type="checkbox"/> Approve <input type="checkbox"/> Disapprove			
Chair Signature		Last Name	Date	

<i>For Advising Office Use Only</i>

Submit forms to:
 SEAS Student Services and Advising
 Science & Engineering Hall, Suite 2500
 Undergraduate -seasadvising@gwu.edu
 Graduate -seasgrad@gwu.edu



Petition for Exception to Stated Academic Policies Form

Student Information			
Last Name		First Name	
GWID		GW Email	@gmail.gwu.edu
SEAS Major/Field of study		Degree	<input type="checkbox"/> B.A. <input type="checkbox"/> B.S. <input type="checkbox"/> M.S/MEng <input type="checkbox"/> Ph.D
Department		Semester/Year	

- Instructions:**
1. Complete all requests for information on this form
 2. Attach all supporting documentation (e.g. relevant email correspondence, course syllabus, medical documentation)
 3. If necessary, attach completed University and/or SEAS form(s) needed for the requested action (e.g. RTF, H/SS form)
 4. Have your Faculty Advisor review your petition and complete the Faculty Advisor Section below
 5. Submit this completed form to the Undergraduate Student Services and Advising office for Associate Dean's review

Exception / Action Requested _____

Reason Code Administrative Reasons Personal Reasons

Explanation (If additional space is needed, attach typed sheet):

Required Signatures			
Student Signature		Date	
Faculty Advisor Decision	<input type="checkbox"/> Approve <input type="checkbox"/> Disapprove		
Faculty Advisor Signature		Last Name	Date
Submit to Student Services and Advising Office for Associate Dean's Review			
Associate Dean Decision	<input type="checkbox"/> Approve <input type="checkbox"/> Disapprove		
Associate Dean Signature		Last Name	Date

For Advising Office Use Only

Submit forms to:
 SEAS Student Services and Advising
 Science & Engineering Hall, Suite 2500
 Undergraduate - seasadv@gwu.edu
 Graduate - seasgrad@gwu.edu



Application for Graduate Transfer Credit Completion

Student Information			
Last Name		First Name	
GWID		GW Email	@gmail.gwu.edu
SEAS Major/Field of study		Degree	<input type="checkbox"/> M.S/MEng <input type="checkbox"/> Ph.D
Department		Semester/Year	

With my advisor's consent, I request graduate transfer credit of _____ hours based upon the following below. Attach Syllabus and transcript. * Please review the following for transfer policy: <http://bulletin.gwu.edu/university-regulations/>

Transfer Credit Information			
Institution		Course #	
Semester Hours		Grade	Date:
GW Equivalent Course #		Level	<input type="checkbox"/> M.S/MEng <input type="checkbox"/> Ph.D
Title of Course			

Transfer Credit Information			
Institution		Course #	
Semester Hours		Grade	Date:
GW Equivalent Course #		Level	<input type="checkbox"/> M.S/MEng <input type="checkbox"/> Ph.D
Title of Course			

Required Signatures			
Student Signature		Date	
Faculty Advisor Decision	<input type="checkbox"/> Approve <input type="checkbox"/> Disapprove		
Faculty Advisor Signature		Last Name	Date
Submit to Student Services and Advising Office for Associate Dean's Review			
Department Chair Decision	<input type="checkbox"/> Approve <input type="checkbox"/> Disapprove		
Department Chair Decision		Last Name	Date

For Advising Office Use Only

Submit forms to:
SEAS Student Services and Advising
Science & Engineering Hall, Suite 2500
Graduate - seasgrad@gwu.edu



Dissertation Completion Certificate Form/ Project Completion

Student Information			
Last Name		First Name	
GWID		GW Email	@gmail.gwu.edu
Field of study		Degree	<input type="checkbox"/> M.S/MEng <input type="checkbox"/> Ph.D
Department		Examination Date	
Advisor's Name		Qualifier Date:	
Research Advisor		Proposal Date:	
Graduation Semester		Research Hours Completed	

Recommendation	
Reason Code	<input type="checkbox"/> Passed <input type="checkbox"/> Recessed <input type="checkbox"/> Failed

Examining Committee Members (Names and Signatures)	
1.	Chair of Committee:
2.	
3.	
4.	

Publication Requirement	
Name of Paper	
Authors	
Venue of Submission	
Submitted	Accepted:
	Plan to Submit:

Required Signatures			
Chairman Decision	<input type="checkbox"/> Approve <input type="checkbox"/> Disapprove		
Chairman Signature		Last Name	Date
<i>Submit to Student Services and Advising Office for Associate Dean's Review</i>			
Associate Dean Decision	<input type="checkbox"/> Approve <input type="checkbox"/> Disapprove		
Associate Dean Signature		Last Name	Date

<i>For Advising Office Use Only</i>

Submit forms to:
 SEAS Student Services and Advising
 Science & Engineering Hall, Suite 250J
 Graduate- seasgrad@gwu.edu



Doctoral Final Examination Approval Form

Student Information			
Last Name		First Name	
GWID		GW Email	@gmail.gwu.edu
Field of study		Degree	<input type="checkbox"/> M.S/MEng <input type="checkbox"/> Ph.D
Department		Date	
Advisor's Name		Research Advisor	
Dissertation Title: Abstract Must be attached.			

Proposed Date: At least 3 weeks in advance of today's date	
Decision	<input type="checkbox"/> Approved <input type="checkbox"/> Not Approved

Proposed Committee (Names, Organization, Title)	
1. Chair of Committee:	
2. Advocate(s)	
3.	
4.	
5.	

Required Signatures					
Chairman Decision	<input type="checkbox"/> Approve <input type="checkbox"/> Disapprove				
Chairman Signature		Last Name		Date	

For Advising Office Use Only

Submit forms to:
 SEAS Student Services and Advising
 Science & Engineering Hall, Suite 2500
 Graduate- seasgrad@gwu.edu



Form 5
Doctoral Dissertation Program

Student Information			
Last Name		First Name	
GWID		GW Email	@gmail.gwu.edu
Field of study		Degree	<input type="checkbox"/> M.S/MEng <input type="checkbox"/> Ph.D
Address (Local)		Address (Permanent)	
Phone (h)		Phone (c)	

Tentative Dissertation Title:

Required Signatures						
Student Signature					Date	
Director of Research Decision	<input type="checkbox"/> Approve <input type="checkbox"/> Disapprove					
Director of Research Signature				Last Name		Date
Department Chair Decision	<input type="checkbox"/> Approve <input type="checkbox"/> Disapprove					
Department Chair Signature				Last Name		Date
<i>Submit to Undergraduate Student Services and Advising Office for Associate Dean's Review</i>						
Associate Dean Decision	<input type="checkbox"/> Approve <input type="checkbox"/> Disapprove					

For Advising Office Use Only

Submit forms to:
SEAS Student Services and Advising
Science & Engineering Hall, Suite 2500
Graduate- seasgrad@gwu.edu

**The George Washington University
Electronic Theses/Dissertations (ETD) Access / Approval Form**

The information on this form should match exactly the record entered into the [GW ProQuest ETD online system](#), and should be submitted to your school or college's graduate office at the same time you submit your thesis or dissertation online.

Student's Full Name as on Thesis or Dissertation _____ GWID: _____
ETD Submission ID#: _____

Mailing Address:

Email: _____ Phone: _____

Degree (Official Abbreviation): _____ Planned Graduation Date: _____

School or College: _____

Program: _____

Campus: Foggy Bottom Virginia Campus Other: _____

Type of Submission: Dissertation Thesis

Exact Thesis/Dissertation Title:

Name(s) of PDF File(s) Submitted to ProQuest: _____ Date of File: _____
Thesis or Dissertation:

Supplements, if any:
1. _____
2. _____
3. _____
4. _____

Student and Thesis Advisor/Dissertation Director Certifications

Research Approvals

I hereby certify that I have obtained the required institutional approvals if my research involves human subjects, protected health information, animals, radiation or other hazardous materials, and the like (see [Ensuring Research Integrity and Compliance](#)). In addition, this thesis or dissertation does not contain personally identifiable information that would compromise assurances of confidentiality to research participants.

Part B: Copyright (See [Copyright](#) and [Patent Issues](#) for more information.) Please select one of the following options:

1. I own the copyright in the thesis or dissertation as its author. I hereby grant to the George Washington University and its agents the non-exclusive, world-wide, royalty-free license to archive and make accessible, under the conditions specified below, my thesis or dissertation in whole or in part in all forms of media, now or hereafter known. I retain all other rights, title, and interest in my thesis or dissertation and may use all or part of my thesis or dissertation in future works (such as conference presentations or papers, articles, or books).
2. I have produced my thesis or dissertation for the U.S. Government as an officer or employee and therefore the thesis or dissertation is not subject to copyright (17 U.S.C. §105).

Further, I hereby certify that, where warranted, I have obtained and attached hereto written permission statements from the owners of each third party copyrighted matter to be included in my thesis or dissertation, allowing distribution as specified below.

Part C: Release Statement (See [Publication Issues](#) for more information.)

In addition to the unrestricted display of the bibliographic information and the abstract, I agree that the above-mentioned document will be placed in the GW ProQuest ETD archive with the following status (choose one option from each of the options below). In all cases, the full text of all theses and dissertations will be available for unrestricted open access worldwide through the GW institutional repository, either immediately or after the embargo period expires.

1. **Unrestricted Open Access:** Release the entire thesis or dissertation for free, open access worldwide.
 - a. **Immediate Release** (Preferred option except in rare situations noted below), or
 - b. **Embargoed:** Keep the thesis or dissertation from public access for a period of 6 months, 1 year, or 2 years while I pursue a commercial opportunity (such as a book contract or patent) or to meet research sponsor requirements. I understand that patent applications must comply with the [GW Patent and Scholarly Works Policy](#).

OR

2. **Traditional Publishing:** Release the entire work for purchase through ProQuest.
 - a. **Immediate Release** (Option of choice except in rare situations noted below), or
 - b. **Embargoed:** Keep the thesis or dissertation from public access for a period of 6 months, 1 year, or 2 years while I pursue a commercial opportunity (such as a book contract or patent) or to meet research sponsor requirements. I understand that patent applications must comply with the [GW Patent and Scholarly Works Policy](#).

Thesis Advisor/Dissertation Director Verification of ETD:

I have reviewed the final electronic version of my thesis or dissertation to be submitted to GW ProQuest and have determined that it is an accurate representation of the document reviewed and approved by the Dissertation Research Committee or Thesis Advisor.

The undersigned agrees that this ETD Access / Approval Form updates any and all previous statements submitted heretofore.

Signed: _____
Student Printed Name Date

Signed: _____
Thesis Advisor / Dissertation Director Printed Name Date

Signed: _____
Graduate School Administrator Date

APPENDIX B: Doctoral Student Checklist

SEAS Doctoral Student Checklist

PHASE 1: Pre-Candidacy

Forms can be obtained from the Departmental Graduate Records Coordinator

1. Establish academic advisor (designated and/or approved by the department chair)

2. Complete any prerequisite work (or other conditions of admission).
3. Complete and file a Program Plan of Study: Form 1
4. Complete all course requirements on your Program Plan of Study
5. Complete the preliminary / qualification examination forms and file by the deadline.
6. Maintain continuous enrollment. Be actively enrolled in at least one credit hour during the semester in which you intend to sit for the comprehensive examination.
7. Successfully complete all sections of the comprehensive examination.

PHASE 2: Candidacy

1. If you have not already done so, establish a doctoral dissertation committee
2. Committee Membership and Proposal Approval form with Part I completed.
 1. _____ Dissertation Chair
 2. _____ Committee Member
 3. _____ Committee Member
3. Obtain your dissertation committee's approval of your dissertation proposal. Complete and file two copies with your department: (1) Proposal, (2) Dissertation Committee Membership and Proposal Agreement form with Part II completed, and if required, (3) the Human Subjects forms. This is needed to gain final approval of the proposal.
4. Successfully complete the oral defense of the proposal.
5. Submit drafts of dissertation to the dissertation chair and committee members for review and feedback, as requested by the department chair
6. Enroll in a minimum of 24 credit hours of Dissertation Research.
7. Check with your graduate coordinator for deadlines for scheduling dissertation oral examinations.

8. Complete an Application for Graduation form for the semester in which you plan to graduate by established semester deadline. Check with the graduate coordinator for the deadline to submit.
9. Secure an appointment to meet with the graduate coordinator to review your academic record.
10. Establish a dissertation oral examination committee with the assistance of your dissertation committee chair (Dissertation Oral Examination form).

Committee membership:

	NAME	E-MAIL	TELEPHONE
1.			
2.			
3.			
4.			
5.			
6.			

11. Submit the electronic copy of the completed dissertation; one paper copy and one electronic copy of the abstract (350 words); the Dissertation Approval Form and the Request for Dissertation Oral Examination Form to the graduate coordinator.
12. Receive confirmation from the department chair concerning committee approval & date, time, and location of the oral examination.
13. Submit copies of the dissertation to the members of the examining committee and retain one copy for yourself. This must be done no less than 3 weeks prior to the scheduled date of the oral examination.
14. Make any revisions requested by the oral examination committee within 30 days from the date of your final oral examination or 14 calendar days prior to the end of the semester (for summer and fall graduates) or April 1 for spring graduates.
15. Within those same 30 days, submit the final electronic copies of the dissertation to the department, along with a copy of the abstract, UMI Information, Survey of Earned Doctorates, and any other related materials. Upload the final, revised version of your Dissertation.
16. Fill out the ETD approval form completely; secure the necessary signatures (advisor, ETD coordinator, ADAA). After the ETD form is approved the dissertation will be submitted by SEAS.
17. Be cleared for graduation upon a final check of your academic record and receipt of the above mentioned materials. See clearance checklist.
18. See Advanced degree program coordinator for the Ph.D. program.

APPENDIX C: Dissertation Guidelines

SEAS Dissertation Format Guidelines

August 2016

For any questions on dissertation format, please contact:

Marilyn Shazier-Shields at x48323 or by email at mshazier@gwu.edu

These guidelines address:

General Considerations & Requirements

- Electronic Submission Requirements
- Margins
- Type Size & Spacing
- Page Numbering

Preface Pages

- Title Page
- Certification Page
- Copyright Page
- Dedication Page
- Acknowledgement Page
- Abstract
- Table of Contents
- List of Figures
- List of Tables
- List of Symbols
- List of Acronyms
- Glossary of Terms

Main Text

- Organization
- Graphics
 - Figures & Tables
 - Labeling Graphics
 - Sideways & Larger Graphics
 - Equations
- Footnotes
- Lists
- References
 - Marking Citations in the Text
 - The Reference Section
- Appendices

GENERAL CONSIDERATIONS AND REQUIREMENTS

Electronic Submission Requirements

The University requires that all dissertations be submitted electronically. Paper dissertations will no longer be accepted. When you are close to completing your dissertation, go to the ProQuest ETD website:

<https://www.etdadmin.com/cgi-bin/school?siteId=55>

Create an account and upload your dissertation. You will not be charged anything until all your degree requirements are completed and the finished dissertation is submitted to ProQuest. 2019-2020 Submission deadlines are as follows:

- Completing Fall 2019 – Deadline is December 14, 2019
- Completing Spring 2020 – Deadline is May 20 (MS Thesis) April 1 (Ph.D.)
- Completing Summer 2020 – Deadline is August 15, 2020

If you have any questions about the ETD website, or how to do anything connected with it, please contact Marilyn Shazier-Shields (mshazier@gwu.edu or phone 994-8323), or the Gelman Library dissertation administrator Valerie Emerson (etds@gwu.edu or phone 994-2041).

The major change and advantage with electronic dissertations is that you can include much more information and more types of information. You can include color photos, video and sound clips, and active web links. Anything that you can embed in a web page, you can put in your dissertation.

Also note that your ETD submission must be in PDF format. There are instructions on the ETD site for converting to PDF if you are unfamiliar.

Margins

Margin requirements will be enforced without exception. The right and left margin should be one and one-quarter inches to allow for binding. Even though dissertations will be electronic, ProQuest still requires the 1.25” margins so they can print them out and bind them if a hard copy is requested. Top and bottom margins should each be one inch. All text and graphics (except page and numbers) must fit inside those margins. Material outside the margins will affect the readability and appearance of the document.

Type Size and Spacing

The type should be 11 - 12 points. A 12 point Times New Roman or a 12 point Courier are good examples of acceptable type fonts. Decorative and ornate fonts are not acceptable. If you are in doubt about whether the type font you want to use is acceptable, please ask before writing your entire dissertation in it. It is permissible to mix type fonts within your dissertation, as suggested in the Figures and Tables section.

All text material should be double-spaced, but long quotations and footnotes may be single-spaced. To avoid confusion about when a new paragraph starts, because the text is all double spaced, you should start each paragraph in the main text portion with a ¼ inch indentation (two dots on the measurement bar at the top of *Word*).

Page Numbering

All pages except the title page must be numbered. Page numbers should be centered in the lower (footer) area of each page.

Preface pages (see next section) will be numbered using small Roman numerals. The title page is considered to be page “i”, but is not numbered. Start numbering with “ii” on the next page.

Pages in the main text will be numbered with Arabic numerals, starting over with “1” on the first page of Chapter One. Numbering will continue through to the end of the dissertation, including the Reference section and any appendices.

Nota Bene: Even though this guide provides instructions and examples for using Word to write your dissertation, the use of LaTeX is highly encouraged. You will find it much easier to produce complex equations in LaTeX, and it also has a superior ability to create your lists of tables and figures, as well as your table of contents. Please consult with your advisor for his/her opinion of the best tool to use before you start writing.

Preface Pages

Preface pages are all the material before the main text. They are numbered with small Roman numerals. Note that not all of these pages are required, but if they are included, they should be in this order:

- Title page (required)
- Certification page (required; for doctoral dissertations only)
- Copyright page (optional)
- Dedication page (optional)

- Acknowledgment page (optional)
- Abstract (required for doctoral dissertations, optional for master's theses)
- Table of Contents (required)
- List of Figures (required if you have any figures)
- List of Tables (required if you have any tables)
- List of Acronyms (optional)
- List of Symbols (optional)
- Glossary of Terms (optional)

All of the preface pages, with the exceptions of the title page, certification page, and copyright page, should have the name of the page centered and in bold at the top of the first page of that section, in the same manner as the titles of the chapter pages.

Title Page

See the sample title page at the end of this document.

All lines should be centered left and right. Start with the dissertation title, in initial caps. Then single space blocks of information with double spacing between each major group of information. Do not list all your committee members, just your advocate. Try to center the text vertically on the page. **This page is not numbered.**

There are only three acceptable completion dates that can be on the Title Page regardless of the actual date of your defense. If you are completing your doctorate in Summer semester, the date will be August 31 of that year. If you are completing in Fall semester, the date will be January 10 of the *following* year. If you are completing in Spring semester, the date will be the date of the GW commencement ceremony.

- Completing Fall 19 = January 10, 2020
- Completing Spring 20 = May 17, 2020
- Completing Summer 20 = August 31, 2020

Certification Page

The Certification Page is an official statement that your dissertation has been accepted and you have completed all requirements for your doctorate. Please see the sample page at the end of this guide. This is where you can put the actual date of your defense. This will always be page ii. Committee members do not sign this page.

Copyright Page

As the author of a thesis or dissertation, you own the copyright to your work just by virtue of being its author. If you are concerned that someone may infringe on your intellectual work, you can pay a fee and register your copyright. Here is what registering the copyright

accomplishes:

1. A registered copyright serves as prima facie evidence of copyright validity and is a prerequisite for filing an infringement action against someone in court.
2. A copyright owner can recover statutory damages and attorney's fees only if the work is registered prior to infringement or within three months of publication.
3. If the infringement occurred prior to registration, the copyright owner can still file an action, but it is limited to actual damages and injunctive relief. In other words, you could register the copyright after you find out about the infringement and still take action against the violator.
4. By paying the registration fee to ProQuest, you are paying ProQuest to register the copyright on your behalf. Alternatively you can do it on your own now or later.

As this suggests, registering the copyright might not be necessary in many cases. However, if your work is something that has the potential to make money (e.g., book royalties or a patent), it is probably wise to register the copyright. Whether or not you do formally copyright your work, you can have a copyright page. Copyright should read © Copyright (year) by (student's name). All rights reserved. Text should be single spaced (instructions for inserting symbol is in style guide), centered vertically and horizontally in the page. The year of the copyright should match the year of completion that is on the Title Page. If you have a copyright page, it will be numbered iii.

If your work could lead you to seek a patent for an invention or discovery, you have the option when you register on the ETD website to delay making your work public to give yourself time to file for a patent. Once you make your invention or discovery public, you may lose your opportunity for a patent after a certain time.

If you developed a patentable invention with University funds or facilities, please also understand that you have a responsibility to disclose this to the University (the Associate Vice President for Research and Graduate Studies or the Medical Center Office of Research). For more information, please visit the website of the Office of Sponsored Research.

Dedication Page

If you wish to dedicate your dissertation to a particular person, institution, or anything else, this is where you do it. Write about who you wish to dedicate it to and why. If you have a copyright page, this will be numbered iv. If you do not have a copyright page, this will be page iii.

Acknowledgement Page

Writing a dissertation is a huge effort and is rarely done without any help. This page is for you to formally thank all the people who have helped you on your path to completion of your dissertation. Be generous with your thanks.

Abstract

The abstract is a one or two page (absolutely no longer than two) summary of your research in terms that a general audience would be able to understand. Think about how you would explain your research to a first year engineering undergraduate. Do not cite references in the abstract. The title of the dissertation or thesis should be written after the page header.

Abstract of...

2 blank line spaces.

Title of Dissertation or Thesis

single spaced if more than one line

2 blank line spaces.

Text starts on this line.

Table of Contents

The title page, the certification page, and the copyright page are *not* listed in the table of contents. All of the other preface pages, if used, and *every* numbered organizational subdivision within the main text, the reference pages, and any appendices, must be listed along with the page number that each starts on.

Refer to the section on organization below under Main Text for the organizational scheme. All of the organizational subdivisions should be listed by number, followed by the subdivision title, then a line of dots out to the right margin where you put the page number. Page numbers can be easily lined up by using a right justified tab.

It will help you and your readers to follow your organization if you indent subheaders $\frac{1}{4}$ inch in the table of contents. See the example page at the end of this document.

It is important that if the descriptive title of a section is very long, the text does not overflow into the page number column. Start a new line instead. Continuation lines should be indented $\frac{1}{4}$ inch from the start of the previous line to avoid confusion with the next organizational entry. See the example page at the end of this document.

It is a good idea to build your table of contents as you write so you can see at a glance how the structure of your dissertation is forming. Word and LaTeX have a function which will automatically build a table of contents as you mark the headers.

List of Figures

If you have any figures, you must list them by number and label name, and tell what page they are on. See the section on figures and tables for more information.

List of Tables

If you have any tables, you must list them by number and label name, and tell what page they are on. See the section on figures and tables for more information.

List of Symbols

If you use a lot of symbols and variables in equations, your readers may find it helpful if you list the meanings of those that you use frequently. Try to alphabetize them so looking up a particular symbol is easier. This is not always easy with a mix of Greek letters, Latin letters, and non-alphanumeric symbols, but try to alphabetize by the name of the symbol. One method is to have a list of Roman alphabet symbols, followed by a list of Greek letter symbols, followed by a list of “other” symbols.

List of Acronyms

Washington, DC, is known as a land of “alphabet soup.” A bewildering variety of acronyms are used in government agencies, by businesses, and also within your scientific research community. Outsiders usually do not have a clue what they mean. Keep in mind that your dissertation will be read by people both within and outside of your particular area of expertise. If you use a lot of acronyms, even though you will be spelling them out the first time you use them (see section on Main Text) it is a good thing to have one central location where all acronyms are explained so the reader does not have to hunt through the text looking for a particular acronym’s first use.

Glossary of Terms

As with acronyms above, not all terms are crystal clear to all readers. Many terms that look like they are in common usage may be used in a particular way or have a specific meaning within your discipline that is different from common usage. Having some of your more esoteric terms explained in one central place may be very helpful.

Main Text

Main Text sections must be placed in this order:

- Main text of dissertation (required)
- References (required)
- Appendices (optional)

The most important thing to keep in mind when writing the text of your dissertation is the fact that a variety of people will be reading it in the future. In an immediate sense, you are writing it for your advisor and your dissertation committee. You can assume that those people are all very familiar with your subject material, your methods, and your results. However, after your doctoral defense is complete, your dissertation will be published and will be available for reading by anyone who troubles to look it up. You can assume that those readers will have the technical background necessary to mentally grasp your points; however, you should also assume that they may not have the narrow expertise and familiarity with your particular research that will allow them to read about your work on the same level that you and your committee do. Therefore, as you write, you should explain some of the more esoteric details. Don't just assume that everyone knows what you are talking about.

A good test is to have one of your classmates read your text. He or she will have technical knowledge equivalent to you, but may not have the specialized knowledge you have in your particular area. If that reader does not immediately understand certain parts, perhaps those parts should be rewritten to provide more explanation.

Another important consideration is that future readers probably will not read your dissertation from beginning to end. They may only read the parts that they are interested in. Thus, they may skip your introduction and literature review chapters and go straight to how you performed your experiment. You can help this type of reader by spelling out acronyms, and otherwise explaining new concepts the first time they are used in each chapter, even if you have already done so in previous chapters.

Organization

Dissertations will be organized into numbered chapters, each chapter will be divided into numbered sections, sections may be divided into numbered sub-sections, etc. down as many levels as you need. Just remember that if you have a section "x.1", you must always have a section "x.2". In other words, do not subdivide a section into only one dependent part. You must always have at least two. See the example of headings below.

In general, your first chapter will be an introduction to your research problem. State the problem; briefly state the history of the problem and where research into it stands at the present. Briefly state what you propose to do, how, and why. The last section of your first

chapter may be a brief chapter-by-chapter overview of your entire dissertation. When writing your dissertation, you may want to write the introduction chapter last so you can accurately “predict” what you will say in later chapters.

The second chapter is usually a “literature review.” You describe in detail the research that has been done on your problem in the past, how it has influenced subsequent research, how and why past research has led up to your present situation.

In the third chapter you present your new contribution to the research, explain the theory of how and why your research works, and how it will solve the problem stated in the introduction.

In the fourth chapter you go over your research step-by-step. Explain how and why you set up your experiment to obtain your results.

In the fifth chapter you talk about what happened when you actually ran your experiment and talk about your results. Mention any problems you encountered while running the experiment and how you overcame them.

The sixth chapter is for your conclusions. Were you right or wrong in your approach to your experiment? What went particularly well or badly? How might you have done things differently? What further research might be done to follow up on your results?

This is not the only acceptable organization, but it is the most common. You may need a totally different organizational approach because of your particular type of research. Just be sure to talk with your advisor about how you should organize your dissertation before you start writing.

At each organizational level you need to give a very short descriptive title of what you are writing about in that section. This will also be put in the table of contents. Put your section headers in bold. Start your second level headers (X.X) flush with the left margin. Indent each successive levels (X.X.X, etc) an additional ¼ inch (two additional dots on the measurement bar at the top of your *Word* window). Note that your text always starts with only a ¼ inch indentation, and it always starts on the next line (accounting for the fact that everything is double spaced) after the header. You should double space before a new header (see example below).

Chapter 1 — Introduction

Chapter headings are centered, in bold and in all caps or initial caps. Leave 2 spaces after the chapter heading before starting the text

Start each chapter on a new page. All of the text on this page starts at the same location on the ruler bar except for the first line of text of each new paragraph.

Note that each level is indented in a ¼ inch (or two dots to the right on the ruler bar) from the last section header.

1.1 Second Level Header (starts at the left margin)

1.2 Second Level Header

1.2.1 Third Level Header

Start your text here. Text.

1.2.1.1 Fourth Level Header

Start your text here.

1.2.1.1.1 Fifth Level Header

Start your text here.

Notice that even though the header keeps moving over with each lower level, the text always starts in the same place.

Graphics

A graphic is anything that is not text, plus the labeling for the graphic. Common graphics include tables, graphs, photos, drawings, charts, equations, etc. Every graphic must have a label so it can be referred to in the text.

When incorporating graphics into your dissertation, the best way to introduce them is to mention or explain them before they appear in the text. If you place the graphic before mentioning it in the text, the reader will wonder what the graphic is about and it will interrupt the flow of reading. If possible, your first mention of the graphic should be on the same page so the reader can read the textual description and look at the graphic without having to turn any pages.

Figures & Tables

There are two types of graphics that must be labeled and listed in the preface pages: figures and tables. A figure is every kind of graphic except tables and equations. Figures include graphs, photos, drawings, clip art, and anything else that is not text. A table is a display of data in an array of columns and rows. You use the *Table* pulldown in *Word* to create one.

If at all possible, make your tables and figures fit completely on one page. That way the reader can see all the data at once without having to turn pages. You can turn a graphic sideways, as discussed below, to make it fit. If it is not possible to fit a graphic on one page and it continues onto the next page, you will need to label the continued graphic at the top of the following page so the reader knows it is a continuation of a previous graphic and not a new graphic. Label continuations exactly the same way as the main graphic, but write Table 2-1 (cont.) and the title at the top of the next page so readers know the graphic is a continuation and they should look at the previous page to see the start. Again, remember that future readers may not start reading at the beginning of your dissertation, and may not have read the previous pages. Also, if a table must be continued on the next page, be sure to label the vertical data columns again at the top of the new page so readers know what those columns mean.

Labeling Graphics

All graphics must be labeled. Tables are labeled on top of the table. Figures are labeled below the figure. You should use slightly smaller type and a different type font in the label so that the reader knows that it is a label and not regular text. For example, if you use 12-point Times New Roman for your main text, make your labels 10-point Arial.

Make your graphic titles short and to the point. Keep in mind that titles will be listed in the prefatory material and a graphic title that is five lines long is not really helpful. You can put a short title on the label and then put more information below the graphic, and as part of it, to explain what's going on.

Tables and Figures will be numbered sequentially within each chapter. All tables will be numbered starting with 1 and figures will be numbered separately starting with 1. Thus, in Chapter 2 you may have Table 2-1, Table 2-2, etc. and Figure 2-1, Figure 2-2, etc.

Example:

Text text text text text text text text. In Figure 2-1, we see three SEAS doctoral candidates in a blinding snow blizzard, walking to their lab in Staughton Hall.

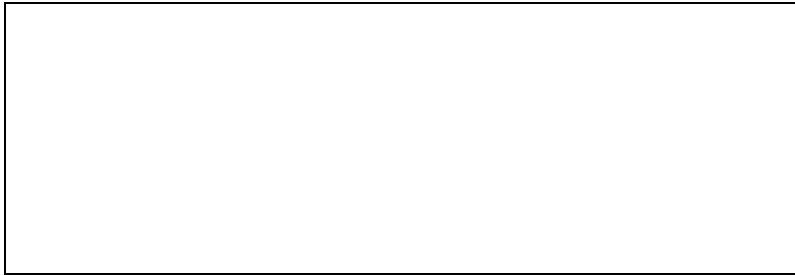


Figure 2-1: Three SEAS doctoral candidates in a blizzard

This is an example of further explaining what is happening in the graphic. This text is considered part of the graphic, not the main text. It is not part of the graphic label that goes in the List of Figures.

In Table 2-1 below, we demonstrate the method used to label tables

Table 2-1: This is the label

	Jan 08	Feb 08	Mar 08	Apr 08
Data 1	blah	blah	blah	blah
Data 2	blah	blah	blah	blah
Data 3	blah	blah	blah	blah

A shortcut when you are creating your lists of figures and tables for the preface pages is to just copy your graphics label, past it into the list, change the font from Arial to Times New Roman, and add the page number. Like the table of contents, you must make sure that the text of your graphics titles does not get into the page number column. Start a new line before it gets there.

Graphs should have all data lines labeled either with a key at the bottom of the graph or with a label pointing to the proper data line. Ideally, if you have multiple lines on your graphs, they should be in different colors so readers can tell which line is which.

Sideways and Larger Graphics

If you need to present a graphic sideways on the page because it will not fit the regular way (i.e., in landscape view instead of portrait view), please remember that the page number still needs to be oriented in portrait view. If you don't know how to do this, please talk to me because it's rather complicated to write out instructions in this document. Just be sure that the graphic is turned 90° counterclockwise so that the top of the graphic is on the binding (left) side of the page.

If a graphic need to be larger than one standard page in size yet needs to be all on the same page, talk to me (Marilyn Shazier-Shields, 994-8323) and we will figure something out. Don't just do it on your own and assume that it will be acceptable.

Equations

It is very likely that you will include equations in your dissertation. If you are using LaTeX to write your equations, they should be centered in the line. If the equation is longer than one line, continue it on the next line, and on subsequent lines.

If you are using *Word* to write your equations, centering them may be a problem. If you are unable to center them, they should start flush with the left margin. In any case, equations should be written in italic type. If the equation runs longer than one line, continue it on the next line, but indent ½ inch.

Each full equation — not each equation line — should be labeled flush with the right margin with a number within parentheses. Number your equations sequentially within each chapter. Thus you might have equations numbered (1.1), (1.2), (2.1), (2.2), etc.

Example in *Word*:

$$1 + 2 = 3 \qquad (1.1)$$

You may need to explain any symbols used in your equations. Do that in the text immediately following the equation, and in the List of Symbols section, if you have one, in the preface pages.

Footnotes

Footnotes are used to provide a short explanation of a point within your dissertation that does not really merit discussion in the main text. Footnotes should not be used primarily to cite references, although there may be citations within a footnote. *Word* has a footnoting ability built in under the *Insert* toolbar pull down.

Lists

If you list more than three items in a sentence, you should consider using a bulleted list rather than a long series of commas. That makes for much easier reading. For example:

- Item one.
- Item two.
- Item three is a longer item, so if it goes longer than one line, you should start the second and subsequent lines even with the text at the beginning of the bullet.
- Bullets should be indented ¼ inch and the text starts ¼ inch beyond that.
 - o You can have sublists within bullets.
 - o Use a different kind of bullet like this hollow one.
 - o Indent it so the bullet is even with the start of the higher level text and if the line is so long it wraps to the next line, make sure it starts even with the text at the start of the bullet.
 - ◆ And so on.
 - ◆ For as many levels as you need.

- ◆ As with the main text organization, if you have one “sub-bullet”, you must have at least two.

The same applies to numbered lists. Instead of changing the shape of the bullet, alternate numbers and lower case letter for each level. The idea is to ensure readers can tell at a glance what level in the organization they are on.

The difference between bulleted and numbered lists is that bulleted items can be in any order. You can switch the text in bullet one and bullet two and it makes no difference. Numbered lists must be in that order, for instance a list of sequential steps in an operation or a list of priorities would be numbered rather than bulleted.

References

Citing sources is probably the most difficult and time-consuming part of writing a dissertation. However, it is also essential that you properly cite everything that is not your own work to avoid any possibility of plagiarism.

The SEAS faculty has agreed that any style guide may be used to cite references, as long as it is in common usage within your particular discipline. You must consult with your advisor on which citation style he or she wishes you to use. Do not just make up citation styles on your own.

Marking citations in the text

Although there are many styles, they all generally use only a couple different methods of marking cited passages. One method is using numbered citations and the other is using author and year.

The numbered citations method marks cited passages with a number in square brackets like this: [18]. One example of this is the ASME style used by mechanical engineers. The number refers to a full citation back in your References section. The references there are arranged either alphabetically by first author’s last name, or in the order they are cited in the text.

The author and year citations method usually marks cited passages with the first author’s last name, and the year of publication like this: (Martin, 2007). A common example of this method is the Chicago Style Manual. There are some variations on this method; in particular the ACM style used in computer science, which marks citations with only the first three letter of the author’s last name and the last two digits of the publication year like this: [MAR07]. With the author and year method, cited works are listed in your Reference section alphabetically by the first author’s last name.

The Reference section

When putting together your Reference section, keep in mind that all sources used in your research, whether cited in the text or not, must be listed.

All styles, no matter which one you work with, will require the same information. The only difference is how the information is presented.

Reference to journal articles and papers in serial publications should include:

- last name and initials of each author
- year of publication
- full title of the cited article in “quotes”
- name of the journal in which article appears *in italics*
- volume number (if any) in boldface (Do not include the abbreviation, "Vol.")
- issue number (if any) in parentheses (Do not include the abbreviation, "No.")
- inclusive page numbers of the cited article (do include "pp.")

Reference to textbooks and monographs should include:

- last name of each author and their initials
- year of publication
- full title of the publication *in italics*
- publisher
- city of publication
- inclusive page numbers of the work being cited (include "pp.")

Reference to individual conference papers, papers in compiled conference proceedings, or any other collection of works by numerous authors should include:

- last name of each author of the paper cited and their initials
- year of publication
- full title of the cited paper in “quotes”
- individual paper number (if any)
- full title of the publication in italics
- initials followed by last name of editors (if any), followed by the abbreviation, "eds."
- publisher
- city of publication

- volume number (if any) in boldface if a single number, include, "Vol." if part of larger identifier (e.g., "PVP-Vol. 254")
- inclusive page numbers of the work being cited (include "pp.")

Reference to dissertations, theses and technical reports should include:

- last name of each author and their initials
- year of publication
- full title in “quotes”
- report number (if any)
- publisher or institution name, city

Reference to a web page should include:

- last name of each author and their initials, if known. If unknown, list the organization that owns the web site as the author
- year of the latest update to the site at the time you got your information from it.
- web address
- “site accessed on (and the date)”

In spite of the Internet being in common use for well over ten years, many style guides still don't have rules for citing web pages. If you use the form above, combined with the style used for all your other kinds of sources, you should be good. Just be consistent and do it the same way for every web site citation.

Web sites, by their nature, are subject to change without the author having to give notice that there has been a change. A good practice is that at the time you access the site, print out the material that you will use as your reference and write the current date on the page. You may find that by the time your dissertation is finished, your material on the web is different or may have disappeared entirely. Your committee members may need to see the material that was current when you referenced it to help them evaluate your dissertation.

Appendices

Appendices are for supplementary material that supports the subject of your dissertation, but is either not important enough to include in the main text, or is of a bulky, hard-to-read nature. Examples include long tables or figures of raw data results, background material, computer programs, samples of surveys sent out, copies of letters or other documentation received, etc.

You do not have to double space the text in appendices.

Appendices are differentiated by letter, so the first one will be Appendix A, then Appendix B, etc.

Appendix pages are numbered continuously with the rest of the main text. Tables and figures are numbered A-1, A-2, B-1, B-2, etc.

Dissertation Title in Initial Capitals and Small Letters

by Your Name

Degree held, Month Year degree conferred, Name of Institution conferring degree

A Dissertation submitted to

The Faculty of
The School of Engineering and Applied Science
of The George Washington University
in partial fulfillment of the requirements
for the degree of Doctor of Philosophy

Month Day, Year degree conferred

Dissertation directed by

Dissertation Director's Name
Dissertation Director's Academic Title

The School of Engineering and Applied Science of The George Washington University certifies that [your full name] has passed the Final Examination for the degree of Doctor of Philosophy as of [date of dissertation defense]. This is the final and approved form of the dissertation.

[Title of dissertation in all the style used for the title here should
match the style on the title page]
[Student's name]

Dissertation Research Committee:

[dissertation director's full name, professorial title, and the label
Dissertation Director—**use Graduate Bulletin for correct listings**]

[if a co-director: his/her full name, title, and the label Co-Director after
both co-directors]

[committee member's full name, title, Committee Member]

[committee member's full name, title, Committee Member]

Table of Contents

Dedication iii

Acknowledgments iv

Abstract v

Table of Contents vii

List of Figures x

List of Tables xi

List of Acronyms xiii

List of Symbolsxiv

Glossary of Termsxv

Chapter 1 - Introduction 1

 1.1 Section Title 1

 1.2 Section Title 2

 1.2.1 Section Title 3

 1.2.2 Example of a Section Title That is So Long That You Will Have to
 Wrap It into the Next Line, Indenting It ¼ Inch, and Being Careful Not to
 Let the Text Spill Into the Column Where The Page Numbers Go 4

 1.3 Summary of Dissertation Organization 5

Chapter 2 – Literature Review 6

 2.1 Section Title 6

 2.1.1 Section Title 7

 2.1.1.1 Section Title 8

[... more chapters ...]

References 105

Appendix A – Sample Survey 112

Appendix B – Survey Data 120

APPENDIX D: ETD - Electronic Submission Requirements

ETD-Electronic Submission Requirements

Beginning Spring 2008 semester, the university is requiring that all dissertations be submitted electronically. Paper dissertations will no longer be accepted. When you are close to completing your dissertation, go to the ProQuest ETD website: <https://www.etdadmin.com/cgi-bin/school?siteId=55>

Create an account and upload your dissertation. You will not be charged anything until all your degree requirements are completed and the finished dissertation is submitted to ProQuest.

If you have any questions about the ETD website, or how to do anything connected with it, please contact Marilyn Shazier-Shields (mshazier@gwu.edu or phone 994-8323), or the Gelman Library dissertation administrator Valerie Emerson (etds@gwu.edu or phone 994-2041).

The major change and advantage with electronic dissertations is that you can include much more information and more types of information. You can include color photos, video and sound clips, and active web links. Anything that you can embed in a web page, you can put in your dissertation.

Also note that your ETD submission must be in PDF format. There are instructions on the ETD site for converting to PDF if you are unfamiliar.

If your work could lead you to seek a patent for an invention or discovery, you have the option on the ETD website to delay making your work public to give yourself time to file for a patent. Once you make your invention or discovery public, you may lose your opportunity for a patent after a certain time.

If you developed a patentable invention with University funds or facilities, please also understand that you have a responsibility to disclose this to the University (the Associate Vice President for Research and Graduate Studies or the Medical Center Office of Research). For more information, please visit the website of the Office of Sponsored Research.

SEAS Ph.D., Dissertation Completion Checklist

DEADLINES:

Dissertation:	FALL	SPRING	SUMMER
Dissertation draft submitted to advisor	Nov 1	Jan 20	Jun 10
Dissertation submitted to committee	Dec 14	Feb. 20	July 10
Dissertation defended by	Dec 22	March 10	Aug. 1
Cleared for hooding ceremony booklet		April 1	
GW Proquest ETD	January 15	March 24	August 15

At the beginning of the semester you intend to graduate:

1. Request a **Dissertation forms packet** to seasgrad@gwu.edu.
2. Complete the online “**Application for Graduation**” at the following link: <http://registrar.gwu.edu/online-graduation-application-instructions> . In the event that you are not able to defend your Dissertation in that specific semester, you can always re-apply for graduation (Spring, Summer, Fall).
3. Have an updated and approved “**Educational Plan**” in **DegreeMAP** at the following link: https://banweb.gwu.edu/PRODCartridge/twbkwbis.P_WWWLogin
4. Complete the Department **Final Examination Committee Ph.D. Approval Form**
Please note that the form needs to be approved by the Department Chair.
5. Complete the **Ph.D. Dissertation Form (Form 5)**. The form will have the tentative Dissertation Title. The form needs to be approved by your Research Advisor and the Department Chair.
6. Complete the “**Dissertation/Project Completion Certificate**”
7. Once a date for your Dissertation Defense has been confirmed, schedule a Conference Room with your (BME, CS, ECE, CEE or EMSE) Department.

One month prior to Dissertation Defense:

1. Forward all the forms listed above to seasgrad@gwu.edu.
2. Distribute the final draft of your dissertation to all committee members no later than 30 days prior to the date of your Dissertation Defense.
3. Provide your Department the information necessary to prepare the **Dissertation Announcement** and the **Dissertation Abstract**. Make sure that a copy is also submitted to seasgrad@gwu.edu

At the time of your Dissertation Defense:

1. Chair of the Dissertation Committee will request the folder containing **Dissertation/Project Completion Certificate** to SEASGrad@gwu.edu.
2. At the conclusion of your Dissertation Defense, the committee will recommend if you **passed, recessed or failed**.
3. If you pass your Dissertation Defense you will be informed by your committee whether or not you have corrections or revisions that need to be made.
4. Once all the corrections are completed and approved by your Research Advisor you will need to upload your **Dissertation via ETD website**: <https://library.gwu.edu/etd> **(GW's site)**

Your dissertation should be uploaded only **AFTER** your Research Advisor has signed off on the final, approved version of the Dissertation, and about two weeks prior to the established ETD submission deadline to allow to make any and all formatting changes that may be required and to allow enough time to obtain all the required approvals and signatures.

PLEASE NOTE: The ETD deadline is set by the university, and cannot be changed. You will not graduate that semester, if you are unable to meet the ETD deadline. You will graduate the following semester. The Hooding Ceremony is held once a year during the spring semester.

University Services

Please refer to *Student Support webpage* at <https://graduate.admissions.gwu.edu/student-support>

- What to do BEFORE you begin your program

- Assistantships, Fellowships, & Financial Aid
- Career and Employment Services
- Colonial Health Center
- Disability Support Services
- Student Services Activities
- GW Dining
- GW Housing
- GW Libraries
- International Services Office
- Lerner Health and Wellness Center
- Off-Campus Student Affairs
- Office of Student Engagement
- Military & Veteran Student Services
- Multicultural Student Services Center
- Religious Services
- Safety & Security
- Shuttle & 4Ride Escort Services

Useful GW Telephone Numbers

University Police Department (Emergency):	(202) 994-6111
University Police Department (Non-emergency):	(202) 994-6110
Mount Vernon Campus (Emergency):	(202) 242-6111
Mount Vernon Campus (Non-emergency):	(202) 242-6110
GW Information Line:	(202) 994-5050
Dean of Students:	(202) 994-6710
University Counseling Center:	(202) 994-5300
GW Housing Programs:	(202) 994-2552
Emergency Maintenance (24 hours):	(202) 994-6706
Office of Student Support & Family Engagement:	(202) 994-2305
Media Relations:	(202) 994-6460
GW Hospital:	(202) 715-4000
Student Health Service:	(202) 994-6827