

Graduate Student Guide

2012-2013

School of Computing and Information Science

CONTENT COVERAGE

PhD: Spatial Information Science and Engineering

Master of Science: Spatial Information Science and Engineering

Graduate Certificate: Geographic Information Systems

Master of Science: Information Systems

Graduate Certificate: Information Systems

School of Computing and Information Science
University of Maine
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1. Preface

1.1 Use of This Guide

This guide is for the use of those persons granted admission as graduate students in the School of Computing and Information Science at the University of Maine. The guide captures the most recent policies in the School's graduate curricula and procedures.

These guidelines define the minimum that all graduate students must fulfill in the named programs in the School of Computing and Information Science. Each student's academic advisory committee may impose additional requirements as set forth in their program of study.

In the event of a conflict between this guide and the rules and regulations of the Graduate School, the more restrictive provisions apply. If a student is in doubt as to which courses are required or what procedures should be followed, he or she is urged to consult with (1) the academic committee chairperson (also known as major advisor or thesis advisor), (2) the Department graduate coordinator, and (3) the Graduate School.

1.2 Contact Information

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<http://www.umaine.edu/spatial/>

<http://www.umaine.edu/msis/>

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2. Overview of the Graduate Programs

2.1 Program Descriptions and Requirements

The official description of each of the following academic programs is provided in the official University of Maine online graduate catalog at the links as indicated below. However, because the official catalog is updated only once each year, provided below also are links to web pages maintained by the School that may contain more up-to-date information.

Master of Science: Spatial Information Science and Engineering

PhD: Spatial Information Science and Engineering

Official University Catalog Description and Degree Requirements:

http://gradcatalog.umaine.edu/preview_program.php?catoid=27&pooid=3265&returnto=431

Supplemental and/or Updated Information (Degrees, Courses, Careers, Admission):

<http://spatial.umaine.edu/graduate-info/>

Graduate Certificate: Geographic Information Systems

Official University Catalog Description and Program Requirements:

http://gradcatalog.umaine.edu/preview_program.php?catoid=27&pooid=3222&returnto=431

Supplemental and/or Updated Information:

<http://spatial.umaine.edu/graduate-info/sie-graduate-info/#certificates>

Master of Science: Information Systems

Official University Catalog Description and Degree Requirements:

http://gradcatalog.umaine.edu/preview_program.php?catoid=27&poid=3231&returnto=431

Supplemental and/or Updated Information:

<http://www.umaine.edu/msis/curriculum-and-degree-requirements/>

Graduate Certificate: Information Systems

Official University Catalog Description and Program Requirements:

http://gradcatalog.umaine.edu/preview_program.php?catoid=27&poid=3232&returnto=431

Supplemental and/or Updated Information:

<http://umaine.edu/msis/curriculum-and-degree-requirements/#certificate>

2.2 Academic Advisory Committees

The academic advisory committee for each graduate student should be formed at the beginning of the graduate program. The student's major advisor or thesis advisor acts as chairperson of this advisory committee and, for those pursuing a thesis, serves as chair of the examining committee for the final defense. The advisory committee guides the student on course work and the thesis.

Master's Degree

The advisory committee for a thesis or project-based Master's student is composed of a minimum of **three** committee members of the University of Maine Graduate Faculty, **two** of whom must be tenured or tenure-track Spatial Information Science and Engineering faculty members. For an all coursework Master's degree such as the MSIS, the graduate coordinator serves as the chair (and entire committee) to approve the program of study and ensure that all coursework requirements have been met.

Ph.D. Degree

The advisory committee for a Ph.D. student is composed of a minimum of **five** committee members of the University of Maine Graduate Faculty, **three** of whom must be tenured or tenure-track Spatial Information Science and Engineering faculty members. At least one member of the committee should be from the UMaine Graduate Faculty other than the Spatial Information Science and Engineering faculty. An examiner external to the University of Maine is also required (see Section 5.3.3 below) but this person is not an official member of the advisory committee.

Graduate Certificates

Because graduate certificates are all coursework, the Graduate Coordinator for that program typically serves as the student's program advisor and full committee. Students are free to request another advisor if they so desire.

Changes in Academic Advisory Committees

All requests for changes in a graduate student's academic advisory committee must be submitted by email or in writing by the student's major advisor to the Graduate Coordinator. The Graduate Coordinator will review such recommended changes and, if approved, notify the Director of the Graduate School about the changes to the advisory committee. In the case that a Ph.D. candidate requests the exchange of the chair of his or her committee, the request will be assessed by a three-person review board of graduate faculty appointed by the Director of the School of Computing and Information Science in consultation with the Graduate Coordinator. Any significant reconstitution of the committee of a candidate may require that the student pass a new

proposal defense with the newly composed committee prior to continuing with his or her dissertation.

2.3 Academic Program Full Graduate Faculty

Program faculty must apply for and be accepted as full graduate faculty by the Graduate School in order to serve as the chair for graduate student academic advisory committees. The criteria are formally established by the academic program faculty.

Program faculty suitable for serving as chair or a member of the graduate committee for students pursuing academic programs in Spatial Information Science and Engineering Systems are listed at <http://spatial.umaine.edu/faculty/>

Program faculty suitable for serving as chair or a member of the graduate committee for students pursuing academic programs in Information Systems are listed at <http://www.umaine.edu/msis/faculty/>

2.4 Academic Program Associate Graduate Faculty

Associate Graduate Faculty may serve as committee members on graduate academic advisory committees for the programs covered in this Guide but they cannot chair such a graduate committee nor does this person count towards the minimum number of committee members as set forth in Section 2.2 for either the Master's or PhD degree. In cases where an Associate Graduate Faculty co-supervises a graduate student in approximately equal amount with a Full Graduate Faculty member, that Associate Graduate Faculty member may serve as co-advisor of that student.

3. Additional Program Requirements

3.1 Program of Study

All graduate students must complete a formal *Program of Study*. The appropriate form may be downloaded at <http://www.umaine.edu/graduate/gs-documents-and-forms>

This form must be completed by the end of the second semester of enrollment or before entering the second year of the graduate program. Completing the *Program of Study* with committee members' signatures helps ensure that course work will be completed in a timely manner and that students are ensured that the courses they take will count towards their degree. Students should keep a copy of the signed and dated Program of Study. If changes to the plan appear likely in the future but prior to the graduate school deadline, the plan may be filed in the student's folder in the School of CIS and not submitted formally by the School of CIS to the Graduate School until mandated by the Graduate School. The graduate coordinator is typically the sole signatory for all coursework master's degrees such as the MSIS.

Students admitted to the PhD program with only a Bachelor's degree receive only the PhD degree upon completion of that program. While the program of study may encompass a much longer list of courses to be completed, it still needs to be filed before entering the second year of graduate study.

Once the Graduate School receives the *Program of Study*, it becomes the student's required curriculum. Changes in the *Program of Study* may be made by submitting to the graduate school a *Change in Program of Study* form.

3.2 Breadth Requirements

The research-focused graduate degrees of *Master of Science: Spatial Information Science and Engineering* and *PhD: Spatial Information Science and Engineering* require that students take a breadth of coursework. Requiring students to take graduate courses across a range of topics is used to ensure that students have a comprehensive understanding of core information in the field and this requirement is used as a substitute for the comprehensive examination that many institutions require prior to allowing MS and PhD students to move further in the graduate program.

While the university catalog specifies the number and categories of breadth courses that must be met (http://gradcatalog.umaine.edu/preview_program.php?catoid=27&poid=3265&returnto=431), the graduate courses meeting specified course breadth categories are set forth in the Normal Annual Schedule of Classes (See Section 4).

Only those graduate courses listed as meeting a breadth area count towards the fulfillment of a breadth area. If equivalent graduate courses were taken elsewhere, the candidate can file a *Petition for Waiver of Breadth Requirement* form. The Breadth Area Coordinator evaluates the request and, if approved, signs the waiver form. Breadth area coordinators are:

- formal representations of spatial phenomena (Formal): Max Egenhofer
- spatial cognition and computing (Cognition): Reinhard Moratz
- database systems (Database): Silvia Nittel
- geographic information systems (GIS): Kate Beard
- information law and policy (Law): Harlan Onsrud

The student's academic advisor and advisory committee, may choose to be more stringent and refuse to accept the signed *Petition for Waiver of Breadth Requirement* form.

3.3 Course Registration

Full-time registration for a graduate student is defined as six or more degree hours per semester. Doctoral students who have been admitted to candidacy and students in their final semester of study may maintain full-time enrollment status by registering for a minimum of one credit. All registration forms **must be signed by the student's advisor and must be delivered to the School of Computing and Information Science Administrative Assistant**, who will enter the registration. Graduate students who are on a research assistantship during the summer, must register for one credit.

4. Schedules

4.1 Normal Annual Schedule of Classes

The tables that follow are for primary courses offered in the *Spatial Information Science and Engineering* and *Information Systems* programs in the School of Computing and Information Science. The tables are a working schedule only (Oct 2012 version). Use this schedule for planning purposes. Exceptions will almost always apply so please check the official University of Maine schedule each semester on MaineStreet.

Courses shown in blue are offered on campus but also [on-line asynchronously](#). Typically distance students view the recorded class videos (a) prior to an online live discussion each week and (b) prior to the assignment due date for that week.

FALL SEMESTER							
Course	Credits	Instructor	Prereq	Required Courses*			Breadth Designator
				MS-SIE (Project)	MS-SIE (Thesis) PhD-SIE	MS-IS	
SIE 502 - Research Methods	1	Egenhofer	SIE 501		x		
SIE 503 – Principles of Experimental Design	1	Giudice					
SIE 505 - Formal Foundations for Information Science	3	Worboys				x	Formal
SIE 507 - Information Systems Programming	3	Moratz		x	x	x	
SIE 509 - Principles of GIS	3	Beard					
SIE 512 - Spatial Analysis	3	Beard					GIS
SIE 550 - Design of Information Systems	3	Egenhofer				x	Database
SIE 589 - Graduate Project	3	All		x			
SIE 590 - Information Systems Internship	3	Onsrud					
SIE 598 - GeoSensor Nets (alternate years)	3	Nittel	SIE 507				
SIE 598 - Data Stream Management Systems (alt years)	3	Nittel	SIE 507 SIE 555				Database
SIE 516 - Virtual Reality Research and Applications	3	Giudice					Cognition
SIE 598 - Readings in Spatial Learning & Navigation I	1	Giudice					
SIE 699 - Graduate Thesis	1	All			x		
INT 601 - Responsible Conduct of Research	1	Onsrud		x	x		
ISY 590 / COS 490 Computers, Ethics and Society	3	Onsrud					

SPRING SEMESTER							
Course	Credits	Instructor	Prereq	Required Courses*			Breadth Designator
				MS-SIE (Project)	MS-SIE (Thesis) PhD-SIE	MS-IS	
SIE 501 - Introduction to Graduate Research	1	Egenhofer			x		
SIE 510 - GIS Applications	3	Beard	SIE 509				GIS
SIE 515 - Human Computer Interaction	3	Giudice				x	Cognition
SIE 525 - Information Systems Law	3	Onsrud				x	Law
SIE 554 - Spatial Reasoning	3	Egenhofer	SIE 550				Formal
SIE 555 - Spatial Database Systems	3	Nittel	SIE 550				Database
SIE 557 – Database System Applications		Nittel	SIE 507				
SIE 565 - Reasoning with Uncertainty in Spatial Info Sys *	3	Worboys	SIE 505				Formal
SIE 570 - Spatial Cognition and Computing	3	Moratz					Cognition
SIE 589 - Graduate Project	3	All		x			
SIE 590 - Information Systems Internship	3	Onsrud					
SIE 571 - Pattern Recognition & Robotics	3	Moratz					Cognition
SIE 598 - Readings in GIScience	3	Worboys					
SIE 598 - Readings in Spatial Learning & Navigation II	1	Giudice					
SIE 693 - Graduate Seminar	1	Egenhofer	SIE 502		x		
SIE 699 - Graduate Thesis	1	All			x		
INT 601 - Responsible Conduct of Research	1	Onsrud		x	x		

NOTES:

1. Research Methods Course Series: The required series of three 1-credit research courses for MSSIE (thesis) and PhD-SIE students proceeds as follows: **Year 1** (Spring Semester: SIE 501), **Year 2** (Fall Semester: SIE 502, Spring Semester: SIE 693). SIE 503 is often required additionally on the *Program of Study* for students that will be engaged in research involving experimental design and is recommended for all graduate students.

2. Minimum Programming Requirement: All students in all degrees must take SIE 507 in Python programming unless they already have significant Python or Java experience and obtain a waiver from the instructor. In the event of a waiver, another SIE course will be included on the student's program of study. The key goal of the beginners programming course is to get students started successfully to independently write programs. After students learn the fundamentals of programming in the context of a positive experience, it should be able to quickly learn other programming languages in the future either on their own or in other courses.

3. Breadth Areas and Requirements

The five breadth areas are:

- formal representations of spatial phenomena (Formal)
- spatial cognition and computing (Cognition)
- database systems (Database)
- geographic information systems (GIS)
- information law and policy (Law)

The breadth requirements are:

- **MS-SIE (project)** - one course each from four out of the five breadth areas
- **MS-SIE (thesis)** - one course each from three out of the five breadth areas
- **PhD-SIE** - one course each from four out of the five breadth areas
- **MS-IS** – there are NO breadth requirements

4. Proposed Courses: Proposed courses are offered first as SIE 598 courses. Planned future designator numbers for planned 598 courses are:

SIE 508 - Readings in GIScience (3 cr, alternate years upon demand)

SIE 517 - Readings in Spatial Learning & Navigation I (1 cr)

SIE 518 - Readings in Spatial Learning & Navigation II (1 cr)

SIE 558 - GeoSensor Nets (3 cr, alternate years upon demand)

SIE 559 - Data Stream Management Systems (3 cr, alternate years upon demand)

4.2 Typical Daily Schedule of Classes

4.2.1 Fall 2012 (subject to change)

Fall Schedule 2012
SPATIAL INFORMATION SCIENCE & ENGINEERING

Mon	Tue	Wed	Thur	Fri	
8:00-8:50	SIE 505 Formal Found 8:00-9:15 BD 326 Worboys		SIE 505 Formal Found 8:00-9:15 BD 326 Worboys		8:00-9:15
9:00-9:50	(b)		(b)		
10:00-10:50	SIE 509 Prin of GIS 9:30-10:45 BD 136 Holden	SIE 507 Info Sys Soft Eng 10:00-10:50 BD 326 Moratz	SIE 509 Prin of GIS 9:30-10:45 BD 136 Holden	SIE 507 Info Sys Soft Eng 10:00-10:50 BD 326 Moratz	9:30-10:45
11:00-11:50	SIE 598 Data Stream Mgmt 11:00-12:15 BD 326 Nittel	SIE 502 Res Methods 11:00-11:50 BD 326 Egenhofer	SIE 598 Data Stream Mgmt 11:00-12:15 BD 326 Nittel	SIE 502 Res Methods 11:00-11:50 BD 326 Egenhofer	11:00-12:15
12:10-1:00	SIE 516 Virtual Reality 12:30-1:45 BD 326 Guidice	SIE 550 Eng Database 12:10-1:00 BD 326 Egenhofer	SIE 516 Virtual Reality 12:30-1:45 BD 326 Guidice	SIE 550 Eng Database 12:10-1:00 BD 326 Egenhofer	
1:10-2:00		SIE 503 Experimental Design 1:10-2:00 BD 326 Guidice			12:30-1:45
2:10-3:00	SIE 512 Spatial Analysis 2:00-3:15 BD 326 Beard		SIE 512 Spatial Analysis 2:00-3:15 BD 326 Beard		2:00-3:15
3:10-4:00	(b)	Faculty Senate	(b)		
4:10-5:00	INT 601 10/8-11/9/12 Resp Cot of Res 3:30-4:45 BD 326 Onstrud	INT 601 (b) 9/4-10/4/12 Resp Cot of Res 3:30-4:45 BD 326 Onstrud	INT 601 (b) 9/4-10/4/12 Resp Cot of Res 3:30-4:45 BD 326 Onstrud	INT 601 10/8-11/9/12 Resp Cot of Res 3:30-4:45 BD 326 Onstrud	3:30-4:45

4.2.2 Spring 2013 (subject to change)

Spring Schedule 2013 SPATIAL INFORMATION SCIENCE & ENGINEERING

Mon	Tue	Wed	Thur	Fri
8:00-8:50	SIE 565 Reason w/ Uncertainty 8:00-9:15 BD 326 Worboys		SIE 565 Reason w/ Uncertainty 8:00-9:15 BD 326 Worboys	8:00-9:15
9:00-9:50				
10:00-10:50	SIE 510 GIS Applications 9:30-10:45 Beard	SIE 570 Spatial Cognition 10:00-10:50 Moratz	SIE 510 GIS Applications 9:30-10:45 Beard	SIE 570 Spatial Cognition 10:00-10:50 Moratz
11:00-11:50	SIE 525 (D) Intro Systems Law 11:00-12:15 BD 326 Onstrud	SIE 554 Spatial Reasoning 11:00-11:50 BD 326 Eigenhofer	SIE 525 (D) Intro Systems Law 11:00-12:15 BD 326 Onstrud	SIE 554 Spatial Reasoning 11:00-11:50 BD 326 Eigenhofer
12:10-1:00	SIE 501 Intro to Grad Research 12:10-1:00 BD 326 Eigenhofer	SIE 501 Intro to Grad Research 12:10-1:00 BD 326 Eigenhofer		SIE 501 Intro to Grad Research 12:10-1:00 BD 326 Eigenhofer
1:10-2:00	SIE 555 (D) Spatial Database 12:30-1:45 Nittel	SIE 598 Readings NavII 1:10-2:00 BD 326 Gundice	SIE 555 (D) Spatial Database 12:30-1:45 BD 326 Nittel	12:30-1:45
2:10-3:00	SIE 515 (D) HCI 2:00-3:15 BD 326 Gundice	SIE 571 Pattern Recog/Robot 2:10-3:00 BD 326 Moratz	SIE 515 (D) HCI 2:00-3:15 BD 326 Gundice	SIE 571 Pattern Recog/Robot 2:10-3:00 BD 326 Moratz
3:10-4:00				2:00-3:15
4:10-5:00	INT 601 Resp Con of Res 3:30-4:45 BD 326 Onstrud 2st 5-weeks	SIE 557 (D) Database Sys App 3:30-4:45 BD 136 Nittel	INT 601 Resp Con of Res 3:30-4:45 BD 326 Onstrud 1st 5-weeks	INT 601 Resp Con of Res 3:30-4:45 BD 326 Onstrud 2st 5-weeks

5. Responsible Conduct of Research and Intellectual Property

5.1 Conduct in Accomplishing Research

Responsible conduct in the accomplishment of research is expected of all students, researchers and faculty. The required academic course of *INT 601 Responsible Conduct of Research* should be taken early in the graduate program of all students engaged in research.

Among important documents with which all researchers should be familiar include:

University of Maine Student Handbook <http://www.umaine.edu/handbook/>

UMS Student Conduct Code

http://www.maine.edu/system/policy_manual/policy_section501.php

UMaine Policy & Procedures on Alleged Misconduct in Research and other Scholarly Activities <http://www.umaine.edu/research/vice-president-for-research/policy-and-procedures-on-alleged-misconduct-in-research-and-other-scholarly-activities/>

UMaine Policies & Procedures for Financial Disclosures and Conflicts of Interest in Extramurally Sponsored Activities (PDF)

<http://umaine.edu/computingcoursesonline/files/2012/10/ConflictofInterestPolicy.pdf>

Research Compliance: Protection of Human Subjects of Research

<http://umaine.edu/research/research-compliance/institutional-review-board-for-the-protection-of-human-subjects-irb/>

5.2 Intellectual Property Considerations

How rights in the work products of scholarly effort and research are distributed is set forth in the *UMS Full Statement of Policy Governing Patents and Copyrights* (http://www.maine.edu/system/policy_manual/policy_section209.php)

Students should also be aware that making your thesis or dissertation openly accessible in digital form through Fogler Library is a condition of graduation for Spatial Information Science and Engineering students in the School of Computing and Information Science.

6. Thesis and Research Process

6.1 Review of Progress on Research Work

The advisor and the student's graduate committee are responsible for determining whether the graduate student meets the requirements for passing a thesis or dissertation.

It is highly recommended that thesis advisors and committee members take a proactive role in monitoring each graduate student's research progress in order to determine whether a student is on track within his or her program, to highlight exceptional accomplishments, to steer students, and in case of repeated deficiencies to recommend withdrawal from the graduate program.

Towards this goal, it is recommended that thesis advisors:

- a. require their graduate students to complete a progress report by December 1 for the Fall semester and April 1 for the Spring semester, reporting on accomplishments during the current semester, the status of his or her thesis or dissertation, progress on any issues raised with the student's last progress report, and plans for the next semester,
- b. assess the student's progress and forward the progress report to the other members of the student's graduate committee,
- c. complete a performance evaluation in consultation with the other members of the committee, and
- d. meet with the graduate student to go over the outcome assessment.

6.2 Master's Degree Thesis Process

A thesis is required for the degree of Master of Science in Spatial Information Science and Engineering (thesis option). An initial thesis topic is indicated on the Program of Study, but the topic is likely to evolve or alter as the topic and alternative topics are explored.

A Master's thesis is a major written work resulting from comprehensive investigation and independent analysis of a topic germane to the specialized field of study. The goal of the thesis should be to extensively study a specific knowledge domain or phenomenon and provide significant incremental contribution of new knowledge to the field or produce a new interpretation of existing data or information.

Rules for thesis preparation are outlined in *Guidelines for Thesis Preparation*, which is available from the Graduate School. It is the student's responsibility to be familiar with the format(s) acceptable to the Graduate School.

6.2.1 Thesis and Oral Exam Requirements imposed by the Spatial Information Science and Engineering Faculty

The student should consult with and work with his or her faculty advisor in writing the thesis. The student should feel free to consult with committee members and other faculty members as their research and writing progresses. After all segments of the thesis have been completed and revised to the substantial satisfaction of the student's major advisor, the draft thesis with an accompanying cover letter from the major advisor is delivered to all members of the committee. This complete document must be in the hands of all committee members **at least five weeks prior** to any tentative final oral exam date. During the first two weeks of this period the committee must determine whether the thesis is sufficiently developed to allow an oral defense to be scheduled. Presuming that the scheduling of an oral defense date is allowed by the committee, written comments regarding the thesis will be forwarded by committee members to the student's advisor at any time up to and through the date of the oral defense.

A Master's degree thesis defense begins with an oral presentation by the student, which is advertised and open to the University community at large. While this is a public forum, family members are generally discouraged from attending. This is followed by a closed session in which the student is expected to respond to additional questions and comments by the advisory committee members. Recording of the oral thesis or dissertation presentation is permitted but limited to the duration of the candidate's presentation and excludes the subsequent question-and-answer period and the following closed session with the advisory committee members. Students should allow ample time after their thesis defense to address or accommodate the comments of committee members.

6.2.2 Graduate School Thesis Requirements

At the beginning of the semester in which the graduate student plans to graduate, the student should download and follow the **Graduation Checklist** found at <http://www.umaine.edu/graduate/gs-documents-and-forms>. Deadlines are set forth in the checklist for the application for graduation, notice of oral examination, signed tentative thesis acceptance form, final date for oral examination, signed final thesis acceptance form and similar requirements. It is highly recommended that each student should go through the forms with the School of Computing and Information Science Administrative Assistant near the beginning of the semester in which the student intends to graduate to ensure that all requirements will be met.

A draft of the thesis, in a form acceptable for examination purposes, must be delivered to the Graduate School **at least 5 business days prior to the final oral examination**. A completed and signed *Tentative Thesis Acceptance Form* must accompany the thesis at this time.

After the oral exam and after corrections have been made and approved by all committee members and the thesis is in final form, the student needs to complete a *Final Thesis Acceptance Form*. This form must have all committee members' **original signatures** (*faxed or scanned signatures will not be accepted*) and be submitted to the Graduate School with the final thesis before graduation.

6.3 Ph.D. Dissertation Process

6.3.1 Proposal Defense

A proposal defense is taken after the student has completed the course work listed on the approved Program of Study, and the thesis topic has been developed sufficiently to assess its value and to provide guidance for the doctoral student. The examination is given to determine whether the student's topic and methods are suitable and progress is satisfactory. The proposal defense tests the student's dissertation topic and related knowledge through oral and/or written examinations.

Prior to the proposal defense process, the student must prepare a dissertation proposal. The proposal should take the form required by the graduate advisory committee but typically the proposal will have the structure of the proposed thesis. All expected future thesis chapters should be represented. The dissertation abstract and introductory chapters are normally complete, whereas later chapters might contain only an abstract and an outline of the topics to be addressed in that chapter. A comprehensive initial bibliography is an integral part of the dissertation proposal.

The dissertation proposal will be completed and revised to the substantial satisfaction of the student's major advisor. The proposal and a cover letter from the major advisor is then delivered to all members of the committee. The graduate advisory committee members must be given a minimum of **two weeks** to determine whether the dissertation topic is sufficiently developed to allow the proposal defense process to commence. Presuming that the committee members agree that the topic is sufficiently developed to warrant defense, the proposal defense may be scheduled.

In conjunction with or prior to the oral proposal defense process, the student is expected to circulate to his or her committee course work accomplishments detailing courses completed and grades received as set forth on the completed Program of Study. A presentation is made by the candidate that reviews the proposed research goals and proposed methods to be pursued. The primary goal of the defense is to address the comments, questions, and concerns of the graduate

advisory committee members. Recommendations regarding further examination requirements by advisory committee members will be delivered to the major advisor within a week after this defense. These recommendations may include revisions to the course work plan, revisions to the thesis focus, revisions to the committee membership, and similar matters.

After all required proposal defense requirements have been completed successfully, the major advisor will ensure that the *Admission to Candidacy Form* is filed with the Graduate School.

6.3.2 Dissertation

The doctoral dissertation must demonstrate the candidate's mastery of the area of research, and must embody the results of an original investigation in the chosen field of study. It must give evidence of an exhaustive study of a spatial information science and engineering topic and must be an authoritative statement of knowledge on the subject or produce a new interpretation by rearrangement or re-analysis of existing data. The work must be a definite contribution to knowledge of sufficient importance to warrant its publication.

Rules for preparing the dissertation are outlined in *Guidelines for Thesis Preparation*, which is available from the Graduate School. It is the student's responsibility to be familiar with the format(s) acceptable to the Graduate School. Reference books on writing a thesis or dissertation might also be consulted.

Requirements imposed by the Spatial Information Science and Engineering Faculty:

The student will consult and work with his or her faculty advisor in writing the thesis. The student should feel free to consult with committee members and other faculty members as the research and writing progress. After all segments of the thesis have been completed and revised to the substantial satisfaction of the student's major advisor, the draft thesis with an accompanying cover letter from the major advisor is delivered to all members of the committee. This completed draft document must be in the hands of all committee members **at least six weeks** prior to any tentative final oral exam date. During the first three weeks of this period the committee must determine whether the thesis is sufficiently developed to allow an oral defense to be scheduled. Presuming that scheduling of an oral defense date is allowed by the committee, written comments regarding the dissertation will be forwarded by committee members to the student's advisor at any time up to and through the date of the oral defense.

One month before the date that the candidate intends to submit the dissertation to his or her committee, the thesis advisor selects a faculty from another university as **external examiner**. The external examiner must have no conflict of interest with the candidate or the advisor. Conflicts of interest include co-authorship, co-editorship, and joint research proposals (each over the last 48 months), as well as advisor-advisee relationships (lifetime). Upon submission of the thesis to the committee, the graduate coordinator sends a copy of the thesis to the external examiner and requests a written evaluation to be returned within four weeks. The committee has a closed meeting at least one week prior to the scheduled defense to review any comments from the external examiner and to confirm the defense date.

A doctoral degree thesis defense begins with an oral presentation by the student, which is advertised and open to the University community at large. While this is a public forum, family members are generally discouraged from attending. This is followed by a closed session in which the student is expected to respond to additional questions and comments by the advisory committee members. Recording of the oral thesis or dissertation presentation is permitted but limited to the duration of the candidate's presentation and excludes the subsequent question-and-answer period and the following closed session with the advisory committee members. Students

should also allow ample time after their thesis defense to address or accommodate the comments of committee members.

Graduate School Thesis Requirements:

At the beginning of the semester in which the graduate student plans to graduate, the student should download and follow the **Graduation Checklist** found at <http://www.umaine.edu/graduate/gs-documents-and-forms>. Deadlines are set forth in the checklist for the application for graduation, notice of oral examination, signed tentative thesis acceptance form, final date for oral examination, signed final thesis acceptance form and similar requirements. It is highly recommended that each student should go through the forms with the School of Computing and Information Science Administrative Assistant near the beginning of the semester in which the student intends to graduate to ensure that all requirements will be met.

A draft of the thesis, in a form acceptable for examination purposes, must be delivered to the Graduate School **at least 5 business days prior to the final oral examination**. A completed and signed *Tentative Thesis Acceptance Form* must accompany the thesis at this time.

After the oral exam and after corrections have been made and approved by all committee members and the thesis is in final form, the student needs to complete a *Final Thesis Acceptance Form*. This form must have all committee members' **original signatures** (*faxed or scanned signatures will not be accepted*) and be submitted to the Graduate School with the final thesis before graduation.

7. Application for Graduation

Graduation is not automatic upon completion of all program requirements. Candidates for degrees must submit an *Application for Degree Form* to the Office of Student Records according to the following schedule:

By November 15, for degrees to be awarded in December

By March 15, for degrees to be awarded in May

By March 15, for degrees to be awarded in August, if candidates are planning to attend the May graduation ceremony

By July 15, for degrees to be awarded in August