Graduate Student Guide

2020-2021, *Version1.6*

School of Computing and Information Science

CONTENT COVERAGE

Research-Based Academic Degrees

Ph.D. in Spatial Information Science and Engineering
https://spatial.umaine.edu/sie-graduate-info/#phd
Master of Science in Spatial Information Science and Engineering
https://spatial.umaine.edu/sie-graduate-info/#masters

Course-Based Academic Degrees

Master of Science in Spatial Informatics (distance only)
https://spatial.umaine.edu/sie-graduate-info/#masters
Master of Science in Information Systems
https://umaine.edu/msis/graduate-programs-overview/curriculum-and-degree-requirements/

Graduate Certificates

Graduate Certificate in Computing for Educators
Graduate Certificate in Geographic Information Systems
Graduate Certificate in Information Systems
https://spatial.umaine.edu/graduate-certificates/

School of Computing and Information Science
University of Maine
5711 Boardman Hall, Rm 348
Orono, ME 04469-5711
Contact: (207) 581-2188

Table of Contents

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 in certain specified programs. 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 (SCIS). Each student's advisory committee may impose additional requirements as set forth in their program of study.

Exceptions to the guidelines contained in this document may be made by majority vote of the Spatial Informatics / Information Systems Graduate Faculty. Items labeled in these guidelines as *recommendations* may be instituted or not by majority vote of the graduate students' advisory committees.

In the event of a conflict between this guide and the rules and regulations of the Graduate School, the more restrictive provisions apply. Student in doubt as to which courses are required or what procedures should be followed, are urged to consult with (1) their major advisor (also known as advisory committee chairperson or thesis advisor), (2) the program Graduate Coordinator, and (3) the Graduate School.

1.2 Contact Information

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http://umaine.edu/msis/
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Harlan Onsrud, SIE/MSIS Graduate Coordinator harlan.onsrud@maine.edu

2. Overview of the Graduate Programs

2.1 Academic 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 http://gradcatalog.umaine.edu/. Because the links in the official catalog are not persistent over time, we instead provide you with "bread crumbs" to find the appropriate requirements. Because the catalog is updated only once per year, we provide you also with the SCIS web site for the program where you can expect to find updates if any are being imposed.

2.1.1 Ph.D. in Spatial Information Science and Engineering

Official University Catalog Description and Degree Requirements: http://gradcatalog.umaine.edu/ choose current graduate catalog in pull down menu > choose Graduate Programs, Certifications, Specializations in left menu > choose Spatial Information Science & Engineering > consult Doctor of Philosophy in Spatial Information Science and Engineering.

Supplemental Information:
https://spatial.umaine.edu/sie-graduate-info/#phd

2.1.2 Master of Science in Spatial Information Science and Engineering

Official University Catalog Description and Degree Requirements: http://gradcatalog.umaine.edu/ choose current graduate catalog in pull down menu > choose Graduate Programs, Certifications, Specializations in left menu > choose Spatial Information Science & Engineering > consult Master of Science in Spatial Information Science and Engineering.

Supplemental Information:
https://spatial.umaine.edu/sie-graduate-info/#masters

2.1.3 Master of Science in Spatial Informatics (Online Only Degree)

Official University Catalog Description and Degree Requirements: http://gradcatalog.umaine.edu/ choose current graduate catalog in pull down menu > choose Graduate Programs, Certifications, Specializations in left menu > choose Spatial Informatics > consult Master of Science in Spatial Informatics.

Supplemental Information:
https://spatial.umaine.edu/sie-graduate-info/#masters

2.1.4 Master of Science in Information Systems

Official University Catalog Description and Degree Requirements: http://gradcatalog.umaine.edu/ choose current graduate catalog in pull down menu > choose Graduate Programs, Certifications, Specializations in left menu > choose Information Systems.

Supplemental Information:
https://umaine.edu/msis/curriculum-and-degree-requirements/#master

2.1.5 Graduate Certificate in Computing for Educators

Official University Catalog Description and Degree Requirements: http://gradcatalog.umaine.edu/ choose current graduate catalog in pull down menu > choose Graduate Programs, Certifications, Specializations in left menu > choose Computing for Educators (Certificate)

Supplemental Information:
https://spatial.umaine.edu/graduate-certificates/

2.1.6 Graduate Certificate in Geographic Information Systems

Official University Catalog Description and Degree Requirements: http://gradcatalog.umaine.edu/ choose current graduate catalog in pull down menu > choose Graduate Programs, Certifications, Specializations in left menu > choose Geographic Information Systems (Certificate)

Supplemental Information:
https://spatial.umaine.edu/graduate-certificates/

2.1.7 Graduate Certificate: Information Systems

Official University Catalog Description and Degree Requirements: http://gradcatalog.umaine.edu/ choose current graduate catalog in pull down menu > choose Graduate Programs, Certifications, Specializations in left menu > choose Information Systems (Certificate)

Supplemental Information:
https://spatial.umaine.edu/graduate-certificates/

2.2 Graduate Faculty

The term g*raduate faculty* sometimes has different meanings as used in this document and the following abbreviations are used to indicate the meaning intended.

GF-1: Faculty member must have a tenured or tenure-eligible appointment within the School of Computing and Information Science in Spatial Informatics and meet the Full Graduate Faculty Criteria for Spatial Informatics.

http://spatial.umaine.edu/faculty/

GF-2: Graduate Faculty affiliated with the Spatial Informatics or Information Systems Academic Programs.

GF-3: Other UMaine Graduate Faculty.

GF-4: External Graduate Faculty (persons accepted by SCIS and the UMaine Graduate School to formally serve on the committees of graduate students).

The Graduate School distinguishes *Full Graduate Faculty* members who may serve as advisors or committee members of a student's advisory committee, *Associate Graduate Faculty*, who may serve as committee members, and *External Graduate Faculty*, who may also serve as committee members. For the graduate degrees and programs covered in this guide, Full Graduate Faculty of type GF-1 may serve as chairs or members of advisory committees. Graduate Faculty of type GF-1, GF-2, GF-3, and GF-4 may serve as committee members.

If 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 (secondary) co-advisor, together with the first advisor, who must be of type GF-1.

The specific compositions of the different advisory committees are specified in Section 2.3.1-2.3.4.

2.3 Advisory Committees

The 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.

The major advisor must be an SCIS Graduate Faculty member affiliated with the Spatial Informatics or Information Systems Academic Programs (GF-1). A non-GF-1 committee member may serve as (secondary) advisor if that committee member has a substantial supervisory role, akin to the major advisor, but may not serve as sole chair of a SCIS graduate student's advisory committee nor as sole major advisor of the dissertation or thesis.

2.3.1 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, at least **three** of whom must be SCIS Graduate Faculty affiliated with the Spatial Informatics or Information Systems Academic Programs (GF-1). At least one member of the committee should be from the UMaine Graduate Faculty other than the three GF-1 members (i.e., GF-2 or GF-3). Any remaining committee members may be from any graduate faculty group (i.e., GF-1, GF-2, GF-3, or GF-4). If a graduate faculty member external to the University (GF-4) does not sit on the committee, an examiner external to the University of Maine is strongly recommended, but this person is not an official member of the advisory committee.

2.3.2 Thesis and Project-Based Master's Degrees

The advisory committee for a thesis-based or project-based Master's student is composed of a minimum of **three** committee members of the University of Maine Graduate Faculty, at least **two** of whom must be SCIS Graduate Faculty affiliated with the Spatial Informatics or Information Systems Academic Programs (GF-1). The third committee member can be from any graduate faculty group (i.e., GF-1, GF-2, GF-3, or GF-4).

2.3.3 All Coursework Master's Degrees

For an all-coursework Master's degree, such as the MS in Information Systems or the MS in Spatial Informatics, the graduate coordinator for the academic degree program serves as the chair (and entire membership) of the Advisory Committee to approve the Program of Study and ensure that all coursework requirements have been met. Students, at their discretion, may request an alternative major advisor and/or an expanded advisory committee.

2.3.4 Graduate Certificates

Because graduate certificates, such as in *Geographic Information Systems*, *Information Systems*, or *Computing for Educators*, are all coursework, the graduate coordinator for that academic program serves as the chair (and entire membership) of the Advisory Committee to approve the student's Program of Study and ensure that all coursework requirements have been met. Students, at their discretion, may request an alternative major advisor and/or an expanded advisory committee.

2.3.5 Changes in Thesis and Project-Based Advisory Committees

All requests for changes in a graduate student's advisory committee must be submitted by email or in writing by the student's major advisor to the Graduate Coordinator for the academic unit. The Graduate Coordinator will review such recommended changes and, if approved, notify the Director of the Graduate School about the changes in the advisory committee. In the case that a

Ph.D. candidate requests the exchange of the chair of his or her committee, the request, if disputed by the current chair, 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 passes a new proposal defense with the newly composed committee prior to continuing with his or her dissertation.

3. Additional Program Requirements

3.1 Program of Study

All graduate students must complete a formal *Program of Study (PoS)*. The appropriate form may be downloaded from the Graduate School website.
Ph.D. PoS:
https://umaine.edu/graduate/wp-content/uploads/sites/551/2017/07/POS_D.pdf
M.S. PoS:
https://umaine.edu/graduate/wp-content/uploads/sites/551/2017/07/POS_MC.pdf
Graduate Certificate PoS:
https://umaine.edu/graduate/wp-content/uploads/sites/551/2015/09/POS_Cert.pdf

The PoS 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 PoS 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 their signed and dated PoS.

The coordinator for a graduate program is typically the sole signatory for all coursework master's programs, such as the MS in Information Systems, the MS in Spatial Informatics, the Graduate Certificate in Computing for Educators, the Graduate Certificate in Geographic Information Systems, and the Graduate Certificate in Information Systems.

Students admitted to the Ph.D. program with only a Bachelor's degree receive only the Ph.D. degree upon completion of that program. While the program of study may encompass a 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 initial approved PoS, it becomes the student's required curriculum. Changes in the PoS may be made by submitting to the Graduate School a *Change in Program of Study* form (https://umaine.edu/graduate/wp-content/uploads/sites/551/2016/06/ChangePOS.pdf). Students and faculty should typically coordinate revision forms and procesess through the Administrative Support Supervisor, Karen Kidder.

3.2 Breadth Requirements for Spatial Information Science and Engineering Graduate Degree Programs

The research-focused graduate degrees of *Ph.D. in Spatial Information Science and Engineering* and *Master of Science in 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 Ph.D. students to move further in the graduate program.

The university catalog specifies the number and categories of breadth courses that must be met. See http://gradcatalog.umaine.edu/ > choose current graduate catalog in pull down menu >

choose *Graduate Programs, Certifications, Specializations* in left menu > choose *Spatial Information Science & Engineering* > consult either Master of Science or Doctor of Philosophy in Spatial Information Science and Engineering as appropriate.

The graduate courses actually meeting specified course breadth categories are set forth in the Annual Schedule of SIE Graduate Courses (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 may submit a *Petition for Waiver of Breadth Requirement* that details the request and, if needed, provides supporting documentation. The Breadth Area Coordinator evaluates the request and, if approved, responds with the decision to the student, the Graduate Coordinator, and the Administrative Support Supervisor.

Breadth Area Coordinators are:

• Kate Beard: geographic information systems
• Nicholas Giudice: spatial interaction and cognition
• Torsten Hahmann: formal representations of spatial phenomena
• Silvia Nittel: database systems
• Harlan Onsrud: information law and policy

3.3 Depth Requirements for Ph.D. Students

The coursework of a Ph.D. student must include 12 graduate credits of depth in one or more areas closely related to the student's dissertation. At least six of these 12 credits must be topical SIE graduate courses (thesis credits, internship credits, and such 1-credit courses SIE 501, SIE 502, SIE 693, SIE 694, and INT 601 do not count). The remaining six graduate credits for depth may be from any relevant graduate program, including further SIE graduate courses.

Any depth credits cannot count simultaneously as credit in the student's breadth requirements.

Appropriate depth credits may be transferred from a prior graduate degree into the Ph.D. program if the student's advisory committee considers that the related courses provided the expected depth related to the dissertation topic.

3.4 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 adviser and must be delivered to the Administrative Support Supervisor (i.e., Karen Kidder) for the School of Computing and Information Science*, who will enter the registration. Graduate students who are on a research assistantship during the summer, must register for one credit.

4. Annual Schedule of SIE Graduate Courses

All SIE graduate courses are offered by distance.

The following tables 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 for planning purposes. Exceptions almost always apply so check the official online University of Maine graduate course schedule each semester in MaineStreet.

4.1 Fall Semester 2020 Schedule

Course	Credits	Instructor	Prereq	PhD-SIE & MS-SIE (Thesis)	MS-SIE (Project)	MS-IS & MS-SI	Grad Cert CfE	Grad Cert GIS	Grad Cert IS	Breadth Designator applies to PhD-SIE & MS-SIE (Thesis)
				Required Courses						
SIE 502 Research Methods	1	Egenhofer	SIE 501	x						
SIE 507 Information Systems Programming	3	Ranasinghe		x	x	x	x		x	
SIE 509 Principles of GIS	3	Egenhofer						x		
SIE 512 Spatial Analysis	3	Beard	statistics							GIS
SIE 515 Human Comupter Interaction	3	Giudice				x			x	Interaction & Cognition
SIE 550 Design of Information Systems	3	Egenhofer				x			x	Database
SIE 559 GeoSensor Networks	3	Nittel	SIE 507 or permission							
SIE 589 Graduate Project	3	all			x					
SIE 590 Information Systems Internship	3	Onsrud								
SIE 699 Graduate Thesis	≥1	all		x						
INT 601 Responsible Conduct of Research	1	Onsrud		x	x					

4.2 Spring Semester 2021 Schedule

Course	Credits	Instructor	Prereq	Required Courses						Breadth Designator applies to PhD-SIE & MS-SIE (Thesis)
				PhD-SIE & MS-SIE (Thesis)	MS-SIE (Project)	MS-IS & MS-SI	Grad Cert CfE	Grad Cert GIS	Grad Cert IS	
SIE 501 Introduction to Graduate Research	1	Egenhofer		x						
SIE 508 Object-Oriented Programming	3	Nittel	SIE 507				x			
SIE 510 GIS Applications	3	Beard	SIE 509					x		GIS
SIE 516 Virtual Reality Research and Applications	3	Giudice								Interaction & Cognition
SIE 517 Spatial Interaction Design	3	Ranasinghe								Interaction & Cognition
SIE 525 Information Systems Law	3	Onsrud				x			x	Law
SIE 557 Database System Applications	3	Nittel	SIE 507					x		
SIE 589 Graduate Project	3	all			x					
SIE 590 Information Systems Internship	3	Onsrud								
SIE 693 Graduate Seminar	1	Egenhofer	SIE 502	x						
SIE 694 - Doctoral Seminar	1	Egenhofer	SIE 693	for PhD candidates						
SIE 699 Graduate Thesis	≥1	all		x						
INT 601 Responsible Conduct of Research	1	Onsrud		x	x					

4.3 Summer 2021 Schedule

Course	Credits	Instructor	Prereq	PhD-SIE & MS-SIE (Thesis)	MS-SIE (Project)	MS-IS & MS-SI	Grad Cert CfE	Grad Cert GIS	Grad Cert IS	Breadth Designator applies to PhD-SIE & MS-SIE (Thesis)
				Required Courses						
SIE 504 Beauty and Joy of Computing	3	Holden					x			
SIE 699 Graduate Thesis	≥1	all		x						
INT 601 Responsible Conduct of Research	1	Onsrud		x	x					

4.4 SIE Graduate Courses Not Offered in Academic Year 2021

The following SIE graduate courses will not be offered in Fall 2020, Spring 2021, or Summer 2021.

Course	Credits	Instructor	Prereq	Required Courses						Breadth Designator applies to PhD-SIE & MS-SIE (Thesis)
				PhD-SIE & MS-SIE (Thesis)	MS-SIE (Project)	MS-IS & MS-SI	Grad Cert CfE	Grad Cert GIS	Grad Cert IS	
SIE 503 Principles of Experimental Design	1	Giudice	SIE 501							
SIE 505 Formal Foundations for Information Science	3	Hahmann					x			Formal
SIE 554 Spatial Reasoning	3	Egenhofer								Formal
SIE 555 Spatial Database Systems	3	Nittel						x		Database
SIE 558 Real-Time Sensor Data Streams	3	Nittel								Database
SIE 559 Geosensor Networks	3	Nittel								Database

4.5 Research Methods Course Series

SIE-Ph.D. and MS-SIE (thesis) students should take the required series of three 1-credit research courses as follows:

Year 1, Spring Semester: SIE 501

Year 2, Fall Semester: SIE 502, Spring Semester: SIE 693

SIE 502 and SIE 693 require graduate students have sufficiently advanced their dissertation or thesis research so that they can deliver professional talks about their work. For students who do not pursue a thesis or dissertation, these courses are inappropriate.

Upon completion of this 3-course sequence, SIE-Ph.D. students need to take each Spring Semester, until graduation, the doctoral seminar SIE 694.

4.6 Minimum Programming Requirement

All students in all degrees must take SIE 507, 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, they should be

able to quickly learn other programming languages in the future, either on their own or in other courses.

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. All graduate students pursuing a dissertation or thesis are required to complete INT 601 or an equivalent course.

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/pdf/conductcode.pdf

UMaine Policy & Procedures on Alleged Misconduct in Research and other Scholarly Activities

https://umaine.edu/research-compliance/research-misconduct/

UMaine Policies & Procedures for Financial Disclosures and Conflicts of Interest in Extramurally Sponsored Activities (PDF) https://umaine.edu/research- compliance/financial-conflict-of-interest/

Research Compliance: Protection of Human Subjects of Research https://umaine.edu/research-compliance/human-subjects/

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/pdf/intprop.pdf

Note that the official policy is to encourage faculty and students to make their works accessible as possible by licensing articles and other works under an open access license whenever feasible. (Example: Creative Commons Attribution 4.0 International License). 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 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.

6.2 Ph.D. Dissertation Process

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

If a student is initially admitted to the Ph.D. program without a master's degree or with a master's degree in an unrelated area and if the student completes all required courses for the doctoral program and successfully defends the proposal topic for the Ph.D., then the Ph.D. proposal defense may be accepted by the Ph.D. advisory committee as the project for a project-based Master's degree.

6.2.2 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 new 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 new knowledge of sufficient importance to warrant its publication.

Rules for preparing the dissertation are outlined in *Guidelines for Thesis/Dissertation/Project Preparation* (https://umaine.edu/graduate/wp-content/uploads/sites/551/2019/03/Thesisguidelines.pdf). It is the student's responsibility to be familiar with the format(s) acceptable to the Graduate School. Reference books on writing a dissertation might also be consulted.

6.2.2.1 Articles *in lieu* of a Traditional Ph.D. Dissertation

In lieu of the traditional form of a dissertation, the graduate committee of a Ph.D. candidate in the School of Computing and Information Science may approve a dissertation to take the form of a progression of three or more refereed articles in outlets approved by the committee. The candidate must be sole or lead author of any included article, the articles should be inserted in the dissertation with the final wording and figures in which they have been or will be published, the

dissertation should include introduction and conclusion chapters explaining ties among the articles and the research progression and the candidate must ensure legal clearance for the articles prior to submission to publishers to ensure that the dissertation may be included in the University's open access digital thesis repository. The committee may choose to require acceptance for publication of one of the papers prior to defense of the dissertation proposal and admission to Candidacy.

6.2.2.2 Requirements Imposed by the School of Computing and Information Science Faculty

The student will consult and work with his or her major 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 four 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 the committee approves scheduling of an oral defense date, committee members will forward written comments regarding the dissertation 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, it is highly recommended that the thesis advisor selects a faculty from another university as **external** examiner if there is no external graduate faculty member (GF-4) sitting on the committee. The external examiner should 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 program 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.

6.3 Master's Degree Thesis Process (MS-SIE)

A thesis is required for the degree of Master of Science in Spatial Information Science and Engineering in the School of Computing and Information Science (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 preparing the dissertation are outlined in *Guidelines for Thesis/Dissertation/Project Preparation* (https://umaine.edu/graduate/wp-

content/uploads/sites/551/2019/03/Thesisguidelines.pdf). It is the student's responsibility to be familiar with the format(s) acceptable to the Graduate School. Reference books on writing a thesis might also be consulted.

The student should consult with and work with his or her major 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 thesis document must be in the hands of all committee members at least four 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, committee members will forward written comments regarding the thesis 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. 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 with the explicit permission of the candidate and the advisory committee but must be limited to the duration of the candidate's presentation and should exclude 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.

6.4 Graduate School Requirements

The Graduate School maintains the Forms and Documents web page (https://umaine.edu/graduate/students/forms-and-documents/), which is a resource that all graduating students should examine very carefully. Of particular importance are:

• Graduation checklist

• Thesis guidelines

• Final thesis acceptance form

• Completion of requirements form

Deadlines are set forth in the checklist for the application for graduation, notice of oral examination, submission of the 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 Support Supervisor near the beginning of the semester in which the student intends to graduate to ensure that all requirements will be met.

The tentative manuscript of the dissertation or 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**. The candidate must work with the advisor to ensure that at the same time the *Tentative Thesis Acceptance Form* (https://umaine.edu/graduate/facultystaff-resources/tentative-thesis-acceptance-form/) is also submitted to the Graduate School.

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* https://umaine.edu/graduate/resource/final-thesis-acceptance/). This form, with original signatures of all committee members, must 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 the application for graduation in MaineStreet.

The deadlines for each semester are:

• May – February 1

• August – July 15

• December – October 1

Various other deadlines associated with graduations in Spring, Summer, and Fall are available through the Graduate School's Forms and Documents Web page (https://umaine.edu/graduate/students/forms-and-documents/) under Graduation Checklist.