RIT | Golisano Institute for Sustainability

M.S. Program in Sustainable Systems:
Graduate Student Guidelines
(revision date August 2025)

The purpose of the Graduate Student Guidelines is to acquaint students with the requirements of the Sustainable Systems M.S. program and to help guide them through their course of study. These guidelines have been created to capture and clarify the policies and procedures governing graduate study and research in the GIS M.S. program. If questions arise, the student should seek clarification from their academic advisor, the Department Head, or the Administrative Assistant.

Introduction

The Golisano Institute for Sustainability offers the Master of Science (M.S.) in Sustainable Systems focusing on sustainable production, energy, mobility, and information technology systems. This multidisciplinary program is designed for students who are driven to become sustainability change agents within organizations worldwide, including academia, national labs, industry, government, nongovernmental agencies, professional associations, and financial and investment communities. The GIS faculty is committed to offering students an education that prepares them to be the innovators and leaders in new sustainability frontiers.

These guidelines are intended to provide students with information about the program and to help guide them through their program of study. Faculty and staff are always ready to provide additional assistance.

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The Sustainable Systems M.S. Degree

The Master of Science degree in Sustainable Systems requires independent work and a mastery of the fundamentals of sustainability covered in the core Sustainability coursework. Two M.S. options are offered:

- Thesis – intensive research experience with a faculty member, leading to a formal written thesis that is publicly defended and published. The Thesis option will require more time to complete than the Capstone option. It is generally a more rigorous research experience, with a goal that the student makes a novel contribution to knowledge in the area of sustainable systems. The Thesis option is therefore suitable for those interested in careers involving research or future pursuit of a Ph.D. degree.
- Capstone – culminating experience during the summer after the first academic year or independently during the academic year. The capstone may include research, practical work experience, or consulting-style projects, wherein students apply concepts from coursework to solving real-world sustainability challenges. The Capstone option can generally be completed in a shorter timeframe than the Thesis option, and thus may be suitable for students with time constraints. Because the Capstone option does not have the goal of a novel contribution to knowledge, it is suited for students interested in a broad range of sustainability careers.

The choice between Thesis or Capstone should consider available time, resources, career goals, and interest in research. The value of a thesis may be perceived differently by various potential employers, e.g. consulting, industry, academia, government and non-governmental organizations. These options are described in greater detail below.

Responsibility

It is the student's responsibility to understand the requirements of the Sustainability M.S. degree program and to track progress using the checklist provided below. Official progress toward the M.S. degree is maintained by the Golisano Institute for Sustainability Program Office. Access to that information is available to each student upon request to the Program Assistant. All degree requirements are published yearly in the RIT catalog. Questions regarding changes in the curriculum should be directed to the Program Office.

Degree Requirements

For a student to be granted the M.S. degree, they must satisfy the following minimum requirements:

1. Complete a minimum of 30 total semester credit hours, including a minimum of 24 graduate-level coursework credit hours and a minimum of 6 credit hours of thesis or capstone credits (all 30 credits are tuition-bearing).
2. Complete either the Thesis or Capstone option, including passing the Thesis Defense Examination in the former case.

Timelines and checkpoints for these two research options, and other steps in progressing through the degree process, are summarized below.

Sustainability M.S. Program Checklist – Thesis Option

Requirement	After	Before	Form/Action to Complete	Done?	Date completed
1. Complete Full Time Equivalency Form (if needed)		One week prior to beginning of each semester	Full Time Equivalency***		
2. Update Program Checklist Form		As appropriate	This table*		
3. Submit Program of Study Form		February 1, first year of full time study; update as appropriate	M.S. Program of Study Form*		
4. Complete Transfer Credit and/or Waiver forms		If appropriate, concurrently with Program of Study form	Transfer Credit Application / Waiver Application Form*		
5. Identify Thesis Advisor and agree on research topic		May 1, first year of full time study	M.S. Thesis Approval Form*		
6. Form Thesis Committee		Beginning of fall semester, 2nd year	M.S. Thesis Committee Formation*		
7. Submit Application for Graduation		2 semesters before completing requirements for degree	Application for Graduation***		
8. Finish all required coursework		By end of graduation term	Update M.S. Program of Study* (#3 above)		
9. Submit Thesis to Committee		Two weeks prior to defense			
10. Publicize defense		Two weeks prior to defense	Email Dept. Head and Program Assistant*		
11. Pass Thesis Defense	Two weeks after scheduling defense	Approximately two months prior to certification deadline	Thesis cover sheet & Report of the Thesis Defense**		
12. Submit Thesis to ProQuest	Signing Thesis cover sheet & Report of Thesis Defense	Seeking degree certification	Submitted thesis following https://infoguides.rit.edu/thesis-services		
13. Transfer data and closeout on campus	Thesis Defense	Seeking degree certification	Data Transfer and Exit Checklist Form*		
14. Obtain degree certification	Passing thesis defense	Seven years after enrolling	M. S. Graduation Certification**		

* To be completed by student; Forms obtained at the MS and PhD students MyCourses page.

** To be completed by Sustainability faculty, Department Head, or Program Assistant.

*** Form obtained at http://www.rit.edu/academicaffairs/registrar/forms.

Sustainability M.S. Program Checklist – Capstone Option

Requirement	After	Before	Form/Action to Complete	Done?	Date completed
1. Complete Full Time Equivalency Form (if needed)		One week from beginning of each semester	Full Time Equivalency***		
2. Update Program Checklist Form		As appropriate	This table*		
3. Submit Program of Study Form		February 1, first year of full time study; update as appropriate	M.S. Program of Study*		
4. Complete Transfer Credit and/or Waiver forms		If appropriate, concurrently with Program of Study form	Transfer Credit Application / Waiver Application Form*		
5. Submit Application for Graduation		2 semesters before completing requirements for degree	Application for Graduation***		
6. Finish all required coursework		By end of graduation term	M.S. Program of Study* (#3 above)		
7. Select Capstone experience	Enrollment in capstone credit course	Timelines vary with each option (see below) but no later than May 1 of first year of full-time study	M.S. Capstone Approval Form*		
8. Submit Capstone document to capstone supervisor, academic advisor and Department Head		End of final capstone credits (typically Aug 1 of summer semester)	Follow Capstone Guidelines		
9. Transfer data and closeout on campus	Finishing Capstone experience	Seeking degree certification	Data Transfer and Exit Checklist form*		
10. Obtain degree certification	Approval of Capstone		M.S. Graduation Certification **		

* To be completed by Student; Forms obtained at the MS and PhD students MyCourses page.

** To be completed by Sustainability faculty, Department Head, or Program Assistant.

*** Form obtained at http://www.rit.edu/academicaffairs/registrar/forms.

Coursework

The M.S. requires students to complete 30 credit hours, which include

- 6 credits of (tuition-bearing) capstone or thesis,
- 6 credits of open electives
- 3 credits of a policy-focused elective
- 15 credit hours associated with the core courses.

The five core courses are designed to ensure that students have a well-rounded basis in sustainability:

ISUS-702	Fundamentals of Sustainability Science;
ISUS-704	Industrial Ecology;
ISUS-706	Economics of Sustainable Systems;
ISUS-806	Risk Analysis;
ISUS-808	Multicriteria Sustainable Systems Analysis

General Course Requirements

a. Each student must develop a Program of Study and obtain approval of their academic advisor.
b. The coursework must consist of graduate courses (600-900 level).
c. All M.S. students are required to maintain a cumulative grade point average of 3.0/4.0 to remain in good standing in the program.

Potential Electives

Graduate-level courses offered by any college at RIT may be acceptable electives, pending approval by the advisor and Department Head via the Program of Study. Before selecting an elective, students must check the prerequisites and seek the concurrence of their advisor and the faculty member offering the course.

Policy Elective Requirement

The Program requires that a student take one course (3 credit hours) on a policy subject. Technology, Policy, and Sustainability (PUBL-810) is the course recommended to meet this policy requirement. However, this course is not offered every semester and/or may not fit in a student's schedule. Students may take alternate policy courses with the approval of their advisor via the Program of Study. Several such alternate courses are listed below, although others can be considered in consultation with the advisor:

ISUS 620 - Sustainability in the Global South
ENVS-631 or PUBL-631 - Climate Change: Science Technology & Policy
PUBL-630 - Energy Policy
PUBL-610 - Technological Innovation and Public Policy
PUBL-701 - Graduate Policy Analysis
PUBL-702 - Graduate Decision Analysis

Program of Study

By no later than February 1 of the first year of full-time study, a student should prepare an M.S. Program of Study, which records core and elective courses and research credits completed and anticipated. The form should be signed by the student, the advisor, and the Department Head. The Program of Study should be reviewed periodically by the student and the advisor and modifications should be made as necessary. The Program of Study must match the student's transcript at the point of Degree Certification.

Applying Coursework from Prior University Programs

It may be possible to transfer credits earned in prior graduate work to count towards your M.S. Transfer of credits requires the approval of the advisor and the Department Head. A maximum of 6 credit hours may be transferred from other graduate programs at RIT or other institutions, with grades of B or above. Credit transfer is approved via the Transfer Credit Application form and the Program of Study form, both of which must be approved by the academic advisor and Department Head. Course credits carrying a pass/fall grade are not transferable.

Separate from the transfer of credit, if prior coursework overlaps significantly with content of a core course, the student may apply to waive the course(s) at GIS. Approval of the waiver depends on the student providing suitable documentation of equivalency, which may include syllabi, papers, projects, or assignments. The decision must be approved by the instructor currently teaching the core course, through use of the Waiver Application Form. Note that waiving does not reduce total credit hours of coursework that must be taken.

Registering for Courses

Students are responsible for course registration each semester. On-line registration takes place during each preceding semester (except fall semester registration, which opens during the preceding spring). While first year students are typically registered for their first fall core courses by default, it is the responsibility of the student to verify enrollment and full time status and to make appointments with their advisor at the time of early registration to facilitate course substitutions, elective requests, and updates to the Program of Study.

Credit Limitations

A normal full time course load is nine credit hours. However, students intending to graduate in one calendar year should take 12 credit hours in the Fall and Spring. The Department Head may limit the total number of credit hours a student may take in the event of probationary academic standing. Courses should be selected in consultation with the student's advisor.

Full Time Equivalency

A full-time graduate academic workload is defined as a minimum of 9 academic credits per semester or an equivalent amount of coursework and research. Students taking less than 9 course credits establish full time equivalency each semester by completing the Graduate Student Full-time Equivalency form, typically specifying that the remaining credits are associated with research assistant activities. The purpose of the form is to illustrate that the research work you are doing outside of your classes is equivalent to being enrolled full-time.

Summer Registration

M.S. Capstone students aiming to complete the degree in one calendar year (certifying at the end of summer term), typically register for their 6 credits of Capstone Research (ISUS 780) in the summer. These are tuition-bearing, graded credits, *meaning that students must pay tuition when they sign up for capstone credits*. If students are using a summer co-op or internship to fulfill the Capstone Co-op option, they would simultaneously register for Sustainability Co-op (ISUS 699) during the summer. Any students doing a co-op or internship separate from capstone will also register for ISUS 699. Note that Sustainability Co-op is a non-tuition bearing course and provides full-time status.

There are some special registration cases for students doing research and/or needing to maintain full time status over the summer. MS Thesis students finished with course work but still completing their thesis over the summer and/or MS students funded in summer as a GRA, will need to 1) register for a zero-credit Continuation of Thesis credit and 2) complete a Full Time Equivalency (FTE) form specifying that you are doing research proportional to the full time (9 credit hour) class load. These are not tuition-bearing credits and do not count toward degree minimums. The final decision about summer research credit registration is made by consulting the advisor and reviewing the Program of Study Form to ensure they are on track to earn the total credits needed by planned graduation date.

Schedule Verification and Changes

Following early registration, students will have access to their schedule on SIS. A student may change their schedule at any time up to the end of the drop/add period during each semester, following the procedure outlined by the RIT Registrar. Students are strongly encouraged to consult with their advisor or the Department Head before adding or dropping classes. Changes in a course schedule through drop/add are not reflected on a student's semester grade report or permanent record.

Course Withdrawal

If a student wishes to stop participating in a class after the drop/add period, the student must officially withdraw from a course and will receive a grade of W. This grade will be reflected on a grade report and permanent record. Withdrawal from a course during the first year that causes a student to carry less than nine academic credits (or causes loss of full-time status) may result in withdrawal of student funding, if applicable. Course Withdrawal forms are available from the Registrar. Additional information regarding course withdrawal may be found at https://www.rit.edu/academicaffairs/policiesmanual/d050

Schedule of Record

Official notification of a student's final course schedule for a current semester is via SIS. The student should check this information carefully. It is the student's responsibility to check the accuracy of this information and to pursue the necessary corrections. Official registration for a course that a student does not attend could result in course overload, F grade, and loss of

funding. Not registering for a course or the right number of hours for a variable credit course may result in the student receiving no credit or insufficient credit for graduation requirements.

Academic Integrity

As a university, RIT is committed to the pursuit of knowledge and the free exchange of ideas. In such an intellectual climate it is fundamentally imperative that all members of this academic community behave in the highest ethical manner as they produce, share, and exchange this information. In the case of students, academic honesty demands that at all times student work be the original product of that individual student, and that any information which a student uses in a work submitted for evaluation be properly documented. Any violation of these basic standards constitutes a breach of academic integrity.

GIS follows RIT policy regarding definitions, principles, and procedures surrounding academic integrity. It is the student's responsibility to review and understand RIT's Academic Integrity Policy located at https://www.rit.edu/academicaffairs/policiesmanual/d080.

Specific things to note:

- Individual submissions should reflect a student's own work and understanding.
- It is not acceptable to copy someone else's work and hand it in as your own, to provide solutions to other people to copy, or to submit duplicate materials to different classes.
- In cases where group work is allowed on individual class assignments, the goal is for students to collaborate towards developing a better understanding of the subject. Each student should complete their own work for submission; it is not acceptable to take work done by one or a few students in a group and present it as your own.
- There is zero tolerance for plagiarism, which is using someone else's published work without giving them proper credit. Plagiarism includes copying text directly from other sources ("copy-paste"), failing to either directly quote or paraphrase others' words and ideas, and/or not properly citing other's work.
- The first instance of academic dishonesty in a class will result in a zero grade on the assignment.
- The second instance in a class will result in zero grade on the assignment and the highest possible grade for the class being lowered to "B" (actual grade may be lower depending on performance).
- The third or further instance in a class or across classes will be reviewed by the entire Sustainability faculty and receive more severe outcomes; possibly to include the student failing a course or suspension from the program.
- All instances of academic dishonesty will result in the notification of the Department Head, Core GIS faculty, and the student's Advisor
- Resources are available (https://library.rit.edu/citations/) on the appropriate use and citation of sources

Course Attendance

Attendance is encouraged to get the most benefit from a course, but it is understood that occasional absences may be unavoidable. Students should not come to class if they are sick.

Students are requested to provide advance notice of an absence if possible, and it is the student's responsibility to obtain course materials and complete any missed work. GIS courses are not designed for online delivery. Some instructors may post online content needed to complete missed work, including, slides, readings, and problem solutions, but these should not be viewed as a replacement for in-person attendance.

Grading Policies

Students are encouraged to make alternate arrangements with the instructor if it is anticipated that an assignment will be submitted late. Instructors may apply a point penalty to late submission. If students have any concerns about their performance or grades, it is recommended to be proactive and meet with the instructor at the earliest opportunity to come up with a plan for improvement. Barring instructor error, no final grade changes will be possible.

Course Resources and Accommodations

Any RIT student with a permanent or temporary disability can register and request accommodations. If applicable, please receive accommodation approval from the DSO, then see the instructor to work out the needed arrangements: https://www.rit.edu/disabilityservices. Without approved accommodations, GIS faculty cannot provide exceptions or special course arrangements for individual students.

Students who would like additional support in academic skills (reading, writing, study methods, etc.) are encouraged to contact the Academic Support to learn about available resources: https://www.rit.edu/academic-support. Finally, GIS considers the diversity of its students, faculty, and staff to be a strength and critical part of its educational mission. Every member of the course is expected to contribute to an inclusive and respectful culture. If there are aspects of the design, instruction, and/or experiences within a course that result in barriers to a student's inclusion, they should notify the instructor as soon as possible.

Time Limitations: the "Seven-Year Rule"

All candidates for the Master degree must maintain continuous enrollment during the completion of the program. Such enrollment is not limited by the maximum number of research credits that apply to the degree. Normally, full-time students complete the course of study for the M.S. in a minimum of one academic year for the Capstone option, to a maximum of two academic years for the Thesis option. The seven-year rule requires that all courses used towards the Sustainability M.S. program be completed within seven years of the date the student enters the program. Prerequisite courses are excluded from this rule. The purpose of the rule is to ensure that graduate students have current knowledge in their fields of study when certified by RIT.

If a student does not complete all program requirements within the seven-year time period, course(s) more than seven years old can no longer be counted towards the requirements of the program of study. If this occurs, the student must complete additional course(s) to replace the credit that has expired. If extenuating circumstances prevent a student from completing within the seven-year timeframe, the student may appeal to the Dean of Graduate Studies for

permission to complete the degree while retaining the expired course(s). In rare cases, extensions of the seven-year rule may be granted. Petition for an extension is made to the Dean of Graduate Studies, and is initiated via written request to the Department Head.

Graduate Research Assistantships and Evaluation

GIS faculty may occasionally choose to financially support M.S. students with a graduate research assistantship (GRA) from a sponsored research project. A GRA is a fixed stipend position, typically associated with thesis research. Hourly research positions are also sometimes available. Students interested in research positions should investigate faculty research portfolios and contact them individually for more information. These positions are competitive and merit-based. GRA stipends and hourly research positions have varying time commitments, pay rates, and pay schedules during the academic year and summer. A student should confirm these details with the faculty funding them.

GRA students will be evaluated on an annual basis by their faculty supervisor. The purpose of this evaluation is to ensure that students receives constructive advice and that any problems are identified and addressed in a timely way. The evaluation is typically conducted in summer, annually. GRA positions are at the discretion of the faculty and may be terminated or put under conditional status upon receiving a negative review, if students are on academic probation, and/or if students are not making satisfactory progress on research or coursework.

Fellowship opportunities may also be available to qualified students and are usually based on national competition. GIS encourages students to apply for these and other fellowships based on guidance from their advisor. In addition to the financial benefits, fellowship awards represent a degree of accomplishment that often plays an important role in a student's career development.

Choosing an M.S. Program Option

Students typically choose between the capstone and thesis options for the M.S. based on their career goals and graduation timeline. The MS Capstone is well-suited for students going on to a wide variety of sustainability careers and can be completed in one calendar year (fall, spring, and summer). The MS Thesis is a good option for students going on to further graduate study or to careers requiring research, analytical, or laboratory skills. The thesis typically takes two years to complete.

M.S. Thesis Option

The M.S. Thesis has two main requirements:

- Earning 6 credits of ISUS-790 - Thesis Research (tuition-bearing credits).
- Completing, writing, and successfully defending the Thesis research, approved by the research advisor, thesis committee, and the Department Head.

The thesis option is competitive and merit-based. It may be paid or unpaid depending on the discretion of the research advisor and funding availability.

The Research Advisor

Students planning to pursue the Thesis option must identify a research advisor by no later than December 1 of the first year of full-time academic study and must have their research topic approved by the advisor by no later than May 1 of the first full academic year (via the "MS Thesis Approval" Form). The research advisor may then also act as academic advisor. The research advisor will normally be a member of the GIS instructional or research faculty. However, appointed members of the GIS extended program faculty or other RIT faculty (those resident in other departments) may also serve as research advisor subject to approval of the Department Head. In making this approval, the Department Head will consider the faculty member's expertise, accomplishments, and ability to supervise MS-level research. Advisors will assist students with issues regarding curriculum requirements, elective choices, presentations and publication, RIT support facilities, and time management. In rare occasions, it may be necessary and appropriate for a student to change advisors during thesis research. Any change should be promptly reported by a revised Thesis Approval Form.

M.S. Thesis Committee

During the process of formulating a thesis research proposal, the student together with their advisor should also form a Thesis Committee. This process should be reported via the "MS Thesis Committee Formation Form" to be submitted by Fall semester in the second academic year). The student will develop an in-depth research project with input from their advisor and committee. The specific requirements for the committee are:

a. Three or more members (including the research advisor),
b. Sustainability academic or research faculty comprise at least half of the committee (exceptions by approval of the Department Head); an additional external member from industry or government research lab is often beneficial,
c. The proposed committee is approved by the research advisor and the Department Head by signing the Thesis Committee Formation Form.

Research Progress

Students are encouraged to meet with their advisor regular intervals to discuss progress, receive guidance, and to plan future work. Students are also encouraged to seek periodic formal feedback from all committee members and should meet at least annually with their committee. The student's advisor or committee members may also call a meeting to discuss any issues or concerns. It is important that the student and advisor work together to design a reasonable plan to complete the thesis in a timely fashion. Students are encouraged to create a schedule with mileposts and assess progress against this plan.

Thesis Preparation

The Thesis research will culminate in a written M.S. Thesis that provides a comprehensive overview of research objectives, methods, findings, interpretations, and conclusions. The Thesis content will be determined with the advisor, who will typically have additional publication requirements, such as submitting the Thesis research to a scholarly journal. The research outcomes must also be presented during a public thesis defense and exam.

The thesis format should follow all applicable guidelines of RIT and ProQuest. Additional information is available at: https://infoguides.rit.edu/thesis-services.

The main text of the thesis should be logically divided into chapters, which should include content on:

- Motivation,
- Literature review,
- Methods,
- Results and Discussions, and
- Conclusions and Recommendations.

The graduate student's thesis is copyright-protected material, and familiarity with copyright rules and responsibilities is beneficial. Copyright law establishes certain rights and ownership to the creator of original art, text, figures, etc. Students should also be aware of and in compliance with all standards relating to permissible use of copyrighted materials within the thesis. For examples, students cannot use images sourced from the Internet unless they can document permissions for reuse (e.g., Creative Commons license allowing reuse or permission from copyright holder). Students are encouraged to consult the ProQuest Manual on Copyright Law and Graduate Research.

The M.S. Thesis Defense

Students should schedule their thesis defense at least two months prior to the certification deadline for the semester in which they plan to graduate. The thesis defense can be scheduled only after all outstanding requirements for the degree have been successfully completed. It is the student's responsibility to contact their advisor and Thesis Committee to identify a mutually acceptable date, with no less than two weeks advance notice. It is also the student's responsibility to reserve the GIS auditorium (or equivalent space) for the defense. The student should notify the Program Assistant of the scheduling of the defense by forwarding the title and abstract of the thesis and the scheduled date, time, and location of the exam. Barring exceptional circumstances (requiring permission from the Department Head), the examination must be formally announced via hallway postings or email broadcast no later than two weeks before the scheduled date.

When the student and their advisor have agreed that the student is ready for the defense of the thesis, the student will distribute electronically a final draft to the thesis committee and Department Head at least two weeks prior to the defense.

The Exam Process

The first part of the examination is open to the public, as advertised in advance. It comprises a seminar-style presentation with visual aids used as appropriate to communicate and defend the thesis research. During the talk, the following points must be addressed: objectives and accomplishments of the research; the sustainability problem studied; why is it relevant and novel; what approach was taken and why; what were the results and conclusions. It is expected that the candidate will make a verbal presentation with only occasional reference to

written notes. The public portion of the defense is expected not to exceed one hour, including approximately 40-45 minutes of presentation followed by 15-20 minutes for questions.

After the presentation, the Thesis Committee will examine the candidate in a closed meeting. The Department Head may also observe. The examination is primarily concerned with the thesis research work, but it is also of the final certification of the student's overall knowledge for the degree. Questions may relate to any aspect of the material in the research area and in the coursework of the degree program. The committee examination usually lasts about one hour, at the end of which the candidate will be asked to leave the examination. The examining committee will deliberate at this time and reach one of the following decisions:

Accepted. The thesis requires no change or only minor typographical or editorial changes which will be made to the satisfaction of the thesis advisor.

Accepted with Minor Modifications. The thesis requires minor changes in substance and/or editorial changes or clarifications. Typically, this category implies that no further research needs to take place. It is more a matter of refinement, clarification, or elaboration. The report of the Thesis Chair will outline the nature of these changes and the date by which the changes are to be completed. Approval of changes is the responsibility of the thesis advisor.

Accepted with Major Changes. The thesis requires more substantive changes (such as additional experimentation, analysis, or major rewriting), but will likely be acceptable once these changes are made to the satisfaction of the committee. The report of the Thesis Chair will outline the nature of these changes, the date by which the changes are to be completed, and the consequences if the student fails to comply. The full thesis committee will be responsible for approving these changes.

Fail. Students who fail the thesis defense cannot attempt the defense a second time, but may be considered for a capstone project subject to appropriate approvals.

After a decision has been reached, the candidate will be invited back into the room and informed of the committee's evaluation.

Upon successful completion of the examination, the necessary signature pages are signed by the Thesis Committee and Department Head. Securing the signatures is the student's responsibility; it is best done immediately after the defense. When the final thesis is approved by the Advisor, it is then submitted to ProQuest, and the student must provide the submission receipt to the GIS Program Assistant.

M.S. Capstone Option

The M.S. Capstone has two main requirements:

- Earning 6 credits of ISUS-780 - Capstone Research (tuition-bearing credits).
- Completing a capstone project following one of the three options described below, approved by the advisor and the Department Head.

There are three options by which a student can complete a capstone project, and selection among these options should reflect the student's professional goals and consultation with their academic advisor. Typically, each of these options will be carried out in the summer semester, but each has a different timeline and set of deliverables:

Internship / Co-op
This option is recommended for students interested in gaining practical work experience in the sustainability field. Students will participate in a formal, paid work experience that relates to their sustainable systems degree studies.

To participate in this option, students will identify, apply for, and obtain a co-op or internship position using RIT resources and/or personal networks. The co-op work must have a connection to sustainability. Before accepting the position, the student must submit to their advisor a job description, a short summary of how the position relates to the M.S. Sustainable Systems degree, and the "Capstone Co-op Approval Form". This form is approved by the academic advisor, who also signs off on any amendments or updates if the position changes.

Typically, this position will be registered and reported to the RIT Co-op office. Students will normally complete this option during the summer semester, by registering for both Sustainability Co-op and for the 6 credits of Capstone Research (for which the student must pay tuition). The co-op effort must represent 10 weeks of work at 40 hours per week. Students may be able to meet this requirement with part-time work throughout the academic year, as long as the total effort represents an equivalent 400 hours. Such arrangement requires advisor approval and would follow the same process via Capstone Co-op Approval Form.

Once a student has accepted a co-op or internship position with an employer, it would be highly unusual and unprofessional to later turn down or leave the position, barring exceptional circumstances. If a student believes they are in such a situation, they must first meet with the RIT Office of Career Services and Cooperative Education and gain their approval. They then must notify and obtain approval of their academic advisor and the Department Head before making any changes to their employment. Failing to follow this process will result in an unsatisfactory grade for co-op credits and/or inability to use the co-op experience to meet the capstone requirements.

At the conclusion of the co-op term, students will prepare a final report that summarizes their activities and outcomes from the co-op experience. This report should include: a description of the sustainability problems addressed during the job, an explanation of how the student proposed and/or evaluated potential solutions to these problems, and a summary of outcomes or recommendations that arose from the student's work. The report should also include the student's self-assessed performance on the job, with specific emphasis on sustainability knowledge and professional skills that they used on the job and a discussion of specific ways that the MS program prepared them to apply these skills and/or opportunities for the program to better prepare students for the sustainability workforce. The level of detail for each student

report may vary based on employer restrictions (e.g., access to proprietary information), which should be established at the start of the co-op. This report is to be submitted to the instructor of record for the Capstone Credits in which the student registered.

Successful completion of the Co-op capstone will be based on 1) working for the full duration of the position requirements; 2) positive performance evaluation by the employer; and 3) a final report graded by the capstone instructor. Students planning to pursue this option must have a position confirmed and approved by May 1.

Research

This option is best for students interested in going on to jobs requiring research or analysis skills or on to future graduate study.

To participate in this option, students must identify a research area of interest, find a GIS core, research, or extended faculty member willing to supervise the research, and then work with that faculty member to develop and carry out the research activities. Students will typically register in the summer semester for the 6 credits of Capstone Research (for which the student must pay tuition) under the supervision of their research advisor.

The nature of the research will be co-developed with the student and research advisor via the "Capstone Research Approval Form." At the conclusion of the research, the student will prepare a research paper of at least 5,000 words in length that includes a review of scholarly literature on the subject, description of research objectives and methods applied, report of research findings, an interpretation of results and conclusion of the research, and a reference section listing all cited literature. This report is to be submitted to the research advisor and to the instructor of record for the Capstone Credits in which the student registered (if these are not the same faculty).

Successful completion of the Research capstone will be based on 1) completing the agreed-upon scope of work to the satisfaction of the research advisor; 2) graded evaluation of the final written deliverable and presentation by the research advisor; and 3) successful completion of all other research approvals, such as the Data Transfer Form.

Research capstones are competitive and merit based. They may be paid or unpaid depending on the discretion of the research advisor and funding availability. Students interested in this option must identify a research advisor during fall semester and must have the research topic approved by the advisor by no later than May 1. Students starting the program off-cycle in spring term have an extension of these deadlines to the next academic term (not including summer), but should act quickly as research capstones are limited.

Consulting Project

This capstone option is best for students interested in careers in project management, sales, data analysis, or consulting, and will be carried out in a team environment.

To participate in this option, students will register for the 6 credits of Capstone Research (for which the student must pay tuition) during summer semester. Working under the supervision of a faculty instructor, students will carry out research and analysis to solve a sustainability challenge that is co-defined with a partner client (from industry, business, government, etc.). This option does not entail a paid position.

Students will typically work in small teams, but each student will have an individual scope of work that reflects a different part of the sustainability challenge being studied. The team composition, client and scope of work selection, and individual planned effort will be approved by the faculty instructor via the “Capstone Consulting Approval Form.” Students will have routine check-ins with the instructor and with a mentor from the partner client.

At the conclusion of the semester, students will prepare a professional written final report for the client that effectively summarizes the problem, approach, analysis, and recommendations stemming from their summer effort. Students may also present their work at a presentation session for the clients. Each student will also complete a self-evaluation of performance and sustainability knowledge and professional skills that they used on the project (and the degree to which the MS course prepared them to apply these skills) and an evaluation of other team members according to their defined scopes of work and contribution to overall project success. This report is to be submitted to the instructor of record for the Capstone Credits in which the student registered.

Successful completion of the Consulting capstone will be based on 1) completing the project according to the scope of work agreed upon with the client; 2) positive performance evaluation by the client; 3) graded evaluation of the final report and presentation by the capstone course instructor; and 4) self and team evaluations. Students interested in this option should notify the Curriculum Chair (Dr. Callie Babbitt) by May 1. Students who have not already chosen Research or Co-op Capstone options by May 1 will also be automatically assigned to the Consulting Project Option

Changing M.S. Programs

In some cases, students will initially purse one M.S. option (e.g., a Thesis) and then later decide that the other option (e.g., a Capstone) is more suited to their academic and professional goals. This is a decision that should be made in consultation with the academic and/or research advisor. If a student has already completed Thesis Research credits (ISUS 790), the advisor and student will need to submit a request to the Program Assistant for an Enrollment Correction to convert the credits to Capstone Research (ISUS 780). Note that Thesis Research credits are completion-based while Capstone Research credits carry a letter grade. The assignment of the letter grade for Capstone Research credits during a course substitution will only be made once the Capstone activity is complete and the deliverable is graded via the Capstone Completion Form.

Additional Requirements

Research Data and Equipment Transfer

All M.S. students must complete their studies with a proper cleanup of workspace and transfer of lab equipment, procedures and data files pertinent to the thesis or capstone work (or document that such a requirement is not applicable). For laboratory work, materials and equipment used in experiments need to be returned to the advisor. Laboratory procedures developed need to be documented and transferred to the advisor. Waste materials need to be properly disposed of. With respect to data, the candidate should prepare and transfer to their advisor a package of computer files with data, code and/or results used in their thesis or capstone. The files should be clearly documented.

Students must also clean up their workstation area, remove any personal items from GIS common areas, return any computer equipment borrowed, and return their desk key to the GIS Program Assistant. We also request that graduating students share information about their plans after graduation and an email for contact after graduation. The Advisor and Program Assistant will both verify that all of these closeout activities are complete by signing the Data Transfer and Exit Checklist form.

Continuation of Thesis

For the MS thesis option, once work has begun on a thesis, it is seen as a continuous process until all requirements are completed. If a student has completed course work but has not finished the thesis research, writing, or defense, it is the responsibility of the student to register for Continuation of Thesis. This requirement also applies during summer terms when students are working on research as a GRA but are not registered for any course or research credits. During fall or spring, the student should register for one credit hour of Continuation of Thesis; this is typically a tuition-bearing credit, but the Program may offer students one semester extension of time before the Continuation of Thesis tuition is levied. During each summer, the student should register for zero credit hour Continuation of Thesis if they are taking no other course or research credits. Payment of Continuation of Thesis tuition is waived for all summer semesters. If the student does not register for any credits and does not register for the Continuation of Thesis during the academic year, the program may either register the student or remove the student from the program.

For the capstone option, if a student has completed the course work but has not finished the capstone experience by the end of the final capstone term (in which capstone credits are taken), the student gets a grade of Incomplete for the course. The conversion of an Incomplete grade to a final grade is subject to grading by the advisor or capstone instructor via the Capstone Completion Form and all relevant RIT policies.

Language Proficiency

The MS program emphasizes effective communication skills as preparation for a career in sustainability. Typically, communication skills and English language proficiency are documented and assessed in a student's application materials, which may, for example,

require minimum TOEFL or IELTS scores. These skills will also be continually assessed in Sustainability courses and in the written and presentation requirements associated with degree completion. Any of these mechanisms may be used to determine if a student requires additional support or instruction in communication skills or English language proficiency. This determination may result in informal recommendations, such as suggesting that a student take part in programs offered by the Academic Success Center or the University Writing Commons. This determination may also result in formal requirements that must be met to continue in the program. Such requirements may include placement testing and/or successfully completing specialized graduate courses offered by the English Language Center.

Degree Certification

After the student has finished all course requirements and thesis or capstone project, the following steps with be taken by the Program Assistant:

a. Obtain the M.S. Graduation Certification Form signed by the Department Head. For thesis option, this form will only be signed after the final approved thesis has been submitted to ProQuest and confirmation of acceptance provided to the Sustainability program office.
b. Request the M.S. degree certification by the Department Head.

Certification of any graduate degree requires that the student has achieved a minimum program cumulative grade point average of 3.00 (a B average). Full payment or satisfactory adjustment of all financial obligations is also required for certification.

Additional RIT Resources and Policies

All RIT policies apply in full to the Sustainability M.S. program. The Institute Policies and Procedures manual can be found at: http://www.rit.edu/academicaffairs/policiesmanual/. This manual provides the general and educational policies and procedures of the Institute, including information related to students, faculty, staff, and administrators.

The Institute Calendar

The current and upcoming Institute Calendar can be found at http://www.rit.edu/calendar/, together with an event calendar, commencement information, and the employee holiday schedule.

Student Records

Student records are housed in the Academic Student Services Office, and in the Sustainability program office. Administrative support is available to students through these offices in areas of registration, course selection, scheduling, records, and program advisement. In general, students should first consult with their academic advisor, but if further consultation is needed, an appointment can be made with the Program Assistant or Department Head.

In accordance with the Family Educational Rights and Privacy Act of 1974 (commonly known as the Buckley Amendment), RIT students have the right to inspect, review and challenge the accuracy of official educational records. RIT policy ensures that only proper use is made of

such records. This policy also limits disclosure of non-directory information such as grades and class schedules to persons outside the institute without the student's written permission. With the exception of copies made for internal use (provided by the registrar for advising purposes), copies of a student's permanent record (transcript) or non-public information from student records will not be released without the student's written consent. Official requests from students must be made to the RIT Registrar for transcript release.

Coursework and Grade Policies
The M.S. Sustainable Systems program follows the RIT University policies related to grading, required GPA, and repeating coursework. These policies are found in the University Policy Library (D05.0 Grades) found at
https://www.rit.edu/academicaffairs/policiesmanual/d050

Individual course instructors may have specific grade scales and additional policies that govern their class, and these are typically detailed on the course syllabus provided at the beginning of each course.

Academic Probation and Suspension Policy
RIT's Academic Probation and Suspension Policy may be found at
https://www.rit.edu/academicaffairs/policiesmanual/d051.

Approved by Sustainability Curriculum Committee, August 2025