RIT | Golisano Institute for Sustainability

Ph.D. Program in Sustainability:
Graduate Student Guidelines
(revision date August 2025)

The purpose of the Graduate Student Guidelines is to acquaint students with the requirements of the Sustainability Ph.D. program and 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 Sustainability Ph.D. program. If questions arise, a student should seek clarification from their advisor, the Department Head, or Program Assistant.

Introduction

Golisano Institute for Sustainability offers the Doctor of Philosophy (Ph.D.) in Sustainability 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. Ph.D. students in the program conduct research in a wide variety of areas including strategies for achieving sustainable production, industrial ecology, economics of sustainability, environmental science and management, sustainable business enterprises, and sustainable energy systems. 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.

Contact Information

Department Head
Prof. Amit Batabyal
Room 81-2163
Email: aabgsh@rit.edu

Program Assistant
Jennifer Rubianogroot
Room 81-2160
Email: jrsgis@rit.edu

Curriculum Chair
Prof. Callie Babbitt
Email: cwbgis@rit.edu

The Sustainability Ph.D. Degree

The Doctor of Philosophy degree in Sustainability requires concentration and specialization in a relevant research area as well as mastery of the fundamentals of sustainability. The degree is awarded in recognition of demonstrated proficiency and high achievement in the student's concentration within the program. As such, significant contribution to the knowledge in the area of Sustainability is made in part through successful dissertation research and publication. The program has been designed to meet the individual needs of graduate students while ensuring that all students complete a well-rounded program of study.

Responsibility

It is the student's responsibility to understand the requirements of the Sustainability Ph.D. degree program. Progress toward the Ph.D. degree is maintained by the 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 made in the curriculum during a student's program of study should be directed to the Program Office.

Degree Requirements

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

1. Complete a minimum of 60 total semester credit hours, including
    a. A minimum of 24 of graduate-level coursework credit hours, including 18 credit hours of core courses,
    b. A minimum of 24 credit hours of dissertation research;
2. Pass the Qualifying Examination;
3. Pass the Candidacy Examination;
4. Submit at least one paper deemed publication-worthy by their Dissertation Committee to a peer-reviewed scholarly journal and present one paper in their research area at an international conference;
5. Fulfill teaching requirement;
6. Pass the Dissertation Defense Examination; and
7. Submit the final Dissertation.

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

Sustainability Ph.D. Program Checklist

Requirement	After	Before	Form	Done?	Date completed
Complete Full Time Equivalency Form	-	Two weeks prior to beginning of each semester	Full Time Equivalency Form***		
Update Program Checklist Form	-	As appropriate	This table*		
Submit Program of Study Form	-	February 1 of first year; update annually with any changes	Ph.D. Program of Study Form*		
Apply for transfer and/or waiver of courses	-	If needed, concurrently with Program of Study form	Transfer Credit Application / Waiver Application Form*		
Pass Qualifying Examination	Completing 1st academic year and all core courses	Start of Fall Semester, Third Year	Report of Ph.D. Qualifying Exam**		
Form Dissertation Committee and hold first meeting	Passing Qualifying Examination	End of Fall Semester, Third Year	Ph.D. Dissertation Committee Formation Form*		
Pass Candidacy Examination	Selecting Advisor, research topic, and forming Committee	End of Spring Semester, Third Year	Report of the Candidacy Examination**		
Submit Application for Graduation	-	2 semesters before completion of requirements for degree	Application for Graduation***		
Complete teaching requirement	-	Dissertation defense	Ph.D. Teaching Requirement Form*		
Finish all required coursework	-	Dissertation defense	Update Ph.D. Program of Study Form* (#3 above)		
Complete publication & presentation requirements	-	Dissertation defense	Publication and Presentation Requirement Form*		
Schedule and publicize dissertation defense	Completing research, with Committee agreement	Two weeks prior to defense	Email Dept. Head and Program Assistant *		
Submit dissertation to Committee	-	Two weeks prior to defense	Email PDF of dissertation to committee		
Pass Dissertation Defense	Two weeks after scheduling defense	-	Signature Page & Report of the Dissertation Defense*		
Transfer data and closeout on campus	Dissertation Defense	Seeking degree certification	Data Transfer and Exit Checklist Form*		

Requirement	After	Before	Form	Done?	Date completed
Submit Dissertation to ProQuest	Signing Dissertation cover sheet & Report of Dissertation Defense	Seeking degree certification	Dissertation submitted* Guidelines at https://infoguides.rit.edu/thesis-services		
Obtain degree certification	Passing dissertation defense	7 years from date of passing Qualifying Examination	Ph.D. Graduation Certification Form**		

Students who join the program off-cycle should try to follow this timeline to the extent possible but may need to shift some milestones to the next academic semester. Such cases should be discussed with the Advisor and Department Head.

* To be completed by student; Forms obtained at the MS and PhD Student MyCourses Page

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

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

Coursework

There are five core courses (15 credit hours) required for the Ph.D. degree to ensure that students complete a well-rounded program of study:

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 Ph.D. 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. Some courses outside the department may require the approval of the instructor prior to a student registering.

Policy Course 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 720 - 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

Research Credits

Research taken for course credit before passing the Qualifying Exam should be registered as Research ISUS-807. A maximum of 12 credit hours of this course can be counted towards degree requirements. After passing the Qualifying Exam, students may register for Dissertation Research ISUS-890. At least 24 credit hours of ISUS-890 are required for graduation.

Program of Study

By no later than February 1 of the first year, a student should prepare a Ph.D. Program of Study, which records core and elective courses and research credits completed and anticipated. The form also records the student's plan and timeline for completing major degree milestones. The form should be signed by the student, the advisor, and the Department Head. Upon completion of the Qualifying and Candidacy exams, the student's advisor and committee may add additional coursework requirements so that the student is sufficiently prepared to carry out their dissertation research. 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 time of Degree Certification.

Applying Coursework from other Graduate Programs

It may be possible to transfer credits earned in prior graduate work to count towards your Ph.D. Transfer of credits requires the approval of the advisor and the Department Head. Students entering the PhD program after graduating with an M.S. in Sustainable Systems may transfer a maximum of 30 credit hours, with grades of B or above. A maximum of 9 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. Waivers 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 at RIT.

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 9 credit hours. The Department Head may limit the total number of credit hours a student may take per semester in the event of continued 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 registered credits per semester or an equivalent amount of coursework and research. Students taking less than 9 registered 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
Ph.D. students do not typically register for course or research credits in the summer. Generally, students carrying out research in the summer will register for zero credits Continuation of Thesis in the section with their research advisor as instructor and, if they are working as a Graduate Research Assistant, will submit a Full Time Equivalency form noting nine credits of Research Assistant Units. This arrangement is necessary to ensure the student maintains full-time status, which is required for GRA stipends. However, 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 needed by planned graduation date.

Schedule Verification and Changes
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 this process 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 following 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 the student's funding. 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.

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 Academic Support Services 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 doctoral degree must maintain continuous enrollment during the research phase 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 Ph.D. in a minimum of three to an average of four to five years, depending also on the degree level held upon entering the program. The seven-year rule requires that all courses used towards the Sustainability Ph.D. program be completed within seven years of the date the student passes the Qualifying Exam. 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.

Residency Requirement
All students in the program must register for a minimum of 9 academic credits in each of 2 consecutive terms, excluding summer, to establish residency. If circumstances warrant, the residency requirement may be waived via petition to the Department Head, who will decide on the student's petition in consultation with the advisor and Sustainability faculty. The request must be submitted at least six months prior to the dissertation defense.

Academic Advising
Students entering the program are assigned to a Sustainability faculty member to assist on a research project. This faculty member will also act as the student's academic advisor. After passing the qualifying exam, students will formally designate the research advisor who will supervise their dissertation research and act as academic advisor going forward.

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 integrity demands that 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

Qualifying Examination

All Sustainability doctoral students must pass a Qualifying Examination (QE), which covers both Coursework and Research and is implemented in two parts:

Coursework component (“Part A”): Coursework knowledge will be assessed via written exam held after students complete all GIS core courses. This is an in-person, multi-day exam with sections covering each of the five core courses. Students are expected to demonstrate their knowledge and ability to solve sustainability problems using concepts and methods learned in the core courses. Each course exam will have different formats, requirements, and allowances on resources that can be used during the exam. Problems are judged anonymously using a rubric developed by Sustainability course instructors. Students will not receive their graded exams or copies of exam solutions, but may discuss exam performance and results with instructors on request.

Research component (“Part B”): Research potential will be assessed via a paper and presentation that demonstrate a student’s ability to formulate and communicate a research question that will ultimately become a paper in their dissertation. This exam does not require that the proposed research be complete, but should provide an indication that the research can be feasibly carried out by the student and can lead to a novel and significant contribution to the field of sustainability. This part of the Qualifying Exam is implemented via the student preparing a paper (in the style of a scholarly article) and presenting it to a committee of faculty.

The QE paper should follow the format of a journal article, with the main text not exceeding approximately 6,000 words (not including references, appendices, or figure and table captions). The paper should be prepared with a professional format, including text no smaller than 11 point, single spacing, line and page numbers added, numbered and captioned figures and tables (embedded in the text at the point they are discussed), and in-text citations and reference list in a consistent scientific style.

The QE paper must include the following components:

- Introduction and literature review: Present and explain a contemporary sustainability challenge that motivates the research. Critically review and synthesize the scholarly literature to explain what is currently known about the identified topic and the gaps or

limitations of current work that limit our ability to address the motivating challenge. The student must clearly state the proposed research question and justify how it is novel and important to sustainability.

The introduction and literature review must include a distinct, labeled sub-section that specifically discusses adjacent scholarly papers on the topic and explains how the proposed work will extend, depart from, and/or contribute to this existing scholarship.

- Methodology: Propose a method that is reasonable and well-suited for addressing the stated knowledge gap. Justify the choice of method and why it is appropriate for the stated research question. Clearly demonstrate an understanding of the fundamental basis of the proposed approach and how it will be applied.

  The methods section must include a distinct, labeled sub-section that documents previously published uses of the proposed method for similar classes of problems, to show that the method is accepted by the field of researchers in which the student plans to publish. If the proposed method is notably different from existing examples in the literature, the student must clearly explain such differences and must still make a case about the expected acceptability of the approach relative to current practice.

- Data collection plan: Explain the type and nature of data required to carry out the proposed method. Present specific plans for how the data will be collected, analyzed, and used to implement the methods and answer the stated research question. It is recommended that the student include a timeline that reflects their understanding of how long the data collection and analysis will take to complete.

- Anticipated results: Describe the type of result(s) that are anticipated to be obtained from the proposed research and how results would be interpreted to answer the research question. While it is not expected that students will have full results at the time of the QE, they should be able to hypothesize what the results might be and explain what form the results will take (e.g., what units of measurement will be presented, what kinds of outcomes might be produced). Students should be able to explain what they will be looking for in the results, what such results will fundamentally mean, and how they will be used to answer the stated research question. The anticipated results should also reflect the state of practice in the student's research domain, and it may be helpful to refer to results found in comparable papers (e.g., those noted in the methods section).

- Milestone plan: At the end of the QE Paper, the student should include an appendix detailing their anticipated timeline to meet key program milestones. This plan should specify month and year by which they expect to complete courses, pass the Candidacy Exam, and complete publication, presentation, and teaching requirements. The plan need not be lengthy or detailed, but should provide information about progress toward these milestones, actions being taken, and any concerns or challenges anticipated.

This paper is submitted as a PDF to the Qualifying Exam MyCourses page by or before 11:59 PM on the date(s) specified below.

The QE presentation is held after faculty have reviewed the submitted paper. The student should prepare PowerPoint slides and an oral presentation of approximately 30 minutes. Most of the presentation should focus directly on the student's work (explaining the research question, explaining methods choice and rationale, linking work to existing scholarship, etc.) and less on general background with which the audience is familiar. The faculty committee assessing the presentation will evaluate the quality of the submitted materials and the proposed research, but may also pose questions to evaluate the student's broader knowledge of sustainability and the overall research area, understanding of the research, and capacity to improve and extend their work. The student must be prepared to discuss and critique key literature that is closely related to their topic and methods.

The QE paper and presentation will also be evaluated based on the student's written and verbal communication skills. To evaluate this factor fairly, the paper and presentation is to be prepared solely by the student. The student's advisor(s) can and should be involved with all aspects of research development and implementation. However, students must demonstrate their own understanding of and ability to carry out and communicate the work. They and their advisor can discuss parts of the QE paper generically, but the advisor may not provide any comments, editing, or suggested changes to the document itself. The student may practice giving their presentation to the advisor or peers and receive feedback on overall presentation style and content, but the advisor should not edit the presentation or give detailed content feedback that would prevent the committee from assessing the student's own presentation skills. The advisor will be invited to be in the audience during the oral presentation, but will not take part in questions or evaluation.

The qualifying exam is passed after successful completion of parts A and B. Each part of the QE is evaluated using a 4-point rubric (scale of: Exemplary, Proficient, Marginal, Deficient), which has multiple components contributing variable weighting toward the final score. To pass, a student must achieve an overall average score of Proficient for both parts A and B and receive no lower than Marginal on any individual component. If a student does not pass the exam on the first attempt, they have one chance to retake it at the next offering. They may be required to retake one or both parts, depending on assessed areas of concern. Only in very limited and exceptional cases would a student be granted an extension to retake the exam at a later date than the next offering, subject to approval by the advisor, Curriculum Committee chair, and Department Head. The qualifying exam must be passed before beginning the third year of full time study. If the student does not pass the QE after two attempts, they may request to transfer to the M.S. program, subject to approval of the advisor and Department Head.

Qualifying exam dates are generally aligned with the start of fall and spring semesters. For students entering the PhD in fall of the 2025-26 academic year, these are as follows:

First offering (August)

- Submit qualifying exam paper to MyCourses: between Aug 1 – Aug 21, 2026
- Coursework exams: Aug 17-22, 2026 (9 AM - 12 PM daily)
- Qualifying exam presentation: Aug 28, 2026

Second offering (January):

- Submit qualifying exam paper to MyCourses: between Jan 1 – Jan 8, 2027
- Coursework exams: Jan 4-8, 2027 (9 AM - 12 PM daily)
- Qualifying exam presentation: Jan 15, 2027

For students who enter the PhD off-cycle in spring of the 2025-26 academic year, the first attempt at the QE will be made during the following January's offering. The retake for these students or those granted an extension from the prior year will be the following August (dates to be specified in 2026-27 PhD Guidelines).

Ph.D. Advising

Ph.D. research supervision and advising is carried out by the student's research advisor(s), with guidance and input from the Dissertation Committee and the Department Head.

The Research Advisor

After passing the Ph.D. Qualifying Examination, a student will formally designate a research advisor (or co-advisors), who will also act as academic advisor. The research advisor will normally be a member of the core GIS instructional faculty. However, members of the GIS research faculty or extended program faculty (those resident in other departments) may serve as research advisor subject to approval of the Department Head. In making such an approval, the Department Head will consider the faculty member's research expertise, experience mentoring PhD students, and ability to fund the student's stipend. Advisors will assist students with issues regarding curriculum requirements, elective choices, stipend support, presentations and publication, RIT support facilities, and time management.

Advisor selection should be confirmed via the Dissertation Committee Formation Form before the end of the third fall semester of study (or spring in the case of off-cycle start). In rare occasions, it may be necessary and appropriate for a student to change advisors during dissertation research. Any change should be promptly reported by a revised Committee Formation Form.

Graduate Research Assistantships

Typically, Ph.D. students in good academic standing who are making good progress on their degree are supported by a graduate research assistantship (GRA) from a sponsored research project, although some students are admitted under alternate funding arrangements. A GRA is a fixed stipend position, typically associated with dissertation research. GRAs are considered "students" and not employees of the University. GRAs must meet the following requirements: 1) matriculated in a Masters or PhD degree program; 2) conducting original, professional-level research generally associated with fulfilling the requirements of external

grants; 3) the research is performed under the supervision of an RIT faculty member; and 4) the research environment is provided by RIT. GRAs can give a maximum of 20 hours of effort per week towards a faculty member's research as part of their GRA appointment. This effort does not include time spent by a GRA on their courses or on research or educational activities carried out to satisfy the requirements for their degree. GRAs are on break when the RIT academic calendar indicates a break, including during observed university holidays and during break weeks between academic terms. Academic terms covered by an appointment are considered active times for research, but GRAs may be provided more time off at the discretion of the faculty advisor.

GRAs receive a semi-monthly stipend payment through the accounts payable process based on the level of effort (hours per week) committed at the time the appointment is made. Stipend payments are not an hourly wage or salary. GIS stipends are based on a student's progress through program milestones, RIT policy, and percent effort on a grant. Current stipend rates for 100% effort (20 hours per week) on a grant are as follows:

Category	Full Academic	Fall or Spring	Summer	Academic + Summer
Entry	$23,000	$11,500	$7,667	$30,667
Qualifying Exam	$24,000	$12,000	$8,000	$32,000
Candidacy	$25,000	$12,500	$8,334	$33,334

Stipends are adjusted in the academic term following the successful completion of a milestone. For example, if a student takes the qualifying exam at the beginning of fall of their second year, they will receive "Entry" rate for fall, and after passing the QE, will be increased to the "Qualifying Exam" rate in the following spring term. The stipend is a fixed amount per semester, but the amount paid to the student during each pay period may vary slightly; for example, if the pay periods do not break evenly across the academic year. However, the total amount per year will be the same. In addition, in summer terms, GIS typically spreads the stipend out over seven rather than six pay periods to avoid students having a gap in payments before the start of fall term. Thus the total amount is the same but the payment per period is slightly reduced. There are a wide array of other factors that may influence stipend arrangements, and students should confirm these details and/or report any stipend problems to the faculty funding them.

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 consultation with 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.

PhD Student Evaluation

Students are encouraged to meet with their advisor at mutually agreed upon intervals to discuss progress, receive guidance, and to plan future work. It is important that the student and advisor work together to design a reasonable plan to complete the dissertation research and manuscript in a timely fashion. Students are encouraged to create a schedule with

mileposts and to assess progress against this plan. PhD students will also be evaluated on an annual basis by their advisor. The purpose of this evaluation is to ensure that students receive constructive advice and that any problems are identified and addressed in a timely way. The evaluation is typically conducted in summer, annually.

If a student has areas of identified concern (based on performance in classes, dissertation progress, or advisor evaluation), an advisor may recommend that funding is reduced or ended, that the student change research or advisor, or that a student consider changing to the M.S. degree. In these cases, a meeting will be held between the student, the advisor(s), and the Department Head. The result of the meeting is a solutions plan with a timeline for resolution. The advisor assesses performance on the solution, with the Department Head acting as a neutral arbiter to ensure a fair process. Satisfactory resolution of the identified areas of concern is required for continuation of advising and funding in the PhD program.

Ph.D. Dissertation Committee

After passing the Qualifying Examination, and during the process of formulating a dissertation research proposal, the student together with their advisor should form a Dissertation Committee. The committee's role is to provide support, feedback, and guidance as the student carries out dissertation research. As such, the committee should be formed as early as possible and meet periodically with the student and advisor so they understand the student's research plan, can proactively advise and support the research, and are familiar with the research outputs planned for the dissertation defense.

The Dissertation Committee shall be formed within one semester of finishing the QE, and no later than fall semester in the third year of study. The committee and should meet at least once per year until completion of the PhD.

Ahead of the initial committee meeting, the student develops and submits an abstract that summarizes their proposed research topic. The abstract should not exceed two pages, single-spaced. When preparing the abstract, students should treat the audience as experts and focus the writing on their work and contribution to sustainability (not general context). This abstract should cover:

- Overarching questions and goals of the research
- Overview of planned chapters, including research objectives and methods for each chapter.
- Tentative Schedule, clarifying the status of completion of each part.

Following the initial committee meeting and approval of the research topic, the student must submit the Ph.D. Dissertation Committee Formation Form.

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);

c. An external member from industry or government research lab is often beneficial to include as a committee member. If this individual does not have a PhD, they can be on the committee but would not count toward the minimum number of members (3);
d. The proposed committee must be approved by the research advisor and the Department Head.

The Research Proposal & Candidacy Exam

The Research Proposal provides an opportunity for students to organize their research ideas and progress into a coherent plan. The Candidacy Exam provides a mechanism for the student's committee to review, provide feedback on, and approve this plan. At the end of this process, the student and committee should have a shared understanding of research goals the dissertation will address and the timeline over which these goals will be met.

The Candidacy Exam must be completed by the end of spring semester in the third year of study (or the subsequent term in case of off-cycle admits), or one year prior to defending the dissertation, whichever comes sooner.

The assessment of the proposal and candidacy exam will focus on the student's potential and/or demonstrated ability to carry out independent research leading to an original contribution to the field of sustainability. The proposal should demonstrate a student's ability to identify a knowledge gap, formulate novel sustainability research questions, identify or develop methods that are appropriate for answering those research questions, and a plan to collect and analyze the data needed to implement those methods and then critically analyze results and put them in context of existing knowledge.

The format and length of the proposal will likely be influenced by the nature of the student's research and extent to which research has progressed. Thus, details of preparation and organization should be determined in consultation with the advisor, and should balance sufficient coverage of research details with effective communication, clarity, and concision. Most student proposals are 25-40 pages (not including appendices). While format may vary, the proposal should include all the following components:

- Introduction – Clearly defines the topic and scope of the proposed research, why this topic is important for the sustainability field, and how the research will contribute to advancing fundamental knowledge about sustainability.
- Literature review – Explains the extent to which the subject has already been studied and the strengths and limitations of the existing scholarship. The student should clearly articulate the key knowledge gaps that their research will fill. In some cases, students may choose to combine parts of the literature review in the introduction and/or divide the literature review into each of the chapter sections (see below)
- Plan of work – Clearly states the research questions and objectives and summarizes the approach or set of approaches that will be followed to meet these objectives.
- Chapter details – The research plan should be logically divided into chapters that describe each of the planned papers that will collectively address the dissertation research objectives. Each chapter should include:

    - Explanation of the chapter's contribution to the overall research question
    - Use of literature to demonstrate novelty and relevance to the research goals
    - A clear statement of the research question being addressed
    - Actual or anticipated methods to be applied, including plans for data collection, model formulation, and data analysis, as applicable
    - A summary of work accomplished to date. Key results should be presented and interpreted relative to the stated research question and put in context of existing published scholarship. If the work is not yet done, students should describe what kinds of results they anticipate and how they will be used to answer the research question.
    - A summary of work still remaining to complete the chapter. Students should provide sufficient information so the committee can assess the feasibility of the research plan and provide feedback. Include information on remaining research tasks, how they will be completed, how long they will take, and any anticipated risks or challenges to completing the research and how the student plans to mitigate them.
- Timeline – Tentative schedule and plan for the completion of the dissertation and any other program milestones (refer to Program Checklist). Please note any special considerations or situations that may affect the course of the dissertation work.
- References – A thorough list of relevant literature references pertaining to the subject.

By the time of the exam, the student should have one such chapter (paper) relatively complete, even if it is not yet published. Therefore, a common question is how to integrate completed work into the Proposal. First, it should be noted that even if a paper is complete and published, the Dissertation Committee may still require edits for use of that content in the Dissertation itself. However, the committee will typically be more focused on understanding and providing feedback on planned work or research that is still underway. A common approach is for students to include a brief summary of the completed work in the chapter details (with a consistent level of detail and formatting as other chapter sections), as well as any relevant information about what will be required to integrate this paper into the dissertation. Then the completed paper should be included as an appendix to the proposal.

Other appendices may include detailed methodological specifications, compilations of data, supporting figures, or any other content that would help explain the research plan and/or provide information to the dissertation committee to help them judge the content and feasibility of the proposed research.

The Candidacy Exam is held once the student has finalized their Research Proposal. This exam has two purposes: 1) assess the student's preparedness to conduct the research as put forth in the Research Proposal and 2) document committee feedback on and approval of the proposed research. A copy of the Research Proposal (including the main document and all appendices) should be emailed to the committee at least one week before the scheduled Candidacy Exam.

The oral component of the exam will consist of a 30-40 minute presentation, after which the Dissertation Committee will ask questions based on both the presentation and written proposal. Aside from a brief background on the nature of the sustainability challenge, most of this time should be used to explain specific aspects of the student research question and proposed methods and plans. The outcome of this exam is either Approval of the Research Proposal, Conditional Approval (subject to specified changes, which the advisor oversees), or Not Approved. In cases where the proposal is not approved initially, the student makes major revisions to the proposal document based on exam feedback and then schedules a second committee meeting to seek approval of the revised plan.

Dissertation Preparation

Once the research has been completed according to the scope of work approved via the Candidacy Exam, the student works with their advisor and committee to finalize the entire dissertation document. If major changes from the research proposal are required, the student should discuss these with the dissertation committee as research progresses. Typically students should meet with their full committee at least once per academic year or more frequently as needed.

In many cases, individual dissertation chapters are comprised of the student's first-authored journal articles that have already been submitted and/or published in a journal, accompanied by an overarching introduction and conclusion. However, the dissertation must be viewed as a cohesive document itself, wherein chapters flow together smoothly with clear connection to the broad research goals. Thus, materials already formatted as publications will likely require additional editing to ensure they are well integrated in the dissertation document.

In cases where journal articles represent collaborative work of multiple students, the content within the dissertation should only reflect the original contribution of the student themselves. These distinctions should be made through discussion with the research advisor and collaborators. Journals may also have copyright requirements regarding the inclusion and citation of published materials, and it is the student's and advisor's responsibilities to understand and comply with all requirements.

GIS does not specify a format or template for the dissertation. At a minimum, the dissertation should follow all applicable guidelines of RIT and ProQuest (additional information at: https://infoguides.rit.edu/thesis-services) and be presented in a professional scientific style, organization, and format. The student should consult with the advisor about formatting details.

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

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

The graduate student's dissertation 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 dissertation. For example, 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 ProQuest resources on copyright.

The Dissertation Exam

The dissertation exam (dissertation defense) can be scheduled only after all outstanding requirements for the degree have been successfully completed. The dissertation exam must be at least one year after the student completes the Candidacy Exam. It is the student's responsibility to contact their advisor and Dissertation Committee to identify a mutually acceptable date (with at least four 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 Department Head and Program Assistant of the exam scheduling by forwarding the title and abstract of the dissertation and the scheduled date, time, and location of the examination. 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 dissertation is complete, the student will distribute electronically a final draft to the dissertation committee and Department Head at least two weeks prior to the defense.

The Dissertation Committee will be joined by an external member serving as the Dissertation Exam Chair. The Chair's responsibility is to ensure that the exam is fairly conducted, facilitate public questions and the closed examination questions, provide a neutral perspective as the committee scores and decides the exam outcomes, and assist in keeping the exam proceeding on schedule. This chair will be appointed by Dean of Graduate Education via a formal request from the Department Head in consultation with the student's advisor. This external member may not be core faculty within the student's Ph.D. program and must be a tenured RIT faculty member who holds an earned Ph.D. degree.

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 dissertation research. During the talk, the following points must be addressed: the sustainability challenge being addressed and its relevance; the dissertation research questions, the objectives, novelty, and accomplishments of the research; the approach and specific methods applied and why; and the key results, interpretations, 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 Dissertation Committee will examine the candidate in a closed meeting. The Department Head may also observe. The examination is primarily concerned with the dissertation research work, but it is also the final certification of the student's overall knowledge for the degree. Questions may relate to any aspect of the material in the research 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 dissertation requires no change or only minor typographical or editorial changes which will be made to the satisfaction of the dissertation advisor.
- *Accepted with Minor Revisions.* The dissertation requires minor changes in substance and/or editorial changes or clarifications. Typically, this category implies that no further research needs to be done. It is more a matter of refinement, clarification, or elaboration. The report of the 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 dissertation advisor.
- *Accepted with Major Revisions.* The dissertation 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 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 examining committee will be responsible for approving these changes.
- *Fail.* Students who fail the dissertation defense cannot attempt the defense a second time, but may be considered for the MS degree by approval of the Department Head.

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

Additional Requirements

Teaching Requirement

Ph.D. candidates are required to undertake some form of teaching during their enrollment in the program. This may consist, for example, of developing and delivering lectures in a GIS course or workshop, teaching in GIS' K-12 outreach programs, working as a teaching assistant in other RIT departments, or other comparable experience. Fulfillment of this requirement requires the approval of the advisor and Department Head. To help students develop effective

teaching skills, the RIT Graduate School often offers a Teaching Assistant Training workshop, which GIS students can attend (more information available on the Graduate School website).

Paper Publication and Presentation Requirements

All candidates for the Ph.D. must submit, with their advisor's approval, at least one first-authored paper to a peer-reviewed scholarly journal recognized by the Web of Science citation index. Candidates must also give one presentation in their research area at an international conference approved by their advisor (this includes conferences held in the U.S. but attended by an international audience). Students must have both of these requirements approved by their advisor and dissertation committee.

Research Data and Equipment Transfer

All candidates for the Ph.D. must complete their studies with a proper cleanup and transfer of lab equipment, procedures, and data files pertinent to the dissertation work. 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. Lab notebooks must be scanned and digital copies provided to the advisor. 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 the dissertation research. 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.

RIT's Continuation of Thesis Policy

Once work has begun on a dissertation, it is seen as a continuous process until all requirements are completed. If a student has completed course work but has not finished the dissertation itself or if the student is not taking any course or research credits during a term (typically summer), it is the responsibility of the student to register for Continuation of Thesis. 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 before the Continuation of Thesis tuition is levied. During summer, the student should register for zero credit Continuation of Thesis if they are taking no course or research credits. Payment of all 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 for "0" credits (using a drop/add form) for which no tuition is assessed in order to maintain registration for one semester only, excluding summer, or remove the student from the program.

Degree Certification

After the student has finished the dissertation, the following steps will be taken by the GIS Program Assistant:

a. Obtain the Ph.D. Graduation Certification Form signed by the Department Head to certify that the dissertation has been successfully defended. This form will only be signed after the final approved dissertation has been submitted to ProQuest and confirmation of acceptance provided to the Sustainability program office.
b. Request the Ph.D. 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 GIS Resources and Policies

Language Proficiency

The Ph.D. 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 milestones. 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.

Parallel M.S. Degree

Students pursuing the Ph.D. degree in Sustainability may have personal or professional motivations for jointly seeking a M.S. degree in Sustainable Systems. Students interested in this option should first consult with their advisor and review the M.S. Program Guidelines to understand all requirements. To earn the M.S. Sustainable Systems (capstone option), a student must complete all requirements for that degree, which include 24 credit hours of core and elective courses, 6 credit hours of capstone research credits, and completion of a culminating capstone project and report. There is no process currently approved for earning a parallel M.S. with thesis option. The course requirements can often be satisfied with credits already taken for the Ph.D. The capstone credit requirements can often be satisfied with PhD-level research or thesis credits already taken, via an Enrollment Correction form (once substituted, these credits will no longer count toward the required dissertation research credits). This conversion can only be requested after the capstone document is submitted and graded. The capstone may be any one of the three capstone options described in the M.S. Program Guidelines; although students in this situation typically pursue the research option.

The capstone project and report may use some of the research, data, and results obtained through the course of completing the dissertation research, but must not be a verbatim copy of any materials submitted to satisfy the Ph.D. requirements. The scope and content of the capstone should be discussed in consultation with the advisor. All program forms and requirements for the M.S. must be completed (see GIS MS Program Guidelines). Once a student has been approved by the advisor and met all requirements, they should contact the Department Head for approval. The Department Head will facilitate the administrative processes for this option.

Transition to M.S. Degree

Students pursuing the Ph.D. degree in Sustainability may have personal or professional motivations for switching to the M.S. Sustainable Systems degree, including situations where a student is no longer eligible to continue in the Ph.D. as in cases of not passing the Qualifying Exam or not making satisfactory progress on the dissertation. In these situations, the student should first consult with their advisor and review the M.S. Program Guidelines to understand all requirements. To earn the M.S. Sustainable Systems (typically via the capstone option), a student must complete all requirements for that degree, which include 24 credit hours of core and elective courses, 6 credit hours of capstone research credits, and completion of a culminating capstone project and report. The course requirements can often be satisfied with credits already taken for the Ph.D. The capstone credit requirements can often be satisfied with PhD-level research or thesis credits already taken, via an Enrollment Correction form. This conversion can only be requested after the capstone document is submitted and graded. Normally, students use research work already completed to fulfill the research option of the M.S. capstone, in consultation with the advisor. While most students in this situation pursue the M.S. Capstone option, students can request to be considered for the M.S. thesis; this decision requires advisor approval. Once a student has changed programs (from the Ph.D. to the M.S.), it is to the discretion of the advisor to continue funding a GRA. The stipend amount covered by the GRA and the tuition benefits will change once a student has moved to the M.S. program, and these issues should be discussed proactively.

Additional RIT Resources and Policies

All RIT policies apply in full to the Sustainability Ph.D. 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 Sustainability program office. Administrative support is available to students 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 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 Policies
The Ph.D. Sustainability 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