

**Policies and Guidelines for Graduate Studies in the
School of Environmental Sciences
University of Guelph**

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1. Introduction

Welcome to graduate studies in the **School of Environmental Sciences (SES)**. This document describes the graduate programs offered by SES, admission and program requirements, student funding sources, and regulations for graduate students in SES. Please note that SES abides by policies and guidelines for Graduate Studies at the University of Guelph outlined in the [Graduate Calendar](#). Students and faculty should be familiar with the content of the following graduate calendar policies: Responsibilities of Advisors, Advisory Committees and Graduate Students, Graduate Student-Advisor Mediation Procedures, Student Rights and Responsibilities, and Degree Regulations. This document outlines policies and guidelines that are specific to the SES.

The graduate program in SES is the responsibility of graduate faculty, staff, and graduate students. Administrative activities are coordinated through the Graduate Program Committee within the School. The SES Graduate Program Assistant (ses.gradsec@uoguelph.ca) and the Graduate Program Coordinator are responsible for overall coordination of graduate studies within the SES. All general inquiries on graduate studies within the SES can be directed to them.

The **SES** is an academic unit within the Ontario Agricultural College (OAC) at the University of Guelph. The School includes an interdisciplinary group of scientists teaching and conducting research into biological, physical, and chemical processes, and their interactions in the environment. The research areas are broadly categorized into [Earth and Atmospheric Sciences](#), [Ecosystem Science and Biodiversity](#), and [Plant and Environmental Health](#).

Through its close ties and cooperation with federal and provincial research groups and industry, the School makes use of expertise available in other organizations, through appointment of Adjunct, Associate and Special Graduate Faculty to serve as members of graduate student Advisory Committees.

2. Degrees and disciplines offered

The SES offers thesis-based degrees of Master of Science (MSc) and Doctor of Philosophy (PhD) degrees, and a course work based degree of Master of Environmental Sciences (MES). MSc and PhD degrees are also offered through two collaborative programs: The Toxicology Program and the International Development Studies Program. Please consult the [graduate calendar](#) for details on the collaborative programs.

2.1 Master of Environmental Sciences

The MES (Master's degree by coursework) is a one-year program that provides the opportunity to study the most recent theoretical and technical advances and to strengthen one's fundamental knowledge in the environmental sciences. This is achieved through a blend of discipline-specific courses as well as broader theme-based courses where the multi-disciplinary breadth of environmental sciences is explored. The MES program is also designed to promote critical thinking and enhance oral and written communication. This graduate experience will prepare students to take on leadership roles in public, private and non-profit sectors and to find solutions to Canadian and global environmental questions. The MES allows students to choose from two options: 1) 3.0 credits of courses (typically six 0.5 credit courses) + 1 major research project (MRP; worth 1.0 credit); or 2) courses-only (worth a total of 4.0 credits; no MRP; typically, eight 0.5 credit courses). Under both options, the program can be completed in 8 or 12 months.

2.2 Master of Science

The objective of the MSc program (Master's degree by thesis) is to train graduate students so that they can develop a broad knowledge in the field of environmental sciences, expertise in specific aspects of environmental sciences (thesis research focus), skills in laboratory and field techniques, as well as excellence in writing and oral communication, and interpersonal skills. With these skills, MSc students will possess a strong foundation on which they can be highly successful in science-related positions in government, industry, and academic institutions.

2.3 Doctor of Philosophy

The objective of the PhD program is to develop highly competent, independent, creative, and critical scientists. Doctoral graduates of the SES Graduate Program will provide leadership as scholars in academic institutions, and as managers and officers in the industrial research and

development sector, in research and policy branches within the government sector, and in other social institutions. Research in the PhD program is expected to be original and novel, contribute significantly to the relevant research field, and be published in high-quality peer-reviewed journals.

The PhD degree is offered in the following Fields of Study:

- Earth and Atmospheric Science
- Ecosystem Science and Biodiversity
- Plant and Environmental Health

3. Schedule for application

Prospective students may apply to the graduate program of the SES at any time but may enter graduate programs only at the start of a semester as per the schedule listed in Table 1. Please keep in mind when applying that processing graduate applications from Canadians and landed immigrants can take 6-8 weeks. Prospective students should consider the time required to apply for scholarships, assemble the required transcripts, obtain letters of recommendation, and complete the application form.

International applicants should allow at least six months for the completed application to be considered to provide time to apply and receive authorization to study in Canada if accepted to a graduate program at the University of Guelph. In addition to the other application materials, English language proficiency test results may also be required (e.g., TOEFL or IELTS). Applicants should arrange to take one of these tests in advance of applying. Ample time should be allowed for the results of these tests to reach the University of Guelph.

Table 1. Schedule of entry dates by degree program for the School of Environmental Sciences

Degree	Entry Semester		
	September	January	May
MES	X		
MSc	X	X	X
PhD	X	X	X

4. Admission requirements

The Graduate Program Committee (chaired by the Graduate Program Coordinator) has primary responsibility for determining the admissibility of applicants to graduate programs within the School. Applications are made directly to the School rather than the University's office of Graduate and Postdoctoral Studies, and questions should be directed to the Graduate Program Coordinator or the Graduate Program Assistant.

Before applying to the thesis-based programs (MSc and PhD), students are strongly advised to obtain the support of a faculty member willing to serve as their thesis Advisor. This will expedite the processing of their application and ensure that a potential applicant has thoroughly investigated the feasibility of graduate work in the SES prior to submitting an application. This saves the applicant time and money and reduces the investment of time by faculty and staff in processing applications from students unlikely to be admitted because of space and resource constraints.

The University and the SES require documentation of proficiency in English. If English is not the student's first language, students will be required to submit the results of a standardized language test. Please refer to <https://www.uoguelph.ca/graduatestudies/future/international> for details on the acceptable tests and minimum scores required.

4.1 MES and MSc Programs

The School's admission standards for the MSc and MES programs are the same as the University, namely a completed, four-year, honours science degree with a minimum 70% (B-) average during the final two years (4 semesters) of full-time undergraduate study. Meeting the minimum requirement (70%) does not guarantee automatic entrance; depending on other criteria (e.g., letters of reference, standardized test scores, academic background relevant to the area to which the applicant has applied), students may be considered for admission with provisional status. Students on provisional status must obtain a 'B' average (73%) with no individual grade below 70% in at least two graduate courses during their first two semesters of study to continue in the program. Provisional students will be funded at the same level as regular students (please see below). Alternate Admissions Criteria are also available for applicants who may not meet the minimum academic requirements, but who are able to provide evidence of a significant, sustained record of relevant experience and relevant task performance (normally a minimum of 5 years).

4.2 PhD Program

Admission to the PhD program is generally restricted to students with a recognized MSc degree in a related field obtained with a minimum academic standing of 'A-' ($\geq 80\%$) in their postgraduate studies. In some cases, students from non-traditional MSc programs (e.g., MES) may also be considered. Students who meet the minimum University requirement ($>73\%$) but not the School requirement ($\geq 80\%$) may be considered for admission with provisional status (please see below). Students on provisional status must obtain an 'A-' ($\geq 80\%$) average and no individual mark below 73% in at least two graduate courses during their first two semesters of study to continue in the program. Provisional students will be funded at the same level as regular students. In exceptional cases, students may enter the PhD program directly from a B.Sc. if they have the minimum requirements as defined by the Office of Graduate Studies of the University of Guelph. Direct admission into a PhD program from an Honours Undergraduate degree is also possible, but the average during the last two years of full-time study needs to be over 80%, and the student needs to be rated as outstanding by referees. Evidence of research aptitude, capability and proficiency is also required.

4.3 Transfer from Masters to Doctoral Program

Students who are currently enrolled in the MSc program may consider a transfer to the PhD program with the support of their advisory committee.

Considerations before making such a decision include:

1. Career plans: this involves discussing how an MSc or PhD will serve as preparation or foundation for a particular chosen career.
2. Scope of current research project: this involved discussing whether the thesis project is too ambitious for a MSc thesis, and how it might be expanded to a PhD project or be reduced to fit the MSc scope.
3. Completion time: this involved weighing the option of a) finishing current project and completing the MSc, and subsequently embarking on follow-up research at the PhD level, versus b) continuing with the current project but in greater depth to achieve a PhD.

In order to complete a transfer, the following are required:

1. The student must initiate the application before the end of Semester 3 of their MSc program but not before the end of semester 2.
2. The student must have a undergraduate degree ($\geq 77\%$) in a related field from an accredited university.

3. The student must have completed at least 1.0 graduate-level course credits (two 0.5-credit graduate courses) recognized for credit at the University of Guelph plus the required graduate seminar course in Environmental Sciences, with an average of $\geq 80\%$.
4. The student must submit a written report of progress in research that includes documentation of productivity, such as:
 - i. Papers published, accepted, or submitted to peer-reviewed journals.
 - ii. Publication of technical reports of scientific work.
5. A statement from the Advisory committee concerning research potential is required. This statement is in the form of a letter signed by all the members of the Advisory committee. This statement must address the following:
 - a. How the MSc project is to be expanded to provide the breadth and the depth of scholarship that is expected of a PhD
 - b. How the additional time required by the student to complete the PhD program is to be funded.
 - c. Confirmation of the student's scholarly maturity and readiness to undertake a PhD program.

This package is sent to the SES Graduate Program Committee and then the Director of the SES for approval. Once approved, the complete package is sent to the Office of Graduate Studies with the following forms:

1. A doctoral funding form and new Advisory Committee Form signed by the Advisor.
2. An Application for Transfer to another Program form. The transfer fee is payable when the application is submitted to the Office of Graduate Studies.

Please consult the graduate calendar under internal program transfer application procedure for more details on this process

4.4 Provisional acceptance

A student may be granted provisional acceptance to the graduate programs in the School of Environmental Sciences. Based on grades, letters of reference, or other information, the Graduate Program Committee may recommend that the student only be admitted on a provisional basis for up to two semesters.

Provisional acceptance will normally have the specific requirement that:

1. The student takes two graduate-level courses within the first two semesters and attain a minimum grade of 70% (MSc) or 80% (PhD) in both courses, with an average $\geq 73\%$ (MSc) or $\geq 80\%$ (PhD). For the MES, the student should take two graduate-level courses in the first semester and attain a grade of $\geq 70\%$. When no available and relevant graduate courses are available, senior undergraduate courses can be taken instead, upon the SES graduate committee's approval.
2. The courses to be taken will be decided by the student and their Advisor(s) and specifically named in the letter of provisional acceptance.
3. The evaluation in these courses is by assignment of a numerical or letter grade and not "satisfactory/unsatisfactory".
4. The courses to be taken do not have, as the majority form of assessment, a written paper or report marked or evaluated by the Advisor(s).
5. For thesis-based programs, the student begins working on their thesis research and participate in research under the Advisor(s') direction.

At the end of the provisional semester(s) and after the marks for all courses are officially posted, the student's status will be changed to regular status if the grades for the assigned courses are $\geq 70\%$ (MSc, MES) or $\geq 80\%$ (PhD), with an average $\geq 73\%$ (MSc) or $\geq 80\%$ (PhD). If these conditions are not met, the student will be asked to withdraw from the graduate program in the SES in accordance with "Procedures and Guidelines for Student Cases" of the Office of Graduate Studies of the University of Guelph.

5. Program requirements

5.1 MES Program

5.1.1 Prescribed program of study and required courses

Candidates for the MES degree by course work must complete a minimum of 4.0 credits and can choose one of two options: 1) coursework plus major research project (MRP) or 2) coursework only option. All MES students must take two required 0.5-credit courses, namely ENVS6501 Integrating Science and Policy in Environmental Sciences (Fall semester) and ENVS6502 Seminar in Environmental Science (Winter semester). Students who select the major research project option will enroll in ENVS6500 Environmental Sciences Research Project, which is worth 1.0 credit. Although students may start to define their MRP as early as the fall semester (see section 5.2.2 below), students will typically enroll in ENVS 6500 during the summer semester. Students wanting to complete the program in 8 months should enroll in ENVS6500 in either the Fall or Winter semester.

Beyond the two required courses, the remaining 2.0 credits (coursework plus MRP option) or 3.0 (coursework only option) credits can be obtained by taking SES courses that focus on such areas as Earth and Atmospheric Science, Soil Science and Environmental Biology or relevant courses from other academic units at the University of Guelph. Students should discuss their course selection and/or research projects with the MES program advisor (see website for current listing of courses and for the MES program advisor). Note that the minimum acceptable mark is 65% for any course (graduate or undergraduate). If a student gets a grade lower than 65%, this will be considered a failing grade.

5.1.2 Duration of program and funding

The MES program is generally completed in 12 months but can be fast-tracked to 8 months if the coursework-only option is selected or if the activities for the MRP are initiated early in the program (Fall or Winter semester). The program may take up to 3 years if registered as a part-time student. Students who are not able to complete the program within the allotted duration will need to submit a plan of study to graduate studies. Please contact the MES program advisor for assistance.

Students in the MES program will normally be self-funded, or funded by their employer, and will not receive any stipends from the SES or their advisor. Students may receive an entrance scholarship of \$1000 for academic achievement. Students may also apply for teaching assistantships (see section 6 below) and for internal awards.

Students in the MES program have access to a Professional Development Fund to assist with the costs of taking skills training workshops or courses. Please contact the MES program advisor for more information.

5.1.3 Individual Development Plans

The Individual Development Plan (IDP) is a learner-centered tool that helps MES students align personal and professional goals with academic expectations and responsibilities. The IDP helps students identify, document and communicate their transferable skills.

MES students will assess their skills, set skill-development goals, and record their achievements each semester. All MES students are matched with a mentor (from industry, government or NGO) and must meet with their mentor to discuss their IDP each semester. In addition, MES students will complete an exploration of potential careers, an informational interview and a final assignment that will prepare them for post-graduation job searching. Detailed information about the IDP (and deadlines) will be provided to MES students during the first few weeks of the Fall semester.

5.1.4 Major Research Project (MRP)

Students in the MES program who select the MRP option will complete it at the University or as part of a placement with an approved non-academic agency under the guidance of a SES faculty advisor or co-advisor.

Although the summer semester is the most common time for students to begin a project, students can commence a project at any time during the MES program. Students are therefore encouraged to contact faculty members in an area of interest as early as possible in the program to discuss potential projects.

“Each student carrying out a MRP will have an advisory committee consisting of two people - the advisor and the second reader. The advisor will be a regular graduate faculty member of the University of Guelph, and an additional graduate faculty member will act as a second reader, to be selected in consultation with the student. The second reader can either be a special, associated, or regular graduate faculty”. **Please submit an advisory committee appointment form to the MES program advisor within two weeks of starting the MRP.**

The relationship between the graduate student and the Advisor and the rights and responsibilities of the student and the Advisor are defined in more detail in the [Graduate Calendar](#). To help with this relationship, a list of expectations for both parties is given in Appendix A (section 8). If either party encounters difficulty that cannot seem to be resolved

through discussion between both parties, they are encouraged to contact the Graduate Program Coordinator for assistance.

The project may include analysis of a data set (derived from lab, field, or computer simulation), or major, critical literature review. The data may come from a pre-existing source or from measurements performed by the student.

The final research project report (see Appendix B/Section 9 for preparation guidelines) must be submitted to the student's Advisory Committee at least four weeks prior to the end of the semester of submission. The student's Advisory Committee members will each evaluate the paper on a numeric grade basis, which will be averaged to give a final grade for the report. If the paper is deemed unsatisfactory, the student will be given an opportunity to make corrections and re-submit it. A second unsatisfactory result constitutes a recommendation to the Board of Graduate Studies that the student be required to withdraw (see Unsatisfactory Progress and Appeals of Decisions on the Graduate Calendar).

The student will make a presentation to the SES on their research project in the winter (8 month or part time option) or summer (12 month or part time option) semester prior to graduation. The presentation will follow standard conference oral presentation format with 15 minutes summarizing the research findings and 5 minutes for questions. These presentations will be scheduled through the MES Program advisor in consultation with the students. The presentation will be graded by the Advisor and one other faculty, and these marks will be averaged to provide a grade for the presentation.

The marking scheme for the research project course must include a report and oral presentation, with other components to be determined and specified in a learning contract between the student and the advisor at the start of the project. For example, it can include a combination of the following: draft and final of research project report, presentation, submission of datasets if doing original field or lab research, annotated bibliography if doing literature review.

5.1.5 After completion

The student may be offered an opportunity to place his/her report on-line for wide public access. This is not mandatory but allows student reports to be available online for others to see and provides a permanent link that can be used in electronic resumes or e-portfolios. Once the student has received a final grade for their research project report, they will be contacted by the Atrium Online Repository staff with instructions on how to submit their report. The process will include selecting appropriate creative commons and distribution licenses.

For more information, consult this link for details on how to submit to the Atrium:

<http://atrium.lib.uoguelph.ca/submit>.

5.2 MSc program

5.2.1 Prescribed program of study and required courses

Students in the MSc program must complete 1.5 credits at the 6000 level. The SES requires all students to complete the seminar course ENVS 6900 as part of the 1.5 credits. The minimum acceptable mark is 65% for any course (graduate or undergraduate). If a student gets a grade lower than 65%, this will be considered a failing grade.

To determine which courses the MSc student should take to complete the credit requirements, the Advisory Committee shall meet with the student to discuss the student's background, interests, and knowledge in the proposed research area. The Advisory Committee will then establish a program of prescribed courses and additional courses (if any). The program of courses must be submitted to the Graduate Program Assistant **no later than the end of the tenth week of the student's second semester.**

5.2.2 Individual Development Plans

The Individual Development Plan (IDP) is a learner-centred tool that helps MSc students align personal and professional goals with academic expectations and responsibilities. The IDP helps students identify, document and communicate their transferable skills. MSc students will assess their skills, set skill-development goals, and record their achievements as part of the required research seminar. MSc students will meet with a mentor (from industry, government or NGO) to discuss their IDP. In addition, MSc students will complete an exploration of potential careers, an informational interview and a final assignment that will prepare them for post-graduation job searching. Detailed information about the IDP (and deadlines) will be provided to MSc students when they take the required seminar course. Students are encouraged to revisit their IDP at the midpoint of their program as well as a few months prior to finishing their degree.

5.2.3 Advisory Committee

The relationship between the graduate student and the Advisor, and the rights and responsibilities of the student, are defined in more detail in the [Graduate Calendar](#). To help with this relationship, a list of expectations for both parties is given in Appendix A (section 8). If either party encounters difficulty that cannot seem to be resolved through discussion between both parties, they are encouraged to contact the Graduate Program Coordinator for assistance.

The Advisor is responsible for forming the Advisory Committee in consultation with the student. The Committee for MSc students shall consist of the Advisor or Co-Advisors (who usually serves as Chair of the Committee) and at least one additional member of the Graduate Faculty,

Associate Graduate Faculty, or Special Graduate Faculty. Most MSc Advisory Committees have three members. Suitably qualified individuals who are not members of the Graduate Faculty at the University of Guelph may be appointed to an Advisory Committee after being appointed as Associated or Special Graduate Faculty. Appointments to Associated or Special Graduate Faculty are made by the Board of Graduate Studies on recommendation by the Director of the SES. Information pertaining to the difference between Graduate, Associated and Special Graduate faculty are available on the back of the nomination form or at <https://www.uoguelph.ca/secretariat/office-services/senate/senate-boards-and-standing-committees/board-graduate-studies/policy>. The Advisory Committee should be established and should meet before the end of the student's first semester, and **no later than the twentieth class day of the student's second semester.**

5.2.4 Duration of program and funding

The expected completion time for a MSc by thesis program is 6 semesters. Students who do not complete their program within the prescribed completion period will be notified by Graduate Studies by the end of semester 7, and both the student and the advisory committee will be asked to submit a plan of study for completion by the time of the maximum program duration (please see details at <http://www.uoguelph.ca/registrar/calendars/graduate/current/genreg/genreg-reg-maxreg.shtml>).

The minimum guaranteed stipend for students in the MSc by thesis program is \$16,500¹ (graduate research assistantship, GRA) and the duration of support is 6 semesters (referred to as “eligible semesters” below). Students may also apply for additional support in the form of scholarships, awards or other assistantships. Students should, however, note that in case they obtain major awards ($\geq 10,000\$$), the stipend will likely be reduced. Masters NSERC holders will receive an additional \$7,500 per year, i.e., \$5,000 from the University and \$2,500 from the Advisor, while holding the NSERC scholarship); for other major awards, it is recommended that the new stipend be above the minimum stipend to recognize the student’s academic excellence. For students receiving awards and scholarships below \$10,000, it is expected that the advisor will continue to provide the minimum stipend. Assistantships may be graduate teaching assistantships (GTA) or graduate service assistantships (GSA) as discussed below and are in addition to the GRA. All domestic MSc students are guaranteed a 0.5 GTA for one of their first three semesters. MSc students whose NSERC funding has expired but who are still within the eligible semester period will receive the base funding of \$16,500. International students will receive the respective base funding plus an additional \$3,000 per year to help offset the higher fees incurred by these students.

¹ All references to currency in this document are to Canadian Dollars

Part-time MSc students may or may not be supported by their research supervisor. Such support is at the discretion of the advisor and is not required by the University or the School.

Please note that because student support usually comes from their Advisor's research grants, there will be certain expectations regarding reporting and publication of research results in a timely manner. Appendix A has additional details on the expectations and roles of students and advisors in the publications resulting from the graduate student program.

5.2.5 Thesis proposal and seminar

MSc students typically present both an oral and written proposal on their thesis research in ENVS 6900. The proposal will outline the background, research hypotheses, questions or objectives, methods, and other pertinent aspects of the project, and must be approved by the Advisory Committee. The public seminar will be scheduled in association with the seminar presentations for ENVS 6900 at the discretion of the faculty member(s) responsible for the course.

5.2.6 Evaluation reports

The Advisory Committee should meet with the MSc student at least once per semester to review course work and research progress. The Advisor is responsible for completing an evaluation of the student's progress through the online platform Gryph Forms. The student will set up a profile and initiate a report, which is then circulated digitally to the advisory committee and graduate coordinator for signature. The contents of the Evaluation Report will be made known to the student, who then has the opportunity to add comments and request a meeting with the Graduate Program Coordinator. All reports will be submitted to the Office of Graduate Studies.

5.2.7 Final Examination

The final oral examination, devoted chiefly to the defense of the thesis, is a departmental examination identified as the MSc examination, where the student (MSc Candidate) will present and defend his/her thesis. At this time, the thesis results are defended in a process that includes a presentation of the work and a defense of the thesis results through oral questioning. Both are open to the public. The Graduate Calendar describes the nature of the various graduate examinations and the composition of the Examination Committee. Detailed procedures for initiating and completing the MSc examination within the SES are provided in Appendix C.

The Candidate must read the [Master's thesis submission and defence schedule](#) in the graduate calendar and make sure they are ready to proceed. Students are strongly advised to attend one or more defenses to become familiar with the process. Questions about the process can be directed to the Graduate Program Assistant or the Graduate Program Coordinator.

5.2.7.1 MSc thesis Examination Committee

The MSc examination committee normally consists of four members appointed by the Graduate Program Coordinator, as follows:

1. A member of the Graduate Faculty who is not a member of the Advisory Committee is appointed to act as Chair of the Examination by the Graduate Program Committee by the authority of the Director of SES on behalf of the Dean (typically a faculty member of the School of Environmental Sciences). The examination chair will ensure that the thesis defense is conducted correctly and that the student is treated fairly. The chair does not participate directly in questioning the candidate during the examination and does not have a vote in the final assessment of the student.
2. A member of the Candidate's Advisory Committee (normally, the Advisor);
3. A member of the graduate faculty or the associate graduate faculty or special graduate faculty who may be a member of the Advisory Committee;
4. A fourth member will be appointed from among graduate faculty from another Department or from SES, but not from the Advisory Committee (the "internal external").

In normal practice, the Advisor(s) contact(s) these individuals in advance to determine their willingness and availability to serve on the Examination Committee, including reading and commenting on the thesis, and participating in the thesis defense on several possible defense dates.

5.2.7.2 Preparation for the defense

Before the thesis is ready for defence (approximately 8 weeks prior to defence), the Advisor(s) and student prepare the [Examination Information Form](#) to be submitted to the Graduate Program Assistant and Graduate Program Coordinator to alert them that an examination chair is needed. After reviewing the nominations for Committee membership and potential dates for the examination on the Examination Information Form, the Graduate Program Coordinator selects the Chair of the Examination Committee who then communicates with the Candidate and his/her Advisor(s) to verify the membership of the Examination Committee. Any concerns are addressed at this time by the Graduate Program Committee and, if required, the Director of the School and/or the Dean of Graduate Studies.

When a final draft of the thesis is nearly ready and at least three weeks prior to the defence, the Candidate and the Advisor(s) complete the [Examination Request Form](#) and ensure that all the members of the Advisory Committee have signed the Examination Request Form to initiate

subsequent steps in the defense process. The Exam Request form is sent to the Graduate Program Assistant and Graduate Coordinator for final signature. It is not necessary that all signatures be on the same copy of the form. The Graduate Program Assistant will provide the signed exam request form to the Chair of the Examination Committee. If delays are experienced and the thesis is not ready for distribution 2 weeks prior to the defence, the Candidate and Advisor(s) work together to ensure the availability of all members of the Examination Committee for the revised defense date.

When the Chair of the Examination Committee receives the thesis and Examination Request Form with signatures of all members of the Advisory Committee, the Chair examines the thesis to verify its suitability for defense. If it reads well, has appropriate introductory and concluding sections, and requires only minor corrections, then it is ready for defense. If the Chair decides it requires additional editing prior to defense, the thesis may be returned to the Candidate with specific instruction as to what is required. However, it is not necessary that the thesis be in its final form at this stage. The chair will then send the thesis to the examination committee. Students will provide printed copies if requested by individual examiners.

For both electronic and printed versions of the thesis, the copy of the thesis for examination should include continuous line numbering and be saved as an Adobe PDF and word file. Note, that a hard copy is easier to work from during the examination and the Candidate should have a hard copy at the defense.

A notice advertising the defense is prepared by the Graduate Program Assistant and is posted in several prominent locations within the School at least one week in advance of the thesis defense. This notice is distributed to the members of the Examination Committee, and other departments that may be interested in informing members of their department/unit of the defense.

The MSc Candidate is responsible for booking and preparing the room for the defense (e.g., checking the functioning of the computer and projector, drinking water, and any other materials required). Rooms that are typically booked for defenses include Alex 265, Bovey 1118, Bovey 3301. Please contact the Graduate program Assistant to book a room.

5.2.7.3 The MSc thesis defense

University of Guelph guidelines for these defenses can be found at:

<https://www.uoguelph.ca/graduatestudies/sites/uoguelph.ca.graduatestudies/files/GUIDELINESFOR%20ORAL%20EXAMINATIONOF%20THESIS-teri-1.docx>

The thesis seminar and final oral examination are open to the public. During the thesis defense, the order of activities is:

1. The Chair introduces himself/herself and welcomes everyone to the defense.

2. The Chair introduces all members of the Examination Committee and their affiliations. The Chair may also introduce members of the Advisory Committee who are not represented on the Examination Committee.
3. The Chair outlines the procedure to be followed during the examination.
4. The Candidate presents a comprehensive 30-40 min seminar on the thesis research.
5. The Chair of the Examination Committee invites questions from the general audience. After these questions, there will be a short break, during which general audience members may leave. If they stay, they have no further opportunities for asking questions or interjecting comments, unless invited by the Chair of the Examination to address a specific issue.
6. Each member of the Examination Committee asks questions of the Candidate for 15-20 minutes in the first round, followed by 5-10 minutes in the second round of questions. Questions should relate primarily to the defense and the thesis, but the MSc examination is also considered to be a general examination on related topics so questions related to, but outside of the thesis, are permitted. The Chair of the Examination Committee keeps notes on the performance of the Candidate and can interrupt as needed to ensure the fairness of the examination. Any examiner, but not the general audience, may interject a related question at the discretion of the Chair of the Examination Committee.
7. Following the completion of the normal rounds of questioning, any final supplemental questions may be asked. The examination process should not take more than 2.5 hours.
8. The candidate and all visitors are requested to leave while the Examination Committee deliberates the results of the examination. The Chair solicits independent feedback from each member concerning the defense and other relevant matters. The Candidate is deemed to have passed the examination if no more than one member of the Examination Committee votes negatively or abstains from voting. Forms requiring signatures are circulated. The Examination Committee will then determine what revisions and corrections, if any, are required and who will be responsible for overseeing their completion by the student. It is common, for example, for the Chair of the Examination Committee to withhold his/her signature from the examination forms pending evidence of satisfactory completion of the requested revisions.
9. The Candidate is recalled and immediately informed of the decision and of recommended and required revisions to the thesis. The Chair of the Examination Committee provides verbal comments to the Candidate concerning his/her thesis and its defense. If the outcome of the defense is "unsatisfactory," clear indications of the deficiencies must be provided to the Candidate, both verbally and later in writing (within three working days), and the Candidate and Examination Committee discuss the next

steps to be taken and potential dates for a second defense (no more than two final oral examinations of the thesis are allowed).

10. The Advisor of the Candidate and the Chair of the Examination Committee will ensure that all required revisions are completed, and the examination forms submitted to the Graduate Program Assistant.

5.2.7.4 After the defense

There are several tasks that need to be completed after the defense. At the conclusion of the defense, the Chair of the exam provides verbal comments to the Candidate concerning his/her thesis and its defense, there are several forms that need to be completed and when submitting the final copy of the thesis.

Most theses require some corrections and edits after the defense, and it is normal for one of the examiners to withhold their signature of approval until these corrections are addressed. All corrections from all examiners must be specifically addressed. Where the student is unsure of the meaning of a comment, they should consult with the examiner and/or Advisor(s). When all corrections are made, the student should discuss what they have done with their Advisor(s) and the examiner whose signature was withheld. When this process is completed, and the examination approval form is fully signed, the thesis is ready for submission.

The Office of Graduate and Postdoctoral Studies (GPS) has specific requirements for the format of the thesis and the electronic submission process which is explained at this link: <https://www.uoguelph.ca/graduatestudies/thesis/index>.

Upon final approval of the thesis by the Office of Graduate Studies, an email will be sent to the student.

Before leaving SES the student is required to comply with SES regulations regarding safe disposal of samples, removal of personal belongings from laboratory, desk and office space, and return of all keys for return of deposit (if applicable).

5.3 PhD program

5.3.1 Prescribed program of study and required courses

The SES requires all PhD students to complete the seminar course ENVS 6900. Students who completed ENVS 6900 (or equivalent as approved by the Graduate Program Coordinator) during their MSc degree are not required to take it again as PhD students within SES.

There are no other University or School course requirements for the PhD degree except for the seminar course listed above. However, the Advisory Committee shall meet with the student to discuss the student's background, interest, and knowledge in the proposed research area, and the Advisory Committee will then establish a program of prescribed graduate courses ($\geq 65\%$ mark required) and additional courses (if any). The program of courses must be submitted to the Graduate Program Assistant **no later than the end of the tenth week of the student's second semester.**

5.3.2 Individual Development Plans

The Individual Development Plan (IDP) is a learner-centred tool that helps PhD students align personal and professional goals with academic expectations and responsibilities. The IDP helps students identify, document and communicate their transferable skills. PhD students will assess their skills, set skill-development goals, and record their achievements as part of the required research seminar. PhD students will meet with a mentor (from academia, industry, government or NGO) to discuss their IDP. In addition, PhD students will complete an exploration of potential careers, an informational interview and a final assignment that will prepare them for post-graduation job searching. Detailed information about the IDP (and deadlines) will be provided to PhD students when they take the required seminar course. Students are encouraged to revisit their IDP at the midpoint of their program as well as a few months prior to finishing their degree.

5.3.3 Advisory Committee

The relationship between the graduate student and the Advisor and the rights and responsibilities of the student and the Advisor are defined in more detail in the [Graduate Calendar](#). To help with this relationship, a list of expectations for both parties is given in Appendix A (section 8). If either party encounters difficulty that cannot seem to be resolved through discussion between both parties, they are encouraged to contact the Graduate Program Coordinator for assistance.

The Advisor is responsible for forming the Advisory Committee in consultation with the student. The Advisory Committee for PhD students shall consist of the Advisor or Co-Advisors and at least two other members of the Graduate Faculty, Associate Graduate Faculty, or Special Graduate Faculty, one of whom must be a member of a Department or School at the University of Guelph other than SES. The majority of PhD Advisory Committees have four members. Suitably qualified individuals who are not members of the Graduate Faculty at the University of Guelph may be appointed to an Advisory Committee after being appointed as Associated or Special Graduate Faculty. Appointments to Associated or Special Graduate Faculty are made by the Board of Graduate Studies on recommendation by the Director of the SES. Information pertaining to the difference between Graduate, Associate and Special Graduate faculty is available on the back of the Graduate Faculty Nomination form. The Advisory Committee must

be formed and submitted to the Graduate Program Assistant **no later than the twentieth-class day of the student's second semester.**

5.3.4 Duration of program and funding

The expected completion time for a PhD program is normally 9 semesters, or 12 semesters total for students who transferred up from the MSc program, referred to as “eligible semesters” below. Financial support is guaranteed in the form of scholarships or assistantships for all eligible semesters.

Students who do not complete their program within the prescribed completion period will be notified, and both the student and the advisory committee will be asked to submit a plan of study for completion by the time of the maximum program duration (please see details at <http://www.uoguelph.ca/registrar/calendars/graduate/current/genreg/genreg-reg-maxreg.shtml>).

Domestic PhD students will be guaranteed a minimum stipend of \$17,500 (Graduate Research Assistantship, GRA) plus an additional \$3,000 SES Scholarship and two ½ Graduate Teaching Assistantship (GTA) over two years, while within eligible program semesters. One TAship/year will be taken up in 2 of the first three years of the student’s program. Doctoral NSERC holders will receive an additional \$10,000 per year, \$5,000 from the University and \$5,000 from the Advisor while holding an NSERC scholarship. For other major awards (greater or equal to \$10,000), it is recommended that the new stipend be above the minimum stipend to recognize the student’s academic excellence. For students receiving awards and scholarships below \$10,000, it is expected that the advisor will continue to provide the minimum stipend. Doctoral students whose NSERC funding has expired but who are still within the eligible semester period will receive the same level of funding described above for non-scholar domestic PhD students. International students will receive the respective base funding plus an additional \$3,000 per year provided by the advisor and the International Doctoral Tuition Scholarship from the University to help offset the higher fees incurred by these students. They will also receive two ½ Graduate Teaching Assistantship (GTA) over two years, while within eligible program semesters. One TAship/year will be taken up in 2 of the first three years of the student’s program. Part-time PhD students may or may not be supported by their research supervisor. Such support is at the discretion of the advisor and is not required by the University or the School.

Please note that because student support usually comes from their Advisor's research grants, there will be certain expectations regarding reporting and publication of research results in a timely manner. Appendix A has additional details on the expectations and roles of students and advisors in the publications resulting from the graduate student program.

5.3.5 Evaluation reports

The Advisory Committee should meet with the PhD student at least once per semester to monitor research progress. The Advisor is responsible for completing an evaluation of the student's progress using the progress report on the online platform Gryph Forms. The student will set up a profile and initiate a report, which is then circulated digitally to the advisor committee and graduate coordinator for signature. The contents of the Evaluation Report will be made known to the student who then has the opportunity to add comments and request a meeting with the Graduate Program Coordinator if needed. All reports are submitted to the Office of Graduate Studies.

5.3.6 Thesis proposal and seminar

PhD students typically present both an oral and written proposal on their thesis research in the ENVS 6900 course. PhD students who have completed this course during their MSc studies or who switched from their MSc to the PhD program without completing the MSc degree in the school are not required to take this course again. However, they are required to prepare a written proposal and present a public seminar on their proposed doctoral thesis research before the end of their second semester in the PhD program. This proposal will outline the background, hypotheses, methods, and other pertinent aspects of the research project, and must be approved by the Advisory Committee. The public seminar will be scheduled through the Graduate Program Assistant in consultation with the student and the Advisor (this presentation may take place in association with the seminar presentations for ENVS 6900 at the discretion of the faculty member(s) responsible for the course).

5.3.7 Qualifying Examination

The Qualifying Examination, administered by the School's Graduate Program Committee, is a component of the doctoral program at the University of Guelph. Students must successfully complete this examination as part of their graduation requirements. The objective of these guidelines is to provide School-specific information for both students and faculty regarding the Qualifying Examination, with the goal of administering the Qualifying Examination as simply as possible.

The Qualifying Examination provides an opportunity to ensure that students have acquired an in-depth understanding of their area of research and in the broader aspects of scientific research and knowledge. For faculty, the Qualifying Examination provides an opportunity to assess the student's breadth and depth of understanding of the subject area and related fields, technical competence, analytical skills, capacity for critical and cross-disciplinary thinking and integration of various components of one's research and to identify a student's weaknesses that can be addressed within our graduate program. As the name implies, upon successful

completion of the Qualifying Examination, a student qualifies for the status of PhD Candidate. Thus, the Qualifying Examination allows the School to determine if a student is ready to progress to the dissertation stage of the doctoral degree.

Preparation for the Qualifying Examination involves a period of study and preparation (typically 2-3 months). There are numerous strategies that students can use to cope with the challenge of taking the Qualifying Examination; Here is one from UC Davis:

<https://grad.ucdavis.edu/current-students/academic-services-information/acing-your-qualifying-exam>

According to University regulations, PhD students should complete the Qualifying Examination before the end of the 5th semester of study. The SES suggests that this examination be completed even earlier, preferably at the beginning of the 5th semester, so that, in the event a second examination is needed, it can be completed before the end of the 5th semester. For students who are switching from MSc to the PhD program without completing the MSc, the University stipulates that the Qualifying Examination must be completed before the end of the 7th semester, while the School suggests that this examination be completed by the end of the 6th semester. Detailed procedures for initiating and completing the PhD Qualifying examination within SES are provided in Appendix D.

5.3.8 Final Examination

In the final examination, the thesis results are defended in a process that includes a presentation of the work and defense of the thesis results through oral questioning. Both are open to the public. The Graduate Calendar describes the nature of the various graduate examinations and the composition of the Examination Committee. Detailed procedures for initiating and completing the PhD examination within the SES are provided in Appendix B.

The Candidate must read the Office of Graduate Studies, Thesis Submission Procedures and make sure they are ready to proceed. Questions about the process can be directed to the Graduate Program Assistant or the Graduate Program Coordinator.

5.3.8.1 Thesis Examination Committee

The PhD thesis Examination Committee consists of five people with no more than two members of the Examination Committee from the Advisory Committee. Members are selected by the Advisory Committee and are as follows:

1. A member of the Graduate Faculty who is not a member of the Advisory Committee is appointed to act as Chair of the Examination by the Graduate Program Coordinator by the authority of the Director of SES on behalf of the Dean (typically a faculty member of the School of Environmental Sciences). The chair will ensure that the thesis defense is conducted correctly and that the student is treated fairly;

2. A member of the Candidate's Advisory Committee (normally, the Advisor);
3. A member of the graduate faculty, the associated graduate faculty, or special graduate faculty who may be a member of the Advisory Committee;
4. A fourth member from among graduate faculty normally from another Department or School at the University of Guelph (the "internal external").
5. A fifth member who has a doctoral degree, is an expert in the area, and is from outside the University, is the external examiner. The external examiner is selected by the Graduate Program Coordinator from a list of two or more nominees provided by the Advisory Committee. To facilitate this, CVs may be requested by the Graduate Program Coordinator. The external must be free of conflict of interest and may not have worked with or published with the Candidate or the Advisor(s) within the previous five years, not be adjunct, associate or special faculty in any Department or School at Guelph, must not be a previous student or supervisor of the Advisor(s), and must declare that they are free of any conflict of interest.

In normal practice, the Advisor(s) contact(s) these individuals in advance to determine their willingness and availability to serve on the Examination Committee, including reading and commenting on the thesis and participating in the thesis defense on several possible defense dates. This preliminary informal contact should not be confused with the formal invitation to serve on the Committee that comes from the Graduate Program Coordinator after deciding on which of the nominees to formally invite to serve.

5.3.8.2 Preparation for the defense

An Examination Information Form should be submitted to the Graduate Program Assistant and the Graduate Program Coordinator 8 weeks prior to the proposed defence date. After reviewing the nominations for the Examination Committee and the External Examiner, the Graduate Program Coordinator will contact the External to ensure that they are available and free of conflict of interest. The Graduate Program Coordinator will then appoint a Chair of the Examination Committee who will then communicate with the Candidate and his/her Advisor(s) to verify the membership of the Examination Committee. Any concerns are addressed at this time by the Graduate Program Coordinator and, if required, the chair of the department and/or the Dean of Graduate Studies. At this point the Chair of the Examination Committee formally contacts the external examiner to invite them to serve and provides them with:

- A cover letter explaining details concerning the report the External Examiner is expected to prepare, expenses, hotel and travel arrangements, and time lines if these have been determined
- The Guidelines for the report of External Examiner for the PhD Thesis,
- A Statement of Taxable Status, and

- The External Examiner Expense Form

When the thesis is nearly ready and the advisory committee has had a chance to review the thesis, the Candidate and Advisor(s) then complete the [Examination Request Form](#) and ensure that all the members of the Advisory Committee have signed the Examination Request Form to initiate subsequent steps in the process. An individual's signature indicates that he/she believes the thesis is ready to be sent to the other members of the Examination Committee for review. It is preferred but not necessary that all signatures be on the same copy of the form. The [Examination Request Form](#) should be submitted 5 weeks prior to the defence date to the Graduate Program Assistant and Graduate Program Coordinator. The Graduate Program Assistant will provide the signed exam request form to the Chair of the Examination Committee.

The Chair of the Examination Committee examines the thesis to verify its suitability for defense. If it reads well, has appropriate introductory and concluding sections, and requires only minor corrections, then it is ready for defense. If the Chair decides it requires additional, minor editing prior to defense, the thesis may be returned to the Candidate with specific instruction as to what is required. However, it is not necessary that the thesis be in its final form at this stage.

The approved thesis is sent by the Chair of the exam committee to the External Examiner and the other members of the Examination Committee at least **four** weeks prior to the date of the defense. It is suggested that the examination copy of the thesis be printed with continuous line numbers (for easier feedback) in PDF and word format or printed copies (if requested by the Examination Committee). Note that the Candidate can have access to a thesis copy during the defense. If delays are experienced and the thesis is not ready to be sent out to the examination committee four weeks prior to the proposed defence date, the Candidate and Advisor(s) work together to ensure the availability of all members of the Examination Committee for the revised defense date.

One week prior to the defense, the report of the External Examiner will be sent to the Chair of the Examination who will share this with the Candidate and the Advisor.

A notice advertising the defense is prepared by the Graduate Program Assistant and is posted in several prominent locations within the School one week in advance of the thesis defense. This notice is distributed to all members of the Examination Committee, the School, and other departments that may be interested in informing members of their department/unit of the defense.

5.3.8.3 The PhD thesis defense

The thesis seminar and final oral examination are open to the public. During the thesis defense, the order of activities is:

1. The Chair introduces himself/herself and welcomes everyone to the defense.

2. The Chair introduces all members of the Examination Committee and their contributions and thanks the external for their contribution to the examination of the thesis.
3. The Chair outlines the procedure of the examination as outlined below.
4. The Candidate presents a comprehensive 40-50 minute seminar on the thesis research.
5. The Chair of the Examination Committee invites questions from all except the Examination Committee. After these questions, there will be short break, during which members of the public may leave.
6. Each member of the Examination Committee asks questions of the Candidate for 20 minutes in a first round, followed additional questioning for 5-10 minutes in a second round. Questions should relate primarily to the thesis research. The Chair of the Examination Committee keeps notes on the performance of the Candidate and can interrupt as needed to ensure the fairness of the examination. Any examiner may interject a related question at the discretion of the Chair of the Examination Committee.
7. Upon completion of the questioning, the Candidate and all visitors are requested to leave while the Examination Committee deliberates the results of the examination.
8. The Chair solicits independent feedback from each member concerning the defense and other relevant matters. The Candidate is deemed to have passed the examination if no more than one member of the Examination Committee votes negatively or abstains from voting. Forms requiring signatures are circulated. The Examination Committee will then determine what revisions and corrections, if any, are required and who will be responsible for overseeing their completion by the student. It is common, for example, for the Chair of the Examination Committee to withhold his/her signature from the examination forms pending evidence of satisfactory completion of the requested revisions.
9. The Candidate is recalled and immediately informed of the decision and of recommended and required revisions to the thesis. The Chair of the Examination Committee provides verbal comments to the Candidate concerning his/her thesis and its defense. If the outcome of the defense is "unsatisfactory," clear indications of the deficiencies must be provided to the Candidate, both verbally and later in writing (within three working days), and the Candidate and Examination Committee discuss the next steps to be taken and potential dates for a second defense. (No more than two final oral examinations of the thesis are allowed).
10. The Advisor of the Candidate and the Chair of the Examination Committee will ensure that all required revisions are completed and the examination forms submitted.

5.3.8.4 After the defense

There are several tasks that need to be completed after the defense. At the conclusion of the defense, the Chair of the exam provides verbal comments to the Candidate concerning his/her thesis and its defense, the student will need to complete several forms when submitting the final copy of the thesis.

Most theses require some corrections and edits after the defence and it is normal for one of the examiners to withhold their signature of approval until these corrections are addressed. All corrections from all examiners must be specifically addressed. Where the student is unsure of the meaning of the comment, they should consult with the examiner and/or Advisor(s). When all corrections are made, the student should discuss what they have done with their Advisor(s) and the examiner whose signature was withheld. When this process is completed, and the examination approval form is fully signed, the thesis is ready for submission.

Office of Graduate Studies (GPS) has specific requirements for the format of the thesis and an electronic submission process which is explained at this link:

<https://www.uoguelph.ca/graduatestudies/thesis/index>.

Upon final approval of your thesis in Office of Graduate Studies, an email will be sent to the student.

Before leaving SES the student is required to comply with SES regulations regarding safe disposal of samples, removal of personal belongings from laboratory, desk and office space, and return of all keys for return of deposit (if applicable).

6. Funding sources for graduate students

Graduate students in the MSc and PhD program are provided at least the minimum stipend in the form of scholarships or assistantships for a minimum duration that varies with the program (please see above). SES does not require funding support for MES Students, but Project Research Advisors may elect to provide some support.

The SES Graduate Program Committee is responsible for coordinating applications for various internal and external scholarships and awards for SES students. For further details on GRAs, GTAs, GSAs and other awards see the Graduate Calendar.

The student award database can be searched at

<http://www.uoguelph.ca/registrar/studentfinance/index.cfm?app=gawards>

and a complete listing of available awards can be found in the graduate calendar:

<http://www.uoguelph.ca/registrar/calendars/graduate/current/gradawards/index.shtml>

6.1 Graduate Research Assistantship (GRA)

The duties and responsibilities of GRAs are defined in the Graduate Calendar. The support provided under the category Graduate Research Assistantship (GRA) is not of the nature of payment for services rendered but is a stipend to students whose thesis research is being supported by the grant(s) to the research advisor(s). The amount paid to a Graduate Research Assistant is determined by the provisions of the grant and the minimum values stipulated above for MSc or PhD and is approved by the SES Graduate Program Coordinator.

As the GRA is a stipend, the position is not formal employment and does not include the normal benefits as would be associated with regular employment. However, in SES, a GRA is entitled to ten (10) working days of vacation in each year. Advanced notice (5 working days) of intent to take vacation must be given to the Advisor(s) and the vacation time must be approved by the Advisor(s). Vacation time in excess of this amount, or in lieu of time devoted to the responsibilities of the GRA during statutory and University holidays, is at the discretion of the Advisor(s).

The Advisor of students holding a scholarship with a value greater than or equal to \$10,000 are expected to provide top up GRA support such that the new stipend is above the minimum stipend to recognize the student for their academic excellence. For students receiving awards and scholarships below \$10,000, it is expected that the advisor will continue to provide the minimum stipend. In the case of international students with a scholarship, 'minimum GRA stipend' is understood to include a \$3,000 supplement mentioned above.

The School of Environmental Sciences does not accept 'self-funded' or 'unfunded' full-time graduate students in the research-based MSc or PhD programs.

6.2 Graduate Teaching Assistantship (GTA)

All graduate students are encouraged to acquire teaching experience. The duties and responsibilities of GTAs are defined in the Graduate Calendar. Students are encouraged to inform their Advisor(s) of their intentions to accept a GTA. A GTA appointment usually spans 14 weeks - 12 weeks of classes plus preparation and examination working time.

At the beginning of each semester a GTA has been awarded, the awardee will meet with the faculty/individual(s) responsible for the course/service(s) to complete an "Assignment of Work Agreement" form outlining the expected distribution of effort. The selection and appointment of GTAs will follow the procedures outlined in the agreement with [CUPE 3913, Unit 1](#) as outlined on the SES website.

The salary of GTA's includes a 4% payment in lieu of vacation time. Other leaves of absence from GTA positions are described in the agreement with CUPE 3913, Unit 1.

6.3 Graduate Service Assistantship (GSA)

The duties and responsibilities of GSAs are defined in the [Graduate Calendar](#). Students should inform their Advisor(s) of their intentions to accept a GSA. A GSA may provide services to either a teaching or a research program. The typical GSA (research) would normally be involved in rendering service not directly related to the thesis research. The level of support provided through a GSA will depend on the nature of service provided.

At the beginning of each semester a GSA has been awarded, the awardee will meet with the faculty/individual(s) responsible for the course/service(s) to complete an "Assignment of Work Agreement" form outlining the expected distribution of effort (www.uoguelph.ca/hr/file/1497/download/4760/pdf).

The salary of GSA's includes a 4% payment in lieu of vacation time. Other leaves of absence from GSA positions are described in the agreement with CUPE 3913, Unit 1. The Advisor(s) should be informed when leave of absence is needed.

7. Safety and other SES Regulations

7.1 Safety

Students must abide by all health and safety regulations in SES. All students must be trained in WHMIS and be aware of specific lab and field safety procedures through discussion and completion of the SES Safety Checklist with their advisors received at the start of their program

See also relevant university guidelines for use of equipment and safety regulations (<https://www.uoguelph.ca/ehs/>).

All new students will also be required to attend the SES Safety Orientation Seminar.

Upon completion of their research, graduate students are responsible for clearing all samples, solutions, etc. that they have used during their research and leaving their work area in a clean state for incoming students. Any samples retained at the request of an Advisor must be itemized, properly labeled, and stored under appropriate conditions under the Advisor's name. The student and Advisor must provide assurance that laboratory and office space is in order before the *Recommendation for Degree* form is signed by the Director. Graduate students must also make available to the Advisor(s) all final original research materials, retaining a copy where appropriate. This includes relevant electronic files, field and lab notes associated with the original research and preparation of the thesis.

7.2 Intellectual Property

Ownership of research data and intellectual property will be determined on the basis of a written agreement between the Advisor(s) and the student and will be dependent on the nature of the funding and any overriding agreements such as those associated with a research contract between the sponsor and the University (see guidelines in the graduate calendar). The Office of Graduate and Postdoctoral Studies has guidance on inventions, protection of intellectual property, and Student Rights and Responsibilities. Normally, intellectual property is owned by the discoverer and may be published by the discoverer. In cases where a student elects not to publish their data, the Advisors(s) or members of the Advisory Committee may publish the data. Ownership and authorship should be discussed as outlined in the responsibilities of the student and advisor in Appendix A. The student or advisor is encouraged to contact the Graduate Program Coordinator should conflicts arise.

8. Appendix A: Expectations of the Graduate Student and Advisor

Graduate students and advisors are encouraged to keep an open dialogue and a collegial working environment. From time to time misinterpretation or lack of knowledge of rules and regulations can lead to confusion in the role of each person in this advisor-graduate student relationship. The following lists for students and their advisor or co-advisors is meant to help in the establishment of clear expectations and should be reviewed by both parties at the start of a student's program.

8.1 Expectations of the graduate student

1. Grow intellectually, in part by fulfilling course requirements as outlined by the Advisory Committee, and contribute to a field of knowledge by developing and carrying out a program of research.
2. Learn about and adhere to all appropriate deadline dates and regulations associated with registration, award applications and graduation requirements, as specified in the Graduate Calendar and/or the Office of Graduate Studies and/or the School of Environmental Sciences (SES).
3. Choose, with the approval of the Advisor(s) and Advisory Committee, a topic of research for which adequate resources are available, including financial and physical resources and faculty expertise.
4. Conform to University and Program requirements, academic standards, and guidelines including those related to deadlines, thesis or research project style, course requirements, intellectual property, academic misconduct and any relevant safety and/or workplace regulations. These are listed in the graduate calendar and the SES' policies and guidelines.
5. Produce a thesis or research project that is their own work and that meets the University and SES standards for style and quality, reflecting a capacity for independent scholarship in the discipline.
6. Recognize that the Advisor(s) and members of the Advisory Committee have other educational, research and service obligations that may preclude immediate responses to the graduate student.
7. Consider and respond to advice and constructive criticisms provided by the Advisor(s) or members of the Advisory Committee, as promptly as possible.

8. Meet or communicate regularly with the Advisor(s) (or designate). Understand that the frequency and timing of meetings will depend on the nature of the research being undertaken and the stage in the program. If it is a thesis-based program, understand that interaction with individual Advisory Committee members and other faculty is recommended as appropriate as is meeting with the full Advisory Committee, normally no less than once per semester, to review progress.
9. On a regular basis, make available to the Advisor(s) all original research materials, including digital files, retaining a copy where appropriate.
10. Be prepared to approach first the Advisor(s) and then the Director of the Graduate Program or Chair with any perceived problems or changes in circumstances that could affect performance.
11. Submit, in writing, with specific reasons, any request for the replacement of Advisor(s) or member of the Advisory or Examining Committee to the Director of the Graduate Program should a personal or professional conflict arise. Understand that immediate steps should be taken (normally starting with a meeting with the Graduate Program Coordinator) to change Advisor(s) or a member of the Advisory Committee in cases where an appropriate academic relationship cannot be maintained.
12. Recognize that changing Advisors after program entry may have consequences in terms of the nature and focus of an appropriate research topic and may alter funding planned for a thesis-based program prior to the change from the initial Advisor as outlined in the School's letter of funding.
13. Recognize that specific performance requirements that were agreed to at the time of acceptance to the graduate program must be satisfied. These performance requirements may relate to internal or external funding support that I receive.
14. Recognize that progress in a thesis-based program will be evaluated every semester by the Advisor(s) and Advisory Committee and reported to the Graduate Program Coordinator and Office of Graduate and Postdoctoral Studies.
15. Conform to the appropriate guidelines on vacation time; inform the Advisor(s) prior to taking vacation; and make all necessary arrangements for continuation of experiments and/or data collection when on vacation.
16. My expectations regarding authorship are as follows:
 - a. In cases where my intellectual contribution to the work was negligible, for example in the case of GSA service or routine laboratory work without an active role in experimental design, execution, or data analysis, I will be acknowledged in any publication but will not be shown as co-author.

- b. In cases where I made a substantive intellectual contribution to the work, but did not take the lead role in design, execution, or data analysis, I will be shown as a junior author on any publication.
- c. In cases where I had a major intellectual contribution to the work, and took the lead role in design, execution, and data analysis, I will be shown as the lead author on any publication.
- d. I will not submit a manuscript, abstract, or poster for consideration by a scholarly journal or meeting unless its content has been approved by all co-authors.
- e. I understand that other researchers, including my advisor will be co-author(s) of publications arising from my research depending on their intellectual and/or funding contribution, as per discussion with my advisor prior to publication submission.
- f. I agree that, if I do not communicate with the Advisor(s) in regard to publication(s) arising from my thesis for ≥ 6 months after the date of submission of the thesis, the ownership of data and the rights to publish revert to the Advisor(s) and the above guidelines may not apply.

8.2 Expectations of the Advisor or Co-Advisors

1. Facilitate the student's intellectual growth and contribution to a field of knowledge.
2. Guide the student, with the assistance of the Advisory Committee if program is thesis-based, in the development of a program of study.
3. Encourage the MSc and PhD students to participate in at least one scientific meeting and, if available, fund travel to this meeting.
4. Assist in the development and execution of a research program or project.
5. Be reasonably accessible to the student via telephone, electronic communication or in person for consultation and discussion of the student's academic progress and research problems. I suggest the following schedule of meetings (check all that apply):
 - Weekly meetings with laboratory group
 - Biweekly private meetings to be scheduled on a semester basis, normally on (give date/time and place): _____

Y Regular email correspondence; I will make every attempt to respond to email within 24 h of receipt, provided I am on campus and/or have reliable access to email

Y Other: _____

6. Thoroughly examine written material submitted by the student and make constructive suggestions for improvement. I make a commitment to inform the student of the approximate time it will take for submitted written material to be returned with comments. Normally, comments should be returned to the student within two weeks. When I am unable to respond within two weeks, because of circumstances such as absences from campus or unusually heavy workload, I will advise the student of alternative arrangements and timelines.
7. Advise the student as to the acceptability of the draft thesis or research project prior to submission to the Advisory Committee (thesis) or final submission (research project). If I believe the thesis or research project is not ready for submission or will not be ready within a particular time, I will so indicate with written reasons to the student.
8. Assist the student in learning about all appropriate deadline dates and regulations associated with thesis review, examination and submission, as specified in the Graduate Calendar and/or by the Office of Graduate Studies and/or the School. In cooperation with the Chair of the examination committee or Graduate Program Coordinator, I will help to organize qualifying and final examinations.
9. Give ample notice of extended absences from campus such as research leaves and make satisfactory arrangements for the advising of the student when the Advisor is on leave or on extended absence from the campus. Depending on the length of absence, it may be necessary to make arrangements for an interim Advisor. As of the date of this agreement, I anticipate the following major absences from campus:
 - Y None
 - Y Research leave scheduled for _____ to _____ (mo/yr to mo/yr)
 - Y Other: _____
10. Make reasonable arrangements, within the norms appropriate to the discipline and the limits of the material and human resources of the University, so that the research resources necessary for execution of the research (thesis or research project) are available.
11. Advise the student of regulations designed to provide them with a safe environment. These include relevant safety and/or workplace regulations as well as policies designed to protect individual rights and freedoms.

12. I will endeavor to alert the student to any personal risks that may be encountered in the course of the research and provide training, guidance and adequate equipment appropriate for the mitigation of those risks.
13. Chair the Advisory Committee for the student, including:
 - a. Holding regular Advisory Committee meetings with the student, normally no less than once per semester
 - b. Submitting evaluation reports every semester, in consultation with the Advisory Committee, through the online GryphForms platform.
 - c. Formulating a plan of action with the student and the Advisory Committee to address any problems that have been identified as a result of a semester progress review².
14. In thesis-based programs, comply with any commitment of financial support made to the student as part of the offer of admission. In the event that expected financial support becomes unavailable, I will work with SES and the Office of Graduate and Postdoctoral Studies to ensure that commitments of financial support for the student are met.
15. Acknowledge, in accordance with University policies, the contributions of the student in presentations and in published material, for instance through joint authorship. My expectations regarding authorship are as follows:
 - a. In cases where the student's intellectual contribution to the work is negligible, for example in the case of GSA service or routine laboratory work without an active role in experimental design, execution, or data analysis, the student will be acknowledged in any publication but will not be shown as co-author.
 - b. In cases where the student has made a substantive intellectual contribution to the work, but has not taken the lead role in design, execution, or data analysis, the student will be shown as a junior author on any publication.
 - c. In cases where the student has had a major intellectual contribution to the work, and has taken the lead role in design, execution, and data analysis, the student will be shown as the lead author on any publication.

² A "satisfactory" evaluation represents normal progress on coursework and research. A "some concerns" report is compatible with an expectation for successful completion of the program, but indicates some specific concerns regarding the student's current performance and/or progress on coursework or research or both.

An "unsatisfactory" report is a clear indication of concern about the student's ability to complete the program. Such concern may be based on poor performance in coursework or research or both. Unsatisfactory progress could include failure to meet agreed research milestones, including the timely preparation of a research proposal.

- d. I will be co-author of publications arising from the research except in some special circumstances as agreed upon through discussion prior to submission.
 - e. No manuscript, abstract, or poster will be submitted for consideration by a scholarly journal or meeting unless its content has been approved by all coauthors.
 - f. If the student does not communicate with the Advisor(s) in regard to publication arising from the thesis for ≥ 6 months after the date of submission of the thesis, the ownership of data and the rights to publish revert to the Advisor(s) and the above guidelines do not apply.
16. Immediately disclose to the Director of the School any conflict of interest that arises with the student. Conflicts of interest will arise when there are sexual, romantic, or familial ties between the student and me, or when there are irreconcilable interpersonal conflicts. In such cases, I expect that I will withdraw from the role of Advisor. Conflicts of interest may also arise when I, or the student, have a financial interest in the outcome of a research project. In these cases, I will consult with the Director of SES to determine whether withdrawal is appropriate.

9. Appendix B: Preparation and format for graduate theses and research projects

One of the most rewarding and challenging aspects of the graduate program will be the preparation, completion, and defense of the student's graduate research thesis or project paper, which will summarize the results and interpretations of the student's research. This document is intended to provide students with some introductory suggestions and acceptable formats for successfully preparing the thesis or research project paper. General suggestions for thesis are given in the sections below, followed by specific instructions for the MES project report.

9.1 Preparation of the thesis

The thesis is a vehicle which permits more expansiveness of thought and writing, speculation, and extended literature reviews than is permitted in refereed scientific papers. It permits the student to write extensively on a theme or group of themes and to explore relationships and intricacies more thoroughly than is permitted in papers. It can act as a repository of useful information that might be unpublishable in another format. The contents of the thesis ought to form a cohesive whole in which there is a thesis statement (an appropriate thesis, hypothesis, or objectives; see **Graduate Thesis Proposal**), a literature review tied to the thesis statement, a description and analysis of the research, and a discussion which explores the relationship of the research results to the literature and the thesis statement. These sections should flow smoothly from one part to the next and be presented in a uniform style.

It is important that the student clearly identify what parts of the thesis represent new contributions from the author of the thesis, published work by the author of the thesis, and unpublished work by other members of the student's research group. For multi-authored papers/chapters, the specific contributions of the student must be identified. Although publications stemming from the thesis are likely to be co-authored with the Advisor and/or other members of the research group, the thesis is authored entirely by the student.

9.2 Formats for the thesis

There are various styles and formats used in graduate student theses. Two commonly-used and accepted thesis formats for SES are presented Table 1 and Table 2 and one or the other should be followed. To gain a wider appreciation and understanding of thesis styles and formats, students should review several recent theses from former graduate students in SES, other units within the University of Guelph, and other universities. If students wish to format their thesis differently from the approved formats, this may be done with the approval of the Advisory Committee and Graduate Program Coordinator, and with Office of Graduate Studies.

Whenever possible, students are strongly encouraged to publish the results of their research prior to the completion of their thesis. Under these circumstances, they will probably choose to use the Chapter Format outlined in Table 1. This will allow each chapter in the thesis to be presented in a manuscript format. However, the format of each chapter must be in a style that is consistent throughout the thesis. One disadvantage of this style is that significant repetition and/or redundancy can arise between the various research chapters. Where possible, avoid this redundancy in the thesis by restricting the introduction, materials and methods, etc., to the thesis/hypotheses or objectives of each Chapter, and by cross-referencing to common elements between Chapters. Please note that, except for formatting of the thesis, the text, Figures, and Tables of Chapters that are already published or accepted for publication should be the same as the published paper. Exceptions to this may occur if additional experiments or analyses have occurred since publication or if an examiner recommends additional analyses to be completed. Further, the reference style should be that used in the thesis (i.e., all references at the end of the thesis).

Thesis Style 1 (**Table 1**) is most appropriate for research that involves different studies around a common theme or a series of related hypotheses (e.g., laboratory and field studies). SES recommends that students use Thesis Style 1 for preparation of their thesis.

Table 1. Thesis Style 1: Chapter format based on published papers

Chapter	Title and Contents
	<p>Preface. If chapters of the thesis have been published, submitted, or prepared for submission, this would describe the papers. This includes the authors and the paper, the title of the paper (the Chapter title), the journal where the paper was published, submitted to, or is to be submitted), and with a description of what each of the authors contributed to the paper.</p> <p>Abstract (of entire thesis)</p> <p>Acknowledgements</p> <p>Table of contents, List of Tables, List of Figures, Abbreviations (as appropriate)</p>
1	<p>Introduction and Literature Review (may be combined or separate)</p> <p>Statement of thesis objectives and hypotheses.</p>
2	<p>Research Chapter A</p>

Chapter	Title and Contents
	Abstract (optional)
	Introduction (applies to specific section)
	Materials and Methods
	Results (or Results and Discussion)
	Discussion (or Discussion and Conclusions)
	Conclusions
3	Research Chapter B
	Abstract (optional)
	Introduction (applies to specific section)
	Materials and Methods
	Results (or Results and Discussion)
	Discussion (or Discussion and Conclusions)
	Conclusions
4	Research Chapter C, D, E, F, etc
5	Discussion (applies to all Chapters in thesis and how the work, as a whole, has contributed to the advancement of knowledge in the area)
6	Conclusions (or Discussion and Conclusions - applies to all Chapters in thesis and is combined with the above).
7	Literature Cited (applies to all Chapters)
8	Appendices (optional)

Table 2. Thesis Style 2: Traditional thesis format

Chapter	Title and Contents
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Chapter	Title and Contents
	Abstract (of entire thesis)
	Acknowledgements
	Table of contents, List of Tables, List of Figures, Abbreviations (as appropriate)
1	Introduction and Literature Review (may be combined or separate) Statement of thesis objectives and hypotheses
2	Materials and Methods
3	Results (or Results and Discussion)
4	Discussion
5	Conclusions (or Summary and Conclusions)
6	Literature Cited
7	Appendices (Optional)

9.3 Figures and Tables

Figures and Tables in the thesis should be of high quality and should be publishable without further modification. Tables (see example in Table 1, above) should follow regular Journal styles with no vertical lines between columns, should not be pasted in as images from other software, and should be in the same font as the thesis. Graphs should be prepared using a scientific graphics package such as SigmaPlot®, see example in **Figure 2**. Excel graphs are seldom of high enough quality for a thesis or a publication.

Where possible, Figures and Tables should be integrated into the text and should have a clear caption and appropriate footnotes to allow them to stand on their own without reference to the text.

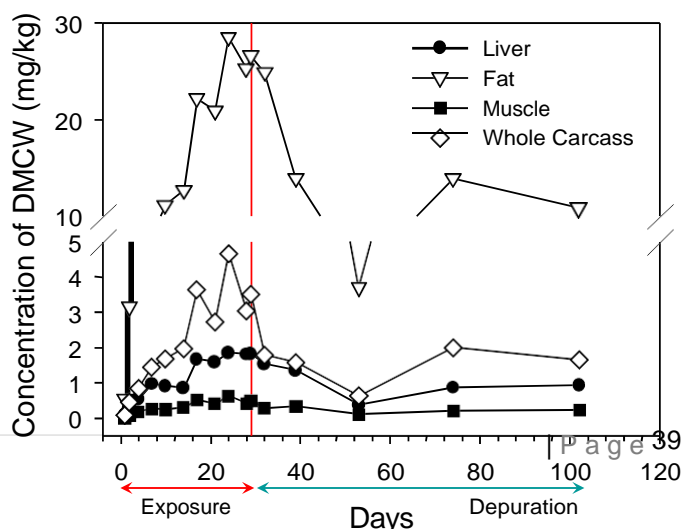


Figure 2. Example of graphic style using the golden rectangle (1 unit high, 1.61 units wide)

9.4 Additional comments and suggestions

The following comments are also offered as additional guidance to graduate students:

1. In the introduction, clearly state the thesis/hypothesis/objectives of the thesis. These objectives are an essential guide to material presented in the discussion.
2. The literature review should be included as part of the introduction or a stand-alone section/chapter of the thesis; do not allow the literature review to dominate the discussion section of the thesis.
3. Use journal-quality graphics. Choose a journal style that is appropriate.
4. Avoid duplication of data in graphic and tabular form. This sometimes is seen in the use of summary tables at the end of Chapters. Detailed presentation of data that support graphs and tables can be placed in appendices.
5. Graphical presentation can often be condensed into tabular format. This is true for some statistical data as well.
6. The conclusion should reflect the student's personal thoughts and ideas, and must address the hypotheses that were tested in the research.
7. The style should conform to good usage for scientific writing, i.e., it should meet the standard of scientific journals in the author's field. A number of style manuals are available, e.g., The Council of Biology Editors' Style Manual (AIBS), The European Life Science Editors' Manual (ELSE), Writing scientific papers in English³, or Fowler's Modern English Usage.
8. Particular attention should be paid to legend and captions of Figures, and to captions and column headings of Tables to ensure that, as far as possible, they are self-contained and self-explanatory and require minimal reference to the text on the part of the reader. For example, they could point out a specific feature in a photograph or an overall trend in the graph.
9. The intended message of the thesis should be evident not only to specialists in the field but to any environmental scientist of reasonably broad training. To this end, jargon should be kept to a minimum and unusual technical terms and acronyms should be defined. In theses that use a large number of acronyms, it is recommended that a glossary of acronyms be presented at the beginning or end of the thesis. Most importantly, the thesis should be in finished form when it reaches the members of the Candidate's Examination Committee. It should read well and should require little

³ See O'Connor, M. and Woodford, F.P. 1976. Writing scientific papers in English. Amsterdam: Elsevier (Bovey Building Reading Room) or Fowler's Modern English Usage (1984), Oxford University Press.

editing. Special attention should be directed at ensuring that all references to citations in the text match the “Literature Cited” section of the thesis. Several software programs (e.g., EndNote) that can help manage, insert, and format references into word processing software are available.

10. The thesis embodies the results of research. The cost of the research is normally borne by research funding of the Advisor, whereas the costs of preparing the thesis shall be borne by the student. For example, the Advisor is responsible for items such as research supplies, computer software, photographic supplies, etc. The student is responsible for costs associated with preparing and printing copies of the thesis for the examination and for final binding.

9.5 MES: Major Research Project report

Students who chose the coursework + MRP option are expected to write a final report. Project formats may be varied and include analysis of existing data sets (derived from lab, field, or computer simulation), lab/field experiments conducted by the students, or a critical literature review. The length of the paper may vary, but it should be no more than 30 double-spaced pages including figures and tables. If based on existing or new data, the format should follow the standard format used in scientific journals for reporting original research (Abstract, Introduction, background, Materials and Methods, Results, Discussion, Conclusion, Acknowledgments and Works Cited. If the project is a critical literature review, format should summarize and critically analyze the body of literature on a specific topic with works cited. Data sets may be included in an appendix. Students should also follow the general and formatting suggestions outlined above in sections 9.3 and 9.4.

Appendix C: MSc defense examination checklist

Week	Date Completed	Task	Responsibility
-10+		Check to make sure there is enough time to complete the process before the deadline for submission of the thesis without financial penalty.	Candidate and Advisor
- 9+		Read Appendix B and make sure that the thesis conforms to the requirements.	Candidate
-9		Read the “Office of Graduate Studies, Thesis Submission Procedures” and make sure you are ready to proceed	Candidate
-8		Discuss appropriate people to serve on the Examination Committee with the Advisor and Advisory Committee.	Candidate
		Fill out Examination Information Form and send to Graduate Program Coordinator for information and confirmation of selected Chair of the Examination and members of the Examination Committee.	Candidate and Advisor
-6		Confirm chair for the defense	Graduate Program Coordinator
-3		Provide signed Examination Request Form to the Graduate Program Coordinator and Grad Prog. Assistant	Candidate

Week	Date Completed	Task	Responsibility
		Provide the thesis to the Chair of the examination	Candidate
		Sign the Examination Request Form and send to the Graduate Program Assistant so it can be forwarded to the chair of the examination and Graduate Studies for approval no less than 2 weeks prior to defense.	Graduate Program Coordinator
		Arrange room for defense; print and distribute notice of examination	Graduate Program Assistant
-2		Once reviewed, provide PDF and word copies of thesis to all examiners. Examiners must receive the thesis two weeks prior to the defence.	Chair of Examination
-1 d		Pick up EXAMINATION PACKAGE (Certification of Approval and Recommendation for Graduation forms) from the Graduate Program Assistant.	Chair of Examination
0		Prepare room for defense; obtain projector and computer.	Candidate or Advisor
0+		Submit the EXAMINATION PACKAGE forms to the Graduate Program Assistant after the examination (even if all signatures have not been obtained).	Chair of Examination

NOTE: The examination committee must receive the thesis for review at least 2 weeks prior to the defense.

10. Appendix D: Guidelines for the PhD qualifying or comprehensive examination

10.1 Timing of the Qualifying Examination

According to University regulations, PhD students should complete the Qualifying Examination before the end of the 5th semester of study. The guideline of the School requires that this examination be completed even earlier, preferably at the beginning of the 5th semester, so that, in the event a second examination is needed, it can be completed before or shortly after the end of the 5th semester. For students who are switching from MSc to the PhD program without completing the MSc, the University stipulates that the Qualifying Examination must be completed before the end of the 7th semester, while the School suggests that this examination be completed by the end of the 6th semester.

10.2 Additional information about the Qualifying Examination

There are a variety of people, and sources of information, that students may consult in preparation for their Qualifying Examination. The first contact should be the student's Advisor(s) and Advisory Committee. Together, the Advisor, Advisory Committee, and the student will decide on the appropriate time for this examination considering the timelines imposed by the University and the School. Students should also consult the general rules governing this examination, which can be found in the University Graduate Calendar ([General rules](#)). The student should study these rules before proceeding to the Qualifying Examination with the help of his/her Advisory Committee and Graduate Program Coordinator. Students may also contact the Graduate Program Coordinator regarding any administrative or technical questions pertaining to the Qualifying Examination. The Graduate Program Coordinator is responsible for coordinating and selecting a Chair for the examination.

10.3 Setting up the Qualifying Examination

The Qualifying Examination consists of two parts: written and oral.

Please note the following process to get a QE exam set up. **Note that the first three steps have to take place BEFORE the student begins to study for their four subject areas.**

- 1) The student meets with his/her Advisory Committee. The Committee considers the student's research ability and potential, as well as the background knowledge in the general and peripheral areas related to the student's doctoral research. The latter assessment may be done by performance in undergraduate and graduate courses taken by the student. If the Advisory Committee is satisfied with the student's potential as a PhD candidate based on his/her background knowledge and research ability, the Committee then recommends that the student proceed to the Qualifying Examination. If the committee is not satisfied

with the student's standing at this time, this should be captured in semesterly progress reports until the situation improves or the student is asked to withdraw or transfer to the MSc program.

- 2) The Advisory Committee suggests the four subject areas to be examined and the examiners responsible for each of the topics in the Qualifying Examination. There are five members of the Qualifying Examination Committee.
 - Chair (this role is purely administrative)
 - 2 members from the advisory committee
 - 2 members not from the advisory committee
 - Of the 4 committee members at least one must be from outside of the department/discipline in which the student is registered.

According to University regulations, examiners must be University of Guelph Regular or Associated graduate faculty. Note that an examination committee member can be special graduate faculty if they already serve on the advisory committee. You can seek an exemption to have a member external to the university who is currently not on the advisory committee to be nominated as special graduate faculty for the purpose of the QE. However, this takes time and may not be approved so please contact the Graduate Program Coordinator early if that is the case.

- 3) **Two to three months prior to the exam**, the Advisor submits the Qualifying Exam Information Form to the Graduate Program Assistant with the following information:
 - a) Names and contact information of four potential examiners (maximum of two from the Advisory Committee and two other members).
 - b) Two or 3 tentative dates for the oral examination.
 - c) Names of potential Chairs.
 - d) The four subject areas for the examination.

This information will be forwarded to the Graduate Program Coordinator. **The student should wait for confirmation of the suggested date of the exam and Examination Committee members (not including the chair) before they start to study for the four examination subject areas. This is done to prevent issues arising if members are not approved by the Office of Graduate studies.**

- 4) A Chair for the Examination is appointed by the Graduate Program Coordinator. The student and advisor will be notified once a chair has been chosen.

- 5) The student contacts each of the examiners to obtain guidance regarding the subject areas. After consultation with all members of the Examination Committee, a date/time is confirmed for both the oral examination and the written examination, which takes place 7-10 days prior to the oral. A room is booked by the student or Graduate Program Assistant. The date/time information should be provided to the Graduate Program Assistant for submission to the Office of Graduate and Postdoctoral Studies and also to post the announcement before the examination.
- 6) At least two weeks before the scheduled written examination date, the Chair of the Examination Committee contacts and solicits two questions from each of the examiners for the written examination. Each examiner will inform the Chair if his/her portion of the examination should be open or closed book and this should be noted on the question. The written examination may be completed over the course of one to four days and is administered by the Chair of the Examination Committee or a designate (e.g. Graduate Program Assistant). The responses to the written questions may or may not serve as the basis for questioning in the oral examination.
- 7) At least one week before the scheduled written examination date the Advisory Committee will submit a letter of support to the Chair of the Qualifying Exam Committee. The letter will address the following areas: research potential, academic training and critical thinking.
- 8) The written examination will have the following general format:
 - a) The Chair will select one question from each examiner to be presented to the student for written answers. Normally, the student will be given a 2-hour in-class period of time to answer the question(s) from each examiner (i.e., a total of 8 h for all questions). The form of the written examination will be determined by the individual examiners. The Chair will examine the questions to minimize any overlap and consult with the examiners if necessary, to ensure that the questions can be answered within this time frame. For open book exams, the Chair, in consultation with the examiner, will communicate to the student what books or references can be used in the examination and if access to the internet is allowed. In closed-book exams, no texts, notes, or internet access is allowed. In both closed and open book exams, additional aids or tools (such as calculators, specific references, and laptop computers) may also be granted. Prior to the examination, the student may discuss with individual examiners the format to be followed and the tools allowed, and the results of the discussion shall be conveyed by the examiner and the student to the Chair. The examiner will have the final say on the ground rules for that examiner's question on the written examination. Once established, the student shall follow the rules set forth by the Chair. The examination is held over 1 - 4 days at the choice of the student. For example, one question is provided in the morning and one in the afternoon each day over two days. Except for the format and duration of the examination, other aspects of the examination are at the discretion of the Chair to accommodate special examination arrangements at the request of the student and/or individual examiner(s).

- b) After the examination, each examiner will receive the student's answers to all the questions and will mark and/or evaluate his or her question(s). At least five working days prior to convening the oral examination, each examiner will inform the Chair if the student's answers to his/her questions are satisfactory. There will be no feedback from individual examiners given to the student at this point. The student can consult only with their advisor for general feedback to get ready for the oral.
- 9) The oral examination will be held within 7-10 days after the written examination is completed. Prior to the oral examination, the Advisor(s) will provide the Chair with a letter attesting to the student's research ability and potential. This letter should include the views of the student's Advisory Committee. This letter forms part of the assessment by the Examination Committee at the end of the oral examination. The oral examination will have the following general format:
- a) The Chair first invites the student to give a brief overview (5-10 min.) of his/her background, education and/or relevant experiences.
 - b) The Chair asks each member of the Examination Committee to pose questions to the student. The sequence of questioning by the examiners will be decided by the Chair.
 - c) There are normally two rounds (ca. 20 and 10 min, respectively, from each examiner) of questioning by the Examination Committee. Additional questions may be posed after these two rounds at the discretion of the Chair. When the questioning is completed, the student is asked to withdraw from the room to allow for private deliberations by the Examination Committee. At this point, the chair will give a copy or read out the letter of the advisory committee to the examination committee for their consideration. Each examiner should consider all three aspects (written exam, oral exam, research potential letter) in their assessment (unsatisfactory/satisfactory). The student is deemed to have passed the Qualifying Examination if not more than one of the 4 examiners votes negatively. An abstention is regarded as a negative vote.
 - d) After the deliberations, the Chair invites the student back to the room and conveys the findings of the Examination Committee to the student.
- 10) In the event that the student's performance is unsatisfactory, the chair of the examination committee should prepare a letter -agreed upon by all examination committee members- that summarizes the feedback from the examination committee members, focusing on the deficiencies that need to be addressed as well as options for consideration (transfer to MSC vs second QE attempt). The student will have two weeks to decide and is strongly advised to consult with their advisory committee on how to proceed. The student can follow up with examination committee members if they need clarification. If they decide to pursue the second QE attempt, the student should do so no later than six months after the failed attempt. The exam will cover the same scope-same areas of questioning, same readings

and will have both an oral and written component as well as a letter from the advisory committee related to the research potential. The actual questions of the written exam will be substantively different. The student may be asked to repeat the exam in one to all four subject areas depending on their performance in each area. The examination committee membership should remain the same even if only a subset of subject areas is being retested. If only a subset of subject areas is being retested, all examiners can ask questions on the chosen subset of subject areas and, all examiners will evaluate the overall performance during deliberations of the second attempt. Note that the student may opt to transfer to an MSc instead of taking a second opportunity to pass the qualifying examination. If the student already has an MSc, they will need to explain how this new MSc will be different from the previous one as part of their transfer application. **Importantly**, if the student attempts a second exam and fails, they cannot transfer to an MSc. They will have to withdraw and apply as a new applicant to the MSc program or any other program of their choice.

In the event of a disagreement between the student and the examiners as to how well a student has done in the Qualifying Examination, the matter will be referred to Office of Graduate Studies. Resolution of such disagreement may involve consultation with experts outside of the School at the discretion of the Office of Graduate Studies.

11. Appendix E: PhD defense examination checklist

Week	Date Completed	Task	Responsibility
-10+		<p>Check the schedule of dates in the graduate calendar for the last day to submit to the Atrium and see if there is enough time to complete the process outlined below before this deadline. If yes, proceed below; If no, check with the Graduate Program Assistant to see if you need to submit a Plan of Study or an appeal for extension of Maximum Program duration form. Note if you are not able to make the Atrium deadline, you may be eligible for a full or partial tuition refund if you submit within two months of the Atrium deadline (see student financial services for refund schedule)</p>	Candidate and Advisor
-8		<p>Discuss Examination Information Form with Candidate.</p> <p>Ensure that the thesis is close enough to finishing that proposed examination dates are reasonable considering the timeline below. If so, then discuss with the Candidate appropriate people to serve on the Examination Committee, including potential External Examiners.</p> <p>Contact suggested Examination Committee members to determine their availability and select three potential dates for examination.</p> <p>Contact External Examiner(s) to determine willingness and availability; note that this is not an invitation, which must come from the Chair pending determination of suitability (see next box).</p> <p>Explain steps in the process to Candidate, identifying sources of information, and where to obtain necessary forms (e.g., (Graduate Studies and SES website).</p> <p>Submit completed Examination Information Form to the Graduate Program Coordinator and Graduate program</p>	Advisor

Week	Date Completed	Task	Responsibility
		Assistant.	
-7		Confirm availability of Chair of Examination and confirm lack of Conflict of Interest and availability of the External. Sign off on the doctoral final arrangement form. Graduate Program Assistant submits the Doctoral Final Arrangement form to graduate studies	Graduate Program Coordinator
-6		Confirm date and time for the defence with all examining committee members. Officially invite the External Examiner to participate in the Examination. Send cover letter explaining details concerning the report the External Examiner is expected to prepare, expenses, hotel and travel arrangements, and timelines. Also include guidelines for the report of External Examiner, Statement of Taxable Status, and the External Examiner Expense Form. These can be found on the SES website at: https://www.uoguelph.ca/ses/graduate/current-graduate-students/phd-program#PhD_defense .	Chair of Examination
-5		Check for signatures and Candidate or Advisor submits completed Examination Request Form to the Graduate Program Coordinator and copy of defense thesis to the Examination Committee Chair. Note: Once the thesis is sent to the examination chair, any outstanding edits to the thesis as identified by the advisory committee at this stage will have to be done after the defense.	Advisor and candidate
-5		Review Examination request Form and sign off so Graduate Program Assistant can submit Form to Graduate studies	Graduate Program Coordinator
-5		Examine the thesis and review the Examination Request Form. Explain to Candidate details of the defense	Chair of Examination

Week	Date Completed	Task	Responsibility
		process (length of thesis presentation, question format in the defense, etc.).	
-4		Send PDF/word and/or hard copy of thesis and information to the examining committee and the Graduate Program Coordinator. Note the examining committee has to have the thesis to review for 4 weeks prior to defense. If this deadline is not met, the defense will need to be rescheduled to a later date.	Chair of Examination
-3		Arrange room for defense, print, and distribute notice of examination	Grad Prog Assistant
-1		Receive the Report on the Thesis from the External and distribute to the Advisor and Candidate	Chair of Examination
-1 d		Pick up EXAMINATION PACKAGE (Report of PhD Examination, Certification of Approval and Recommendation for Graduation forms) from the Graduate Program Assistant.	Chair of Examination
0		Prepare room for defense, obtain projector and computer.	Candidate
0+		Submit the EXAMINATION PACKAGE forms to the Graduate Program Assistant after the examination (even if all signatures have not been obtained). Obtain Statement of Taxable Status form, External Examiner Expense Form and expense receipts from External and give to the Graduate Program Assistant.	Chair of Examination

NOTE: The examination committee must receive the thesis for review at least 4 weeks prior to the defense.