

School of Environment, Resources and Sustainability

PhD Student Handbook



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This Handbook represents the experience and feedback provided by over 10 students in seven SERS PhD cohorts (including recent graduates). Student experience was collected over the course of five months via focus groups in 2021 on the various stages of the PhD degree.

All content in this document is based on the real experiences of PhD students in the SERS program and serves to supplement existing guidance provided by the SERS Department. We express our deepest gratitude for the countless hours volunteered by our community to help guide the next generation of PhDs.

Authors:

Dr. Sophia Sanniti, Jessica Tureček, Katie Pita, Nayadeth Arriagada Oyarzun and Stephanie Cruz Maysonet
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I. Housekeeping and Orientation

1.1 Getting Familiar with your Studies: General tips

- You have received your acceptance letter, congrats! This letter contains key information: student number, initial funding package, estimated length of your studies.
- Try to contact your supervisor before arriving and ask all your questions. **Be proactive about it.** Discuss office space, lab, funding concerns, and which courses you will take in the next two terms. It is important to know your role and responsibilities for the supervisor-student relationship. See the [Guide for Graduate Research and Supervision | Graduate Studies and Postdoctoral Affairs | University of Waterloo \(uwaterloo.ca\)](#)
- Check the SERS Q&A website for orientations regarding tuition, quest and e-mail setup, etc. [SERS graduate student FAQs - Current students | School of Environment, Resources and Sustainability \(uwaterloo.ca\)](#)

1.2 Courses

- Identify areas of interest and discuss them with your supervisor. They may have overlapping interests or even industry connections you could use to collaborate on your research.
- Contact fellow students (a nice starting point is to contact people from your future lab and your supervisor's current students). Do not be shy about it! This is a 'well-known' and 'part of the process' step!
- Check SERS Ph.D. requirements: [PhD degree requirements | School of Environment, Resources and Sustainability \(uwaterloo.ca\)](#)
- SERS courses outlines: [Graduate course outlines | School of Environment, Resources and Sustainability \(uwaterloo.ca\)](#).
- For Water stream students, check the requirements as they differ from those for regular Ph.D. students [PhD degree requirements | School of Environment, Resources and Sustainability \(uwaterloo.ca\)](#)
- You can also take graduate course levels outside the SERS. Discuss with your supervisor about your personal interests and what is best for your research project.
- With your QUEST account [Graduate students | Quest - Student Information System | University of Waterloo \(uwaterloo.ca\)](#) you can enroll in the courses. Contact SERS Graduate coordinator if you have questions.
- LEARN is the system where you can see course material. Check this site for more information: [About Waterloo LEARN | LEARN Help | University of Waterloo \(uwaterloo.ca\)](#)
- Mandatory courses are a starting point to connect with fellow graduate students, so try to network and build community support.

1.3 Funding your degree

- Ph.D. students must have a minimum funding package: This could be a combination of various sources (Awards, TA/RA positions, external funding, supervisor funding, etc.). Your acceptance letter will contain this information. Check the website to see the current minimum funding.
- You are also encouraged to apply different internal and external sources of funding and financial aid.
- Your supervisor has an Excel document with all your funding information formatted by SERS admin. Talk to your supervisor about reviewing your funding package at least once a year.

- **Important:** There are several internal and external awards for domestic and international students, for which SERS coordinator and Graduate Studies and Post-doctoral Affairs department usually e-mail about available funding opportunities that are around \$5,000. However, Graduate and Postdoctoral Affairs have a database with all the funding opportunities that are available for the University's graduate students: [Graduate funding and awards database | Graduate Studies and Postdoctoral Affairs | University of Waterloo \(uwaterloo.ca\)](#)

1.3.1. Internal funding

DDI (Dean's Doctoral Initiative):

- Targeted for domestic students. The Faculty has 10 funded doctoral opportunities for domestic students, that guarantee a funding offer over four years. This is usually a combination of TA/RA positions and based funding.
- Check SERS information: <https://uwaterloo.ca/environment/graduate/future-graduate-students/funding-packages/funding-domestic-doctoral-students>
- DDI comes in the form of TA plus top-up, so for tuition fee payment, you can access a 'promissory note' (which is a commitment for future payment) in the form Finance section of your QUEST account.

1.3.2 Teaching Assistant (TA), What you need to know

- After answering a survey via mail, you will be assigned a TA that aligns (sort of) with your knowledge and skills. There are a few self-pass training courses you can take via LEARN. Check this website for guidance: <https://uwaterloo.ca/centre-for-teaching-excellence/ta-training>
- Once you are assigned a TA, it is the instructor's responsibility to contact you. However, it is a good idea to email them and introduce yourself.
- You should receive the TA hours allocation form at your first TA meeting (if not prior) which outlines tasks and hours. If that does not occur, follow-up with the course instructor immediately in the first week, and the graduate coordinator if you do not hear back. This should be handed in to the department in the first weeks of the term.
- This is a negotiable form, so if the student feels that the hours are not representative of the work they will do (i.e. no hours accounted for answering student e-mails, etc.) a discussion should be had about a more fair distribution. If this course has new material you are required to learn, be sure to allocate reasonable paid hours for you to stay updated on the lectures and texts.
- At the same time, this is an excellent opportunity to share your own academic milestones and negotiate accordingly. For example, if you have your comprehensive exam that term, you may want to take on more grading at the start of the term so you have some time to prepare for the exam
- TA Payment: [Graduate Teaching Assistantships \(TA\) and Graduate Research Assistantships \(RA\) | Graduate Studies and Postdoctoral Affairs | University of Waterloo \(uwaterloo.ca\)](#) for further information.
- **Relinquishing your TA: what happens?** In case you have acquired an external funding source, you can voluntarily relinquish your TA commitments. DDI is compatible with major fundings such as OGS, NSERC and SSHRC. When there is not external source of funding, supervisors often offer to fund the remaining amount to their students during fieldwork season so they can be liberated from TA commitments.

1.3.3. Graduate Research Assistant (RA)

- Graduate Research Assistantship (RA) positions are held by a qualified student who performs a designated list of research duties under the supervision of one or more faculty members. Duties and assigned tasks may be routine or advanced but normally fall outside the scope of the student's research. The relationship between supervisor(s) and student is similar to that of employer and employee.
- **Seasonal RA and TA positions:** Some seasonal TA and RA positions are available, usually announced via e-mail from the SERS coordinator. However, these positions are considered taxable income because it is not under DDI. Ask the graduate coordinator for more information, or check: [Graduate Teaching Assistantships \(TA\) and Graduate Research Assistantships \(RA\) | Graduate Studies and Postdoctoral Affairs | University of Waterloo \(uwaterloo.ca\)](#)
- **Organize UWaterloo:** Organize UWaterloo is a grassroots association that started in 2020 advocating for unionization for Graduate students in job positions at UWaterloo. The University of Waterloo is one of the last universities in Canada without a union for graduate student teaching assistants, research assistants, contract faculty, technicians, post-doctoral fellows, and other academic research and teaching staff. In 2022, RAs were formally unionized. For more information: <https://organizeuw.org/>

1.3.4. Other Waterloo funding sources and awards

- **Conference and international travel funding:** SERS provides travel support to present at an approved academic conference (valued at \$1,500). Contact SERS graduate coordinator for further information, and check the website: [Funding for conferences and international experiences | Graduate Studies and Postdoctoral Affairs | University of Waterloo \(uwaterloo.ca\)](#).
- **Important:** While it is not guaranteed, your supervisor should cover the rest as it is not the baseline expectation that students fund their own travel and conference fees out of pocket (once per year).

1.3.5 Financial aid

- U of Waterloo has some financial aid available based on financial need (parental leaves bursary, student bursary, medical leave bursary, etc.). Check the website for more information about applications: [Financial need funding | Graduate Studies and Postdoctoral Affairs | University of Waterloo \(uwaterloo.ca\)](#)

1.3.6 Clawbacks

- Many scholarships (especially major scholarships) might affect your initial funding. For example, you cannot hold SSHRC and OGS at the same time. Or, you cannot keep your base funding plus full major scholarships. Due to these 'clawbacks' in funding, some students prefer to apply for minor scholarships, so their base funding does not get affected.
- In rare circumstances, the acceptance of a scholarship can lead to an overall lower amount of funding because of incompatibilities between funding sources. Ask about that possibility and restriction with your supervisor and graduate coordinator before applying for or accepting major scholarships.

1.3.7. Other sources of funding

- **Mitacs:** Universities partner with private companies and initiatives. They have several funding opportunities to match your project with specific requirements from a company, organization or

agency. They also have post-doc programs. Check the website for more information: [Programs | Mitacs](#)

1.3.8 Tips for success in applying for funding and scholarships

- Apply as soon as you can, especially in the first 1-3 years. If you are unsuccessful, keep applying for scholarships; every application is a learning experience. These research summaries are also helpful for scoping your research over time.
- Be aware of deadlines and discuss with your supervisor your options and scholarships that you are interested in applying for. **Put funding deadlines right into your calendar at the start of every term.**
- Seek out example applications, see if there are people in the department who have won scholarships that interest you, and ask for advice.
- Attend workshops run by the university/faculty concerning scholarship/grant applications. There are several past workshops available online through Graduate studies and Postdoctoral Affairs YouTube channel: [Ask the Experts: Tri-Agency and OGS/QEII-GSST graduate scholarships - YouTube](#)
- [The Writing and Communication Centre](#) (WCC) can be a useful hub of communication and writing practice, support, and research on campus, including scholarship application support. Students are encouraged to utilize the services offered by the Centre which include one-on-one appointments, workshops, writing cafes, etc. Website: [Graduate Students and Postdoctoral Fellows | Writing and Communication Centre \(uwaterloo.ca\)](#)
- The Centre at UW might know or be able to help when you are trying to understand your funding allocations: [Home | The Centre | University of Waterloo \(uwaterloo.ca\)](#)
- More resources and tips for success can be found in: <https://uwaterloo.ca/graduate-studies-postdoctoral-affairs/current-students/campus-resources-and-services>

1.3.9 What happens after four years?

- If you exceed the time limits of your program, you will need to complete a [Program Extension form](#). Learn more about [program extension](#). The first extension will take place within three terms after the program limit.
- Highly dependent on your supervisors' available funding. Some major awards are still available, but there are fewer options you can apply for.
- Begin thinking of your backup plan now. Financially plan that your Ph.D. will take **at least 5 years**. Statistically speaking, this is the common timeline for natural sciences. Social science doctorates can go up to 7 years in length depending on your research scope.
- Network! Connect with the community for potential RAs.
- Look/prepare for other job opportunities in the university (e.g., at CTE)
- Dissertation Completion Award (only if you do not have a job lined up in the same semester). It is valued in \$5000. Check the website for further information: <https://uwaterloo.ca/forms/graduate-studies/doctoral-thesis-completion-award-application>
 - Note: there are a limited number of these awards every term. Not all candidates applying may receive the award.
- Domestic students: Transition to part-time status to save money on tuition. However, this can severely limit access to benefits, student services (i.e., GRT pass), your ability to be involved in university organizations (i.e., applying for a WESEF grant), and your ability to apply for many scholarships.

1.4 Living in Waterloo

1.4.1 Accommodation

- You can live on and off campus. To see options for living on campus check: [Graduate, Optometry, & Student Families | Campus Housing \(uwaterloo.ca\)](#)
- Columbia Lake North for families is a great option but be aware that the waiting list can take 1 or 2 years. If you are interested in this option, apply as soon as you can.

1.4.2 Transport

- Your WatCard works as a pass to use on transit in Waterloo. Usually, tuition includes unlimited transit fares for the whole term, so you do not need to make an extra arrangement.
- If you want to understand how the transit around Kitchener-Waterloo works, check the website [Grand River Transit \(grt.ca\)](#)
- To travel to Toronto or airport: [Arranging travel to Waterloo | International Student Guide | University of Waterloo \(uwaterloo.ca\)](#)
- Students discounts: [Student Discounts | Stratford School of Interaction Design and Business | University of Waterloo \(uwaterloo.ca\)](#)
- Bike parking on campus – green commuting: [Campus and community cycling resources | Sustainability | University of Waterloo \(uwaterloo.ca\)](#)
- Student parking website [Home | UW Parking Services | University of Waterloo \(uwaterloo.ca\)](#)

1.5 For Ph.D. Parents

1.5.1 Daycare information

- Daycares in Waterloo have a single application portal called OneList. Application process is straightforward, includes a form and the list of the daycares you are interested in: [Child Care Waitlist \(onehsn.com\)](#)
- Waiting lists are on average very long (1 or 2 years), so make sure you apply as soon as possible.
- University of Waterloo has a Daycare on campus called Bright Starts. The application process is also through OneList. However, it is a good idea to give them a call and let them know that you apply for daycare, which program (infant, toddler or pre-school) and the time that you are planning to start school. Website: [Home - Bright Starts Early Learning CentreBright Starts Early Learning Centre | Bright Starts Early Learning Centre](#)
- Fees: Since 2022 due to the Canada-Wide Early Learning & Child Care System fees have decreased enormously. However, if you are concerned about daycare fees there is also a university financial aid award (Graduate Student Day Care Bursary application) to help you with daycare fees. Website: [Graduate Student Day Care Bursary application | Graduate Studies Forms | University of Waterloo \(uwaterloo.ca\)](#)
- There is also a provincial subsidy available for families with financial needs: [Financial Support for Child Care | ontario.ca](#)

1.5.2 School district

- Waterloo region is one of the largest school districts in the province. Applications are made to schools that are closer to your address. Check the website for more information: [Our Schools - Waterloo Region District School Board \(Waterloo Region District School Board\) \(wrdsb.ca\)](#)

- School district also has their own transportation system in cases of need. Check the website for more information: [Student Transportation Services of Waterloo Region \(stswr.ca\)](http://stswr.ca)

1.6 New students: Surviving your first days

1.6.1 Logistics and support

- Take a campus tour – library, study spaces, coffee shops etc. This is a great way to get to know University amenities and services. [Register for Orientation | International Student Guide | University of Waterloo \(uwaterloo.ca\)](#)
- Campus map: [Campus Map | University of Waterloo \(uwaterloo.ca\)](#)
- **WatCard:** The WatCard is the University's comprehensive photo ID, and is needed for many of the services provided by the University. [Home | WatCard | University of Waterloo \(uwaterloo.ca\)](#)
- Make sure to discuss desk space with your supervisor. As a Ph.D. student you should be entitled to desk space to conduct your research. For keys and printing, follow up with the graduate advisor.
- Library: The library has many resources, including online catalogues, study areas, and a loan system. Librarians are there for meetings to help you. At the same time, you can send requests for the library to purchase books if they do not have something you need. [Library | University of Waterloo Library \(uwaterloo.ca\)](#)
- Academic resources: [Academic resources | School of Environment, Resources and Sustainability \(uwaterloo.ca\)](#)
- Health insurance and dental plan: See the GSA website [Health & Dental Plan - Graduate Student Association - UW \(gsauw.ca\)](#)
- Tax advice: Check GSA service of Tax Aid [Tax Aid - Graduate Student Association - UW \(gsauw.ca\)](#)

1.7 Emotional Support and Wellness

1.7.1 Institutional support

- Health and wellness support such as counseling, health services and group therapy [Health and wellness | School of Environment, Resources and Sustainability \(uwaterloo.ca\)](#)
- [SERS Graduate Coordinator](#) is usually the person where to go in case of academic concerns. SERS Graduate Coordinator is someone who works for the department full-time to support graduate students. If you are unsure of where to go, or who to speak to, they are a great first place to check in. Email is sers-grd@uwaterloo.ca. They are also the person you will submit forms to for things like OGS applications, and organizes TA assignments etc.
- Faculty of Environment also has Administrator of Graduate Studies that can be contacted for faculty-related issues, or if your department coordinator is not sure of an answer to your question, or has limited information.
- All Faculty-level contacts can be found here: <https://uwaterloo.ca/environment/about/people>
- [Justice, Equity, Diversity and Anti-Racism](#): In case you need support on a related matter, check the Equity and anti-racism office website. They have a lot of resources available for students: [We're here to support you | Office of Equity, Diversity, Inclusion and Anti-racism \(uwaterloo.ca\)](#)
- Student success office: [Home | Student Success Office | University of Waterloo \(uwaterloo.ca\)](#)

1.7.2 Peer support and community

- Support from the EGSA (there is a SERS department representative on the EGSA; can email egsa@uwaterloo.ca), and at least 3 student representatives to the SERS department itself that attend department meetings with faculty and staff. They will also plan social events for SERS students - a great way to get connected with other people in your department!
- Check the GSA website [Home - Graduate Student Association - UW \(gsauw.ca\)](https://gsauw.ca). They have a variety of resources and services for students, ranging from health services to legal support.
- There is also a SERS Councillor on the GSA (Graduate Student Association), which is a student government body that represents all grad students at UWaterloo. They will have a sense of the larger goings-on at the university and can help you navigate things like your health and dental plan, on- or off-campus housing issues, short-term job contracts, connecting with Human Resources or other resources on campus. See: [Home - Graduate Student Association - UW \(gsauw.ca\)](https://gsauw.ca)
- For more peer support resources: [Peer support | School of Environment, Resources and Sustainability \(uwaterloo.ca\)](https://uwaterloo.ca/sustainability/peer-support)
- **Sustainable Futures Mentorship Program:** Is a mentoring program from SERS designed to gain insights from colleagues, alumni and current students on a career in sustainability: [Sustainable Futures Mentorship Program | School of Environment, Resources and Sustainability \(uwaterloo.ca\)](https://uwaterloo.ca/sustainability/sustainable-futures-mentorship-program)
- Cultural spaces and resources: [Community Equity Resources - Graduate Student Association - UW \(gsauw.ca\)](https://gsauw.ca/cultural-spaces)
- Equity initiatives lead by Graduate students: [Equity Initiatives - Graduate Student Association - UW \(gsauw.ca\)](https://gsauw.ca/equity-initiatives)
- Some list for collectives and clubs:
 - [BIPOC Student Collective - Graduate Student Association - UW \(gsauw.ca\)](https://gsauw.ca/bi poc-student-collective)
 - [International Student Collective - Graduate Student Association - UW \(gsauw.ca\)](https://gsauw.ca/international-student-collective)

II. Research Housekeeping

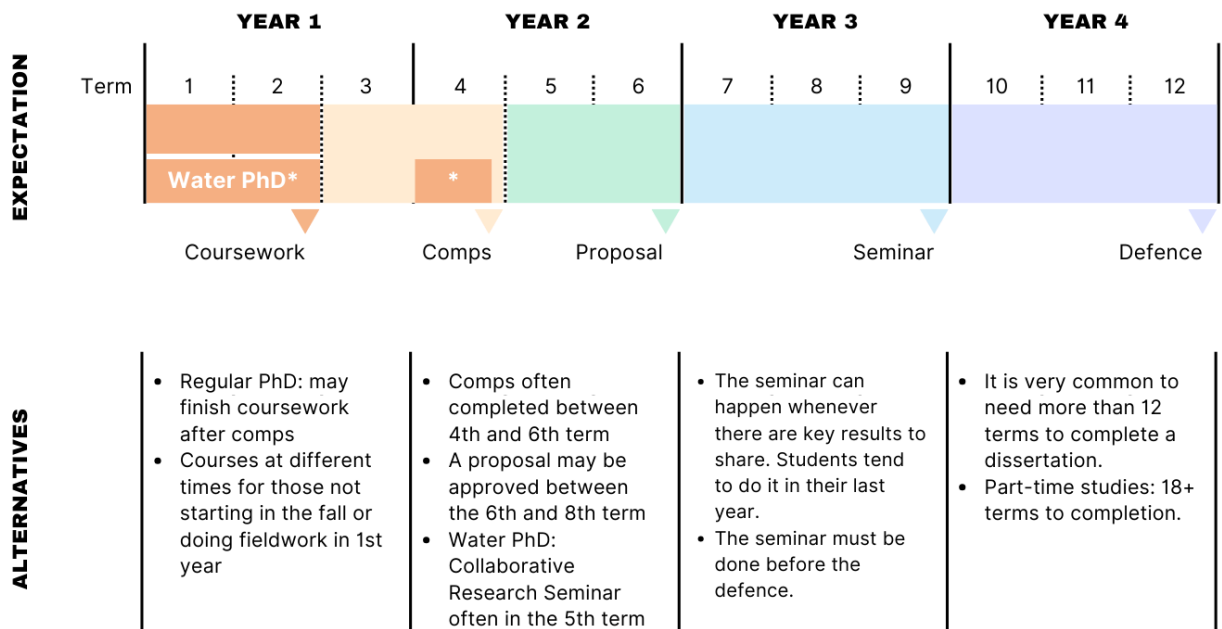
The PhD is a marathon, not a sprint. Conserve your time, your energy, and your money, because it will require you to invest all of yourself. A PhD is not just a research project. You are simultaneously project manager, fundraiser, data scientist, research author, communications specialist, and so much more. If you come from the working world where there is a department for every responsibility, anticipate that this transition may be accompanied by culture shock.

While this extension of responsibility can feel overwhelming, you will gain an extremely valuable and transferable set of skills that will keep you employable in a number of sectors including research, private sector, public sector, non-profit and more. Even though your research area will be very specific, the skills you will learn can take you many places. Always keep that big picture in mind – this degree gives you the qualifications you need for your next step. All you need to do is see a research project through, and you will be on your way. You can do this.

About SERS

Research in SERS is very interdisciplinary – be prepared to work outside your comfort zone/area of expertise or familiarity for at least some of your degree. Coursework will challenge you to learn about concepts you may not have been exposed to before.

PhD Timeline: Expectation & alternatives



2.1 Supervision and Committee

2.1.1 Supervision:

- Every supervisor will have significantly different work and communication styles with their graduate students. Communicate your supervisory expectations and needs clearly (ie. frequency of meetings, deadlines, level of detail in feedback). It is your supervisor's job to help you succeed, but it is your responsibility to articulate your expectations.
- Torn between working with two faculty members? Co-supervision (having 2-supervisors) can be beneficial. Your co-supervisor can be from any accredited academic institution, including UW and from universities across Canada and abroad.
- Ideally, touch base with your supervisor at least once every semester to discuss progress, research focus, questions, concerns, and guidance.
- The power dynamic between supervisor and student can be challenging to navigate. As the PhD, you are the 'boss' of your own research, but you also need approval from your supervisor. Discuss this openly with your supervisor to outline mutual expectations around responsibilities, especially around decision-making on research scope.

2.1.2 Committee:

- Research in SERS is very interdisciplinary. Select committee members that reflect the wide range of research disciplines your research will incorporate. Try your best to strike a balance between personality and skills. You want to be excited to meet with your committee and engage in meaningful discussions about your work.
- You may feel pressure to choose your committee quickly. We recommend taking your time to build your committee (6 months to 1 year). Get to know the faculty members you would like to work with first, and become familiar with their work (publications) and their performance on other committees by watching open exams
- Consider each member's research interest, communication style and dynamic with your own, and discuss the level of involvement you expect to make sure your expectations align.
 - You are interviewing experts for a position on your committee – what do *you* want to know about them before confirming that you'd like them to be on your committee? For example, do they have contacts in their network that could provide helpful insights? Are there essential readings they recommend? Does your anticipated outcome meet their expectations? How would they like to be consulted in the research process?
- Not every committee member has to be equally involved. This is to be expected and is a normal practice.
 - Make sure parameters of the working relationships are clear for everyone: how often you meet, what kind of feedback you'd like/they have time to provide, how much you'd like them to contribute. Most importantly, does the committee defer to the supervisor on final decisions or do all members vote?
- How often folks communicate with their committee (individually or collectively) is highly variable. Communicate as often as you feel you need. However, typically you should meet with your full committee once or twice a year, and your supervisor at least once per semester to maintain contact and update on progress or challenges. Book these meetings well in advance, and come prepared with an agenda and relevant questions. If you need your committee to read your work in advance of a meeting, be sure to respect their time and give them ample notice so your meetings are efficient and effective.

- You can approach faculty and staff for personal and research advice even if they are not on your committee! This is highly recommended since an outside perspective can really give you a refreshing look at your approach.

Important Note: If at *any time* you feel your relationship with your supervisor and/or committee member(s) are not serving you in the way you need, you are able to change supervisors and committee members. You are also allowed to transfer between departments at UW. Read more here: <https://uwaterloo.ca/graduate-studies-academic-calendar/general-information-and-regulations/university-responsibilities-regarding-supervisory-relationships>

It is normal to change your committee members after you complete your comprehensive exam and enter into your thesis research phase, as you better define your research focus and get to know more faculty who more closely align with your area. It is expected that your research scope and goals will change over time. You do not need your supervisor's permission to make committee changes, though it is recommended that you discuss restructuring with your supervisor or other trusted faculty members on best steps forward.

2.1.3 Topics to discuss regularly with your supervisor (and committee):

- Suggested readings and key researchers who have similar interests to you (could be faculty, staff or students).
- How long milestones should take, what are their expectations (ie is the proposal a written document, a one-pager, a presentation, all three)
- Expectations regarding academic performance (e.g., publishing papers, presenting at conferences)
- Expectations around feedback (e.g. turnover time, level of detail [is this a quick scan or do you need detailed feedback])
- Realistic expectations for achievable research and funding goals if you are going to exceed the 4-year timeline. While the graduation rate after five years is only 35%, another 51% of PhDs graduate after six years.
- Note that these expectations may differ between committee members and your supervisor. Set these expectations early and develop a protocol on how to address them. For example, does your Supervisor make the final call, or does the committee vote as a collective? You have a voice as well in these decisions, as you know your capacity best to work and meet deadlines.

2.1.4 Does your project need an ethics review?

- Does my data collection require ethics review: [Does my data collection activity require ethics review? | Research \(uwaterloo.ca\)](#)
- Ethics training is required before applying for ethics approval: [Requirement for Human Research Ethics Training | Research \(uwaterloo.ca\)](#)
- There is no formal ethics training for SERS PhD students. ERS 669 usually has an ethics overview for students for one class. You can take this course as your elective, or, if not, you can email the professor to see if you can attend that lecture.
- Research Ethics login and updated Ethics resources: [Research Ethics System Login | Research \(uwaterloo.ca\)](#)
- Additional training resources: [Training and resources | Research \(uwaterloo.ca\)](#)
- Hint: Save a PDF copy of your approved ethics application. This will help you structure your methods section for your thesis later on.

2.1.5 Contributing to your Discipline/ Research Dissemination

- In addition to conducting your research, you also have a responsibility to share it with a public audience. This can include conference presentations, academic journal articles, opinion pieces and more
- Discuss with your supervisor early on about dissemination expectations (discuss authorship, publication outlets, and timing)
- Ask your supervisor, your lab, and other faculty members in your discipline about relevant conference opportunities. Seek out paper proceedings from past conferences to see if the subject matter aligns with yours
- Seminar Milestone
 - Typically completed in the last year of your PhD. The aim of this talk is to present your core findings to a diverse audience. You do not have to present all of your findings, and it is common for candidates to still be completing their analysis as they fulfill this requirement. See [here](#) for more information.
- UW Speaker series
 - **SERS Salon** is a great, informal place to present your research or other interesting side projects you worked on to your peers, staff and faculty. Talks are typically ~15 min.
* A SERS Salon talk does not fulfill the requirements of the Seminar Milestone.
 - **Other departments** also host research talks and are frequently looking for volunteer speakers. Reach out to other departments where your research is relevant to see if you can present your research at their speaker series. Talks are typically 30-45 min.
*These talks could fulfill the requirements of the Seminar Milestone. Discuss with your supervisor.
- Identify three conferences where you envision presenting your research
 - Always try to get a conference talk over a poster. Talks hold more academic ‘weight’ and more widely demonstrate your capabilities to your peers in your discipline (great for networking!)
 - If you get a poster and not a talk, its still time to celebrate! Posters can be a great opportunity to engage other researchers in more detailed conversations about your research interest.
- Find “seminal” and parallel papers from your area of research; identifying how your research fits into the established literature.
- If publishing is a priority to you, identify three journals you envision publishing in. Research their fees, timelines, article types and expectations, and ranking of journal. Discuss pathways to publication with your supervisor.
- Seek out academic societies and associations that represent your discipline – attend their conferences, volunteer on committees, and get involved to establish your name in the field as you work on your academic research
- Alternative outlets for research dissemination include podcasts, radio interviews, magazines and news outlets, and giving guest lectures for relevant courses at UWaterloo and elsewhere – this is where networking is really important
- Speak with your supervisor about funding opportunities for conferences – every graduate student is entitled to one conference per year. Be sure to ask for itemized receipts and keep them on file for future reference
- Sometimes, supervisors can top off conference/ travel funding. Have a conversation with them about a conference that interests you and see if they can find ways to support you

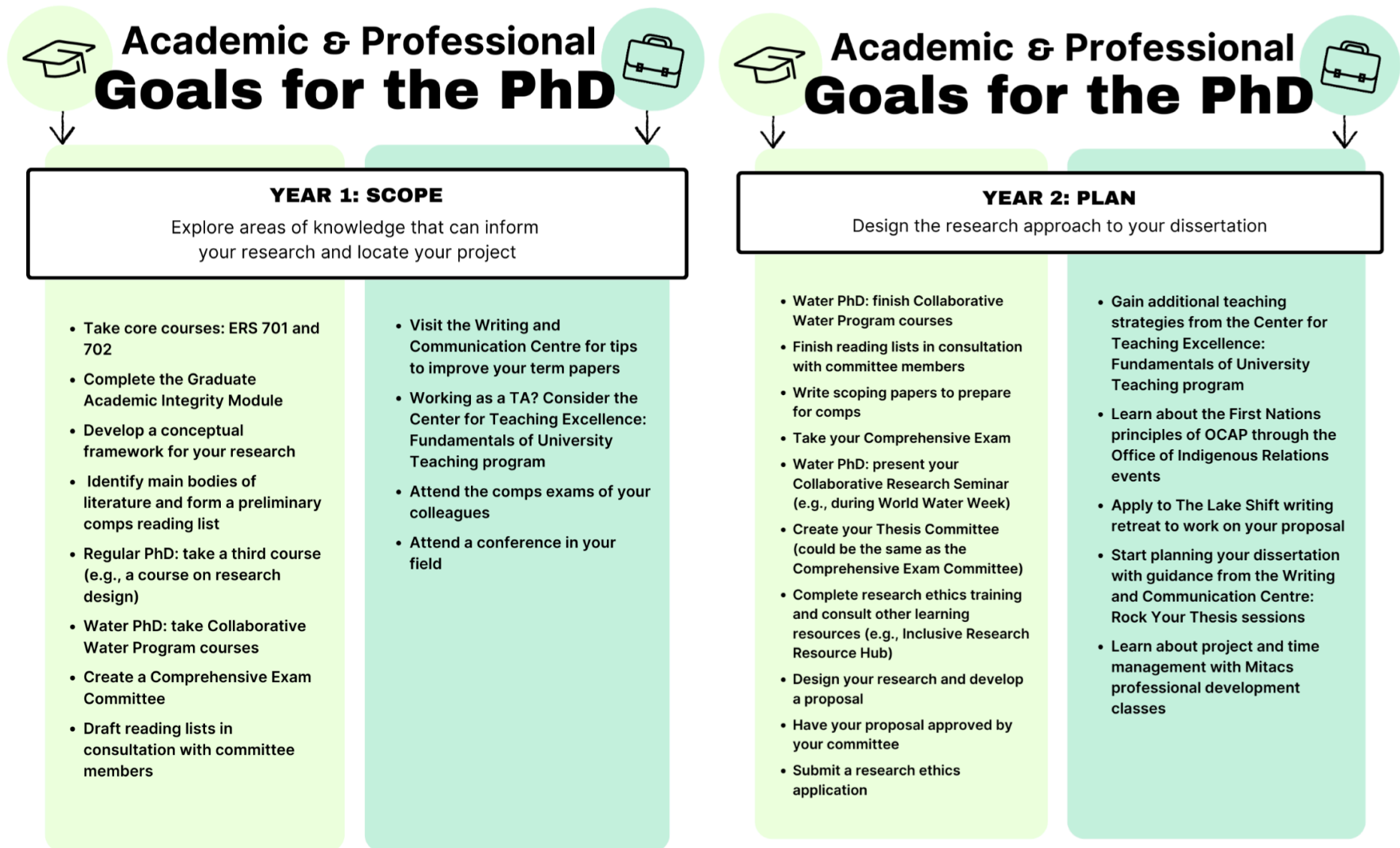
2.2 Services

- The [Office of Research Ethics](#) assists in the facilitation of research and all necessary approvals. Each Faculty at the University has their own Research Ethics Advisor you can consult with directly.
- The [Library](#) is for so much more than the journal/book catalogue!
 - You can request UW purchase books you need that are not in the catalogue
 - Each discipline has their own librarian, and they are all here to help students. Identify your departmental librarian early on in your degree. You can chat with them for guidance on your research/ projects, conducting systematic literature reviews, copyright issues, and more: [Librarians by subject | Library | University of Waterloo \(uwaterloo.ca\)](#)
- [Writing and Communications Centre](#): Academic support unit that offers workshops, peer tutors, and one-on-one appointments to get professional edits and support on your work.
- [Software available for students](#) – UW has a library of downloadable/accessible software (e.g. Microsoft 360, ArcGIS, Statistics programs, photoshop, etc.). You can either download software onto your private computer or access it through on-campus computer labs.
- Visit the Statistical Consulting and Collaborative [Research Unit](#) for help on data management and analysis.
- [AccessAbility Services](#) can help you access and meaningfully participate in your education. For example, they can help you apply for bursaries for hardware and software purchases to accommodate accessibility needs.
- Keep software in mind for when you go to transcribe your interviews. Sample transcribing software include: <https://otter.ai/> ; <https://www.temi.com/try-rev> ; Microsoft Teams also has a Transcription service – keep privacy issues in mind and do your research.

2.3 Writing tips: How to be successful

- Breaking it down into sizable chunks - set small goals. This will help you feel productive!
- Consider the energy difference between research, reading and actually writing. They can be very different processes and require different levels of attention/effort. When structuring your time, include this in your planning.
- “Write drunk, edit sober” - not literal advice, but if you are struggling to put things into words to make them “sound nice”, sometimes, it’s easier to write a terrible draft in order to get words onto paper and have something to work from. You have to start somewhere.
- Use an iterative process for writing/developing your scoping questions - but make sure to keep a limit, e.g., no more than 3 iterations.
- Keywords are super helpful – use them to find related papers, etc.
- Take breaks during writing and return to it later – a fresh perspective can help you figure out the flow of a paragraph, how to explain a complicated concept, etc.
- Be flexible – sometimes, effort put into writing does not necessarily translate into number of words on paper. It may be helpful to block off shorter periods of time (2-3 hours) to write, rather than your whole day
- Share or exchange your writing with a fellow peer and get some peer feedback – this can be someone from your lab, department, Faculty or elsewhere.
- Make sure to have your work backed up as you go, especially for thesis and comps writing – use your free OneDrive! When you have multiple versions, make sure to keep track of those with specific file names. If you’re uploading a new copy 1x per day, include the date in the file name.
- Instead of deleting whole paragraphs, move them to another document – you never know when it can be useful again

III. Yearly Academic & Professional Development Goals





Academic & Professional Goals for the PhD



YEAR 3: RESEARCH

Collect and analyze data for your dissertation

- Conduct research activities: fieldwork and/or labwork
- Start analyses
- Start writing your dissertation
- Consider the Seminar milestone – doing it this year frees up mental space for Year 4, and keeps trend at one milestone per year
- Water PhD: consider preparation of your Collaborative Academic Contribution
- Aiming to become a professor? Consider the Center for Teaching Excellence: Certificate in University Teaching
- Refine your presentation skills with the Writing and Communication Centre: Speak like a Scholar program
- Attend a conference in your field and present initial findings
- Learn about career planning with Mitacs professional development classes
- Start preparing for job applications through workshops by the Centre for Career Development



Academic & Professional Goals for the PhD



YEAR 4+: WRITE & DEFEND

Put together your dissertation chapters and share your work

- Conclude data collection
- Continue analyses
- Continue writing
- Receive feedback on chapters and seek input from committee members where appropriate
- Complete the Seminar Milestone, if pending
- Water PhD: submit your Collaborative Academic Contribution, if pending
- PhD Defence
- Apply to graduate and submit final version of the dissertation
- Navigate the final stretch with the Writing and Communication Center programs: Writing groups, Speak like a Scholar, Dissertation Bootcamp
- Apply to The Lake Shift writing retreat to work on dissertation chapters
- Strengthen your academic job applications by completing the Center for Teaching Excellence: Certificate in University Teaching
- Find support in the job application process from the Centre for Career Development
- Attend defences of your colleagues
- Share dissertation findings at a conference

IV. SERS Comprehensive Exam

SERS comprehensive exam information:

<https://uwaterloo.ca/environment-resources-and-sustainability/graduate/phd-degree/phd-comprehensive-exam>

4.1 Administrative Overview

4.1.1 The Comprehensive Exam Process: A Trilogy

The comprehensive exam involves three stages. Each stage builds on the other:

1. Studying (writing scoping papers)
 - These are not an official requirement, but essential to a successful comprehensive exam.
 - These papers form the base of information you will use when writing your comps and will allow you to compose a more sophisticated response to your comp question(s).
2. Written exam
 - Your written response to the exam question you receive from your committee.
3. Oral exam
 - Oral presentation responding to the question you receive from your committee.
 - This presentation is not a summary of your written response. There is an unofficial expectation that you use this presentation to expand on written exam rather than simply summarizing its contents.

4.1.2 Timeline

The official suggested timeline is to complete your comps by the end of your 4th semester, but there is flexibility around this time. Typically, students complete this milestone by their 6th semester. You may be asked to complete an extension request, though this is not common.

At least 6 months before you receive your question, have a committee meeting to:

1. Formally approve the reading list
2. Discuss the scope of the scoping papers you would like to write and how often you will be submitting them (e.g. goal of 1 paper every 6 weeks)
3. Let your committee know your timeline of when you anticipate to write your comps
*send an email follow up of all things agreed to in the meeting so you have it in writing

At least 2 months before you receive your question:

1. Send your committee your proposed exam question (see, section “4.2.2 Developing a Comps Question” for more detail)

4.1.3 General Overview

In SERS, your comprehensive oral defence is ‘open’, meaning people other than you and your committee can attend. It is highly recommended you attend comprehensive exams which include your committee members/supervisor(s) to familiarize yourself with the exam process and how each member asks questions. Comprehensive exams are announced via email by the Graduate Coordinator. You can also invite friends/family to listen to your fantastic research!

Your comps will typically require you to categorize your research interests into 3 or 4 core areas of research which will form the “pillars” of your exam. You will do an initial breakdown of this as part of the course requirements of ERS 702. Pillars will also typically include ~3 sub-themes each.

There are two core communication skills honed during the comprehensive process. The first is an ability to articulate a massive amount of information into a relatively short paper (10,000 words will seem short by the end). By nature of the interdisciplinary/transdisciplinary work in SERS, you will learn to disseminate your research to a wide audience. Regardless of your committee members’ background, they should be able to easily understand the points you are conveying. The expectations you set for the roles of your committee members in your comps process will heavily influence this.

4.1.4 Communicating with your committee members/supervisor(s)

Clear communication of your expectations with your committee members/supervisor(s), in writing, is key to a successful comprehensive exam. As your comprehensive exam will have an interdisciplinary/transdisciplinary focus, your committee members will also reflect a wide range of backgrounds. We highly recommend that you designate members of your committee to give detailed feedback, and others to give general feedback based on their areas of expertise and the theme of each scoping paper.

Example: You have three scoping papers: one with a focus on ecology, another on planning, and one on Indigenous knowledge. Indicate to your committee that your expectation is that your supervisor will provide detailed feedback on all documents. As for your committee members, you expect that Member A who has expertise in Planning will also provide detailed feedback on the Planning scoping paper and be your point of contact for emails and meetings while you are writing that paper. All other members will be expected to read your scoping paper and provide general (high-level) feedback, as well as indicate where you could articulate a concept better to the wider audience (ie. the way you articulate your point was only understandable by someone in that specific discipline, improve phrasing). Expand this to your other committee members and scoping papers.

This strategic communication will help your committee members maximize their efforts on scoping papers which best align with their expertise, especially where time is a limited resource. This process will also help you learn what each committee member prioritizes and the types of questions they ask. Follow up all meetings with an emailed summary of important points, expectations, and action items to ensure everyone is on the same page and hold your committee, and yourself, accountable.

TA duties: For those who will be TAing during your comprehensive exam, make sure you communicate your exam and TA schedule clearly with **both** your committee and the instructor of the course you are TAing. You can schedule your exam during anticipated slow periods in the course, and some instructors may be flexible with organizing TA duties to relieve some of the pressure during your exam. However, some instructors are not flexible and maintaining both duties will be your responsibility. Open and clear communication is necessary for success.

4.1.5 Accommodation & Accessibility

For those who qualify for Accessibility Services, your requests for accommodation are not limited to extra time. The following are a few examples of types of accommodation you can request through AccessAbility Services:

- Additional time for:
 - Comp question clarification
 - Exam writing

- Time between paper submission and oral defence
- Oral defence itself
- Request that committee members communicate questions in a specific style that best suits your learning/communication needs (e.g. direct vs leading questions)
- Designated break times during oral defence
- Technology to help you research/write/present
- For in-person defences: specific room requests (helpful for light/colour sensitivity)
- Closed defence (no audience, only your committee members/supervisor(s))

Be creative in your self-advocacy to help you succeed! Accessibility Services will help you with this.

4.2 The Comprehensive Exam, Explained

4.2.1 Reading List

Establishing a reading list is the student's responsibility. However, ask your committee members and supervisor(s) to send you a list of readings they consider "must haves" for each area of your comps. This reading list forms the base of your exam, but **you are expected to read and cite outside of this list** to source information which may not be available in the readings but would be necessary to defensibly answer your exam questions.

How many articles should I have in my reading list?

- This is flexible, but a good starting point is 10 articles per sub theme, or 30-40 articles per pillar. Some articles may apply to more than one pillar, you can list these articles under each pillar they apply to.

Tips to Succeed:

- Compile the list of readings you found and the readings given to you by your committee members/supervisor(s). Send it to your committee members/supervisor(s) for approval.
- A good place to start is seminal papers, highly cited articles and meta-analyses
- Literature-sorting and citation software (e.g., Mendeley, Zotero) ARE YOUR FRIEND! They help you keep track of themes, what you have/have not read, and make adding your citations simple and fast.
- Take extensive notes as you read. Copy and paste quotations from articles and organize into themes to easily reference back to when writing your scoping paper and exam.
- Colour code! Highlight in yellow for main points, blue for politics, green for environment (etc.)
- Build a comprehensive file for your notes to track significant topics, points, and quotes from every reading. This can be an Excel file, a table in Word, or another format you are comfortable working with. For the purposes of the exam, you want to be able to quickly jump between papers to build specific arguments around a topic.
- Define everything. A working list of definitions is extremely important. In addition to being a common question point for committee's, it is also an expectation of a PhD thesis. Make sure you indicate from which literature/ authors you draw these definitions as the who, why and when are just as important as the definitions themselves.

4.2.2 Developing a Comps Question

The development of your Comprehensive Exam question is a closed process conducted by your committee. However, to ensure that you and your committee members are on the same page about the

focus and scope of your research for your exam, it is highly suggested that you send your committee members a sample exam question. Make sure you are prepared to answer the question you give! Committees may take inspiration when writing your exam question.

Sample email: *“As we approach my comp date [date], SERS will soon be expecting the submission of my comprehensive question. To reduce possible miscommunication of the my topics of focus (especially considering the highly interdisciplinary nature of our committee and SERS research), I have prepared a sample question I might expect to see below:”*

Note that there is no standard formatting for a comprehensive exam question. Some are short and only include one short and open-ended question, and others include several long, highly specific questions that clearly dictate specific focus areas. Look at previous exam questions for inspiration. You can ask your supervisor, committee members, and other faculty members for examples.

4.2.3 Scoping papers

Scoping papers are short literature review-style research papers that help you assess a particular area of study. Scoping papers are not an official requirement of the Comprehensive Exam process, but they are necessary to excel in this milestone. There is no one ‘correct’ way to organize and write scoping papers. Do what is best for you and your learning style.

The following is a suggested flow of how to approach your scoping paper:

- Write one scoping paper per theme (~3500-5,000 words).
- Scoping tips: *What are the main arguments, authors and contributions of this field? Why is it significant for your study area, and to sustainability more broadly? What are the competing theories or conflicts in the field? How do these authors see the future of this field contributing to the sustainability discourse?*
- Present outlines for your proposed scoping papers at a committee meeting and use the time to scope down the contents before writing. Listen to your committee if they advise that your research scope is too wide – the more focused and simple, the better.
- Designate committee members into two categories based on how their expertise aligns with each scoping paper: **detailed** comments and **general** comments. This will improve the quality of feedback you get from your committee members. It is on you to lay out your expectations for the committee.
 - Committee members who do not specialize in areas you are covering in a specific scoping paper should only be asked to give general comments
 - Committee members who specialize in areas you are covering in a specific scoping paper should be asked to give very detailed comments and feedback
- Once you receive comments from your committee members on your scoping paper, you should review the comments in detail and then meet with your committee member(s) individually to discuss their comments/your thoughts. Ask your committee members to come to the meeting prepared with a few questions they might ask you during your comp. Use this time to understand how they each ask questions, their learning priorities for you, and their expectations of you. It will help you in your oral defence!
- Note that you are not writing your comps paper, but giving yourself the theoretical background on various themes to help you weave them together FOR your comps paper.
- Time management is key here. Discuss with your committee well in advance about timing for each of your scoping papers, receiving feedback on this work, receiving your comps question, writing the exam, and defending. This should happen across a minimum of two semesters to give yourself enough time.

4.2.4 Written Exam

Congratulations on officially beginning your Comprehensive Exam! Once you have received your question, it is recommended to partition it into bullet points to ensure you do not miss addressing any of the requested content.

Below we have included answers to commonly asked questions:

- ***Can I use the writing from my scoping papers to answer my comps question.***
 - You cannot copy and paste **an entire scoping paper** to answer your comps, but you can **use sections you have previously written** to help form to base of your answer. There is an expectation that you build on the research you have already done to provide a more sophisticated and concise answer. Ideally, your comps is an effective synthesis of all your scoping papers with novel insights as a result of that synthesis.
- ***Do my in-text citations count towards my word count?***
 - Yes.
- ***Can I use numerical citations¹ ?***
 - ¹ No. SERS prefers citations where you can see the author's name (PhD Handbook Committee et al. 2023)
- ***Does my figure/table caption count towards my word count or is it included in the 300 word-equivalent value that's given to every table/figure?***
 - The figure/table caption is included in the 300-word value, even if your table and caption use more than 300 words. This is a good opportunity to write descriptive captions, though any analysis must be kept in your core writing section.
- ***Do I have to cite every paper from my reading list in my comprehensive exam?***
 - No.
- ***Do I exclusively cite papers from my reading list in my comps?***
 - You are expected to cite sources that are outside of your official reading list. A comprehensive exam which only cites sources from the reading list will not be considered satisfactory.
- ***Will I need to submit my exam for a plagiarism check?***
 - You will need to submit your written comprehensive exam to iThenticate. Access to this program requires administrative approval which **may take several days**. It is your responsibility to request access and submit your exam on time. Instructions are provided by SERS. Contact the Program Coordinator for further information.

4.2.5 Oral Exam

As the last component of the Comprehensive Exam process, there is an expectation that your oral presentation will build on your written exam, rather than simply summarizing the contents of your written exam. Building on your exam can include:

1. Filling in gaps you realized you missed in your written exam;
2. Referencing the work of relevant papers you found after submitting your written exam; and,
3. Presenting the information from your written exam in a more sophisticated and concise way to improve communication of complex concepts.

Arrive at the exam room at least 30 minutes before your exam time to set up and test that all systems are working. Ensure you have a PDF version of your powerpoint presentation that you have sent to all committee members in case of technical difficulties. In rooms with poor internet connection, you may have difficulty. Be prepared for technology failure at any time (i.e., streaming videos, downloading presentation content from your email or a server).

During the Committee's question period, you may feel pressure to answer questions quickly and that you will be judged more harshly if you need time to think through your response. However, committees prefer you take your time to give them your best answer. The quiet period between question and response can feel very awkward, but committees understand this and value a well thought out response over a fast response.

Tips: Write out the committee's questions as they ask them (point form). Relevant literature or ideas may come to mind that you can write down as well. It's okay to take time to do this so you have something to reference when you answer. Ask for clarification where you don't fully understand the question/ aspects of the question. Verbally indicate that you will take a brief moment to organize your thoughts.

Can I practice my oral defence with friends/peers?

You cannot seek advice or help from anyone while you are in the exam process. You can organize mock presentations **before** you receive your exam question and you can attend other oral exams for inspiration.

I'm feeling defensive with how my committee member worded their question. How can I respond productively?

Sometimes committee members ask questions that can feel frustrating for a variety of reasons. Maybe they missed a point we thought we made clearly or they focus on something we feel is out of scope. Whatever the reason, the best course of action if you are feeling defensive is to answer their question with a request for clarification rather than answering their question directly.

Examples: "If you go to section x you can see that I defined concept y. Could you please clarify if the question you are asking is going beyond this definition?"/ "I feel that x area of research is outside of the scope of my work for y reasons. Could you please clarify what aspects of x area of research you feel relate to my research so I can better comment on them?"

4.3 Study Tips

1. Understanding the way you process/intake information best is key to a successful comprehensive exam.
2. Focus on one pillar at a time, reading literature and writing the scoping paper before moving on to the next pillar.
3. Highlight as you read using different colours to signify different important information, e.g. definitions of core terms (these are key!), core concepts, points of debate, research gaps, emerging themes.
4. Reading through your literature list (at least) twice is recommended. Once, to highlight and think about themes that are coming up in the literature. The second is to then organize all of your highlighting into notes under the primary themes you found while reading through the first time.
5. As you are writing your scoping paper, grey-out notes you use so you can keep track of what information you chose to include/exclude. Those extra notes left behind might come in handy later!
6. Having a document with all your readings, their abstracts and keywords is an easy way to review and remind yourself what each reading is about.

4.4 The Human Side of Comps

Pre-comps: It is normal to feel nervous and intimidated. Good communication with your committee members/supervisor(s), and mutual support with your peers can help make this milestone feel more realizable.

In-comps: This can feel like a very isolating and exhausting period. It is normal to feel overwhelmed, unqualified, and even like you might give up. Remember that this is meant to be a learning opportunity, and it is impossible to cover the full extent of any field by yourself - people have spent their entire research careers doing this. **Your job is to synthesize various fields in a unique way to your research interests and bring some relevant dialogue between fields to enhance the sustainability discourse.** Make time to see friends/family and do activities which get you away from research/writing. Finding ways to support your mental health during this intensive process is key.

Post-comps: This exam is one of the most challenging undertakings folks will take on in their life. It is an incredible accomplishment and right of academic passage. However, due to how large this undertaking is, **it is normal to not feel elated/accomplished/a sense of closure when you complete your comps.** Many PhDs have shared that they experienced feelings of depression, sadness, continued stress or numbness, and shame for not feeling “more happy for their accomplishment” after exerting themselves for so long. This is a normal and not a shameful response. It is also common that students report that it took weeks or months to recover productively/ cognitively/ emotionally from the demand. We recommend you plan for whatever self-care will make you feel the most grounded both during and after your comps, and give yourself time to recover from the labour, energy and focus involved in this amazing piece of work that you built. Jumping right into the proposal stage may exhaust you. Take your time.

Can I publish what I write after my comps?

- Yes, there is opportunity to turn your comps research into publishable content. Discuss this with your committee members/supervisor(s) if you are interested.

What if my research changes direction after my comps?

- Your research may change directions post comps for a variety of reasons (e.g. shift in research interests, field site/data availability). This is normal, and will not reflect negatively on you or your study even if the change in focus is significant.

V. SERS Research Proposal

Your Proposal sets the tone, purpose, scope, methodology and outputs of your research. It should demonstrate that you are capable of independent critical thinking and analysis, and that you can communicate your ideas clearly. This is a crucial step in the PhD process, but you are not expected to be a research expert (yet!). You are expected to have a good level of knowledge about your subject areas and where your proposed research can make a valuable contribution.

Before reading this page, review the SERS PhD Proposal outline here:

<https://uwaterloo.ca/environment-resources-and-sustainability/graduate/phd-degree/phd-thesis-proposal>

5.1 Proposal Components

There are traditionally two components to the PhD Thesis Proposal: **(i) the written proposal** and **(ii) the 'defence'**. While the language is quite formal, the Proposal process follows a much more flexible and informal process than the comprehensive exam and thesis defence. Almost all components of this structure will be decided by you and your committee.

Regardless of whether you are choosing a monograph or three-paper style manuscript for your PhD thesis, the format and structure of your Proposal is flexible and up to you and your committee. **Your Proposal does not have to be perfect; it needs to be defensible.** Use your committee's guidance – they have supervised projects before and conducted research themselves.

5.2 Timing

Following the comprehensive exam, the Proposal milestone should take you a total of **six months** to complete. Remember that your research focus or scope may shift following the comprehensive exam. Allocate time for additional reading and research as your project scope is refined.

Coordinate the presentation/defence date at least one month in advance to ensure all committee members can make themselves available. Feel free to book one-on-ones with individual committee members to discuss how your proposal evolves before this date as well. **Prepare for a 15-20 minute presentation followed by a committee discussion (40 minutes – one hour).** While a formal presentation is not always expected, it often is – but if your supervisor suggests another format that works for you, then it is fine to proceed with an alternate arrangement.

It is ideal to run at least one draft by your committee before you formally submit your proposal to get everyone on the same page and address any major issues. Provide a realistic timeline for submitting proposal drafts and requesting feedback from your committee. Typically, SERS department members expect a minimum of two weeks to review your proposal draft. Make sure you leave yourself enough time to submit drafts, receive and incorporate feedback, and finish the written document with at least two additional weeks before your milestone approval meeting.

Part of your proposal is estimating a timeline for your research (be realistic) - consider how much time it may actually take you to do the research (e.g., roadblocks and procedural times for ethics approval or software training). If you have a thesis defence date in mind, use this [Backwards Planning Tool](#) to get an idea of how to best time the research, data collection, data analysis, and write-up phases to get you to your defence on time.

While it isn't *required* that you finish your proposal by the end of your 6th semester (end of 2nd year if you are a full-time student) of your PhD, try not to leave it too late. It can be challenging to get this milestone done when you are already deep into "research mode."

5.3 Proposal Outputs

Traditionally, the SERS proposal has had various levels of output amongst PhD students. Ask your supervisor and committee what they expect in terms of length, scope, detail. For example, is the written component multiple pages of explanation (3-5,000 words), a fulsome document approaching the length of your written comprehensive exam, or a shorter document and/or a presentation? What do they consider a passed milestone – the written proposal, or the presentation, or both?

Request a written email from your Supervisor confirming when you have completed this milestone. You may receive comments, constructive criticism and expected changes. Verify with your supervisor whether passing this milestone is contingent on you making these changes and resubmitting the Proposal, or if you have passed irrespective of the requested revisions.

To navigate this flexibility, we recommend:

- Review the suggested outline on SERS website with your supervisor and go over any differences in their expectations from that outline
- Outline the process you would like (i.e., number of words in your proposal, length of your presentation, the number of meetings you want with your full committee)
- Get creative! If your research incorporates approaches that are outside of the Western/traditional academic scope, suggest ways to honor this in the creation and 'defence' of your research proposal
- Make sure all proposed formatting is agreed upon in writing (if you ran it by your committee in a meeting, send a follow up email about what you all agreed to)
 - Some committees will lean towards a more formal process (e.g. a 3,000 word proposal with several revisions and a formal presentation with rounds of questions). Others will opt for a shorter written document and a general committee meeting to discuss and approve
 - As there are no official approaches to this process in SERS (no requisite structure for either your proposal, meeting to approve your proposed research, or whether you need to have a presentation), this is an opportune time for you to advocate for yourself and your vision of what you want out of the process of completing this milestone

Ideally, you should not have more than 1-2 rounds of edits on your draft proposal before moving forward to a committee meeting for approval. If you are asked to do more than two rounds of edits, it would be good to have a meeting with your supervisor to discuss further and ensure your success for this milestone by the next submission. After writing a draft, feel free to solicit feedback from your supervisor as well as the committee as a whole – this is very different from the comprehensive exam process, and you are allowed to ask for notes back before officially "submitting" the proposal.

Refer to the II. Research Housekeeping section of the Handbook for information on Research Ethics. Note that the completion of your ethics and proposal are not contingent on each other. However, having a good idea about the structure of your research (in your Proposal) will help you complete your ethics application.

5.4 Proposal Structure

You can use the Proposal outline provided by SERS as “starter” headings and fill in the blanks as you write/compile information you’ve already written. Use the writing from your comprehensive exam to your advantage – where appropriate. Some sections will need to be written from scratch, and that's okay too. It is important to demonstrate leadership at this stage of your PhD. An ideal proposal leaves the committee feeling confident that you have conducted preliminary research on your topic and that you are both knowledgeable and capable of tackling the challenges of a PhD.

Here, we suggest an alternative outline that you can also use, or choose sections that work for you and the research you intend to do:

Alternative Proposal Outline (in addition to the one on the SERS website)

1. Land Acknowledgement
2. Project Details
 - a. Project Background (theoretical context)
 - b. Project Objectives
 - c. Project Justification (how is your research novel, how does it fit into the literature/research gaps)
 - d. Project Impact
 - e. Project Data (what data are you looking at, where did you get it)
 - f. Summary of proposed research (titles of your studies)
3. Study Design[A]: [title] - repeat for every study you are proposing in your thesis
 - a. Objective(s)
 - b. Research Questions
 - c. Description of the people/places/things you are researching
 - d. Methodology (be as detailed here as you can – it will provide opportunities for helpful feedback, and it will make sure that your committee has all the information necessary to understand what you are doing)
 - e. Analysis
4. Study limitations
5. Contributions to Knowledge
6. Project timeline (committees love a Gantt chart – it’s recommended to end with your timeline in a slideshow presentation!)
7. Collaborative relationships (funders, organizations giving you data, research partnerships)
8. Possible Appendices:
 - a. Search terms for systematic review
 - b. Approach to participant recruitment
 - c. Interview or focus group guides (list of questions)
9. References

Keep in mind: Your proposal is not a contract. The purpose of this exercise is to assess your ability to demonstrate you are capable of a PhD study, so you should put time and effort into it. However, don't be concerned if research priorities need to slightly change as your project evolves. This is a natural part of the process for all research topics as the scope is refined and new scholarship comes to light. All of this can be described in detail in your thesis later on.

5.4 Proposal Milestone Submission and Defence/ Discussion

You've submitted your proposal! Now is the time to defend what you've written.

The presentation is not a regurgitation of your written document. Try to focus more on the gaps you found in the literature, your selected research approach, and why your research intervention brings a unique scholarly value, as this is really what you are “proposing” to research. You can also address any changes or suggestions made by your supervisor and/or committee after they received the written document

- Use this time to gain valuable feedback from your committee about what is and is not feasible for a research project. Your committee can give you realistic timelines about recruiting participants, conducting interviews, and data analysis so you can stay on track.
- Have references and justifications prepared for the methods you are choosing.
- Inquire with your committee about software access. A committee member may have licenses available for data analysis software that the university doesn't provide. Remember to account for the learning curve in your research timeline if you're using new technology.
- Reminder to request a written email from your Supervisor to indicate you have passed this milestone.
- Once the committee is satisfied with the proposal, be sure to complete the milestone completion form (inquire with Administration).
- Note: While your entire committee should ideally be at the defence/discussion, last-minute disruptions can happen. If you have a last-minute cancellation of a committee member, get in contact ASAP with the SERS Chair of Graduate Studies regarding what the procedure should be going forward. Sometimes, you may be able to proceed with the scheduled time and solicit feedback from the missing member later, or they can submit their questions and comments in advance.

VI. Writing & Defending your Thesis

You're nearly there. These next months of writing, studying and preparation will serve to showcase and celebrate all your hard work. If you have an end date in mind, use this [Backwards Planning tool](#) at least **two semesters prior** to the semester in which you hope to defend your thesis.

Reminder: Once you pass your comprehensive exam, you are able to change your dissertation committee members to best suit your research goals.

6.1 PhD Thesis Types

There are two thesis formats to choose from [Link]:

- a) Monograph (roughly 70,000 words)
- b) Manuscript (3-4 published or publishable journal-type manuscripts in addition to introductory and concluding chapters)

One format is not more advantageous than the other; it depends on which format will help you achieve your research goals in the interim. The manuscript format may suit you if your research follows a multi-study design and/ or publishing in journals is a priority for you. The monograph format may suit you if your research does not follow a multi-study format, publishing a chapter in a book or a full book is your priority, and/ or publishing in journals is not a core priority of your PhD.

6.2 Writing Your Thesis

6.2.1 Set expectations early

Discussions around the formatting of your thesis with your committee and supervisor(s) should start while you are in the process of writing your Research Proposal, as the design of your research will directly lead into the thesis formatting of your choosing.

- Establish your committee's expectations for the thesis.
 - Some faculty may have preferences for one formatting over another. Remember, it is your choice to pick the formatting that is best for you, and your committee's role is to help you make an informed choice.
- Formally inform your committee of the format you have chosen and why.
- Discuss the structure of your thesis in detail with your supervisor(s). As the thesis is fluid and ever changing until its submitted, this should be a regular conversation you have with your supervisor(s) throughout your degree.
- Keep in mind that it is common to rewrite or restructure entire chapters even after they have been written based on the feedback from your committee.
- Establish an approximate writing timeline to keep yourself and your committee accountable (I.e., 1-2 months per chapter, 4-6 weeks for committee review, 2 weeks to implement changes)
- Committees love a Gantt chart
- Note that for the manuscript format journal articles will have strict limits. However the word limit on the monograph is negotiable depending on topic and committee needs. Look to UW Space for examples and keep your committee informed.

6.2.2 Gather resources and support: There is a template for that!

The following are links and tip to help get you started:

- A guide to thesis formatting: [guide](#)
- Templates for thesis formatting:
 - [templates](#)
 - https://www.ilovephd.com/how-to-write-a-thesis-phd-thesis-format/?expand_article=1
- Make a collection of relevant PhD theses (check [UWSpace](#) as well as other university portals) to get inspiration on structure, methods, analysis and discussion sections
- Ask supervisor about their past students' successful theses to see what they value. You can ask to be connected to these students to discuss their individual approaches and dissertation experiences
- Send a sample completed thesis (I.e., from UWSpace) to your supervisor to let them know this is what you are aiming for and get their feedback on whether it meets their expectations of your work
- Involve AccessAbility services and the Writing Centre early on – send samples of your work (I.e., your comprehensive exam) to get feedback on your writing style and synthesis so that the thesis writing process is smooth and you are equipped with the tools you need to succeed

6.2.3 Special Notes on Journal Manuscript Format

If you choose to publish, selecting the academic journal(s) for publication early on is extremely important. Each journal focuses on unique theoretical and methodological approaches and if your paper doesn't fit that focus it may create barriers to publication. Additionally, each journal has their own formatting requirements. Choosing journals early on and writing your initial drafts to fit their individual requirements will prevent you from having to reformat.

Search for keywords from your research, theory and methods in the journal and ensure your manuscript reflects them through citations and in your cover letter. Contacting the journal of interest with an abstract or short cover letter can be helpful in determining your manuscript's relevance.

These thesis-based publications can be co-authored, but **you must be the first author** on every publication and have done the majority of the work. Anyone you co-author with is automatically disqualified from being considered an external examiner for your thesis defence.

Publishing your chapters before you defend will go a long way to supporting your research in your defence, but it does not mean that you will not have questions or criticism in your defence. Note that journal publication is not a requirement of the SERS PhD program.

6.2.4 A Good Thesis is a Written Thesis!

Although there is a clear and typical structure to any thesis, the writing process will be anything but linear. The dissertation will take its own shape as you create and rework various sections throughout the writing process. This is supposed to happen! Have patience and persistence and be open to innovation as you restructure your arguments, sections, and even the order of chapters. Here are some tips to keep in mind:

- Getting words on paper will be the hardest part. Rather than waiting for the perfect phrasing, start with the central ideas you wish to express – even if they are informal – and work from there.

- Find your flow. Know that some days are better than others for energy levels, quality of writing, and word count. Writing is a creative art, and it's not possible to maintain the same level of creative energy and productivity *every single day*
- You don't have to write the sections in chronological order. Where possible, start with sections that come easy to you. For example, describing the research methodology can be straightforward and a great way to grow your word count.
- Use filler sections such as acknowledgements, dedication or introduction to fall back on when your brain is fried so you can still feel productive
- Give yourself a daily or weekly minimum word count. For example, every weekday you will write at a minimum 500 words towards the thesis. Once you hit that threshold, you can choose to conclude your writing session for the day or keep going! Bit by bit, the thesis will be written
- Find a writing buddy. Writing can be an exhausting task, especially if you are at it alone every day. Consider finding someone in your cohort or even a fellow student in any program that is on a similar timeline to you and establish regular writing sessions to meet online or in person and hold each other accountable. This is also helpful when you hit a challenge in your writing process to talk it through with a friend
- Take breaks! When you finish a section or a chapter, or if you are struggling to phrase an argument, take some time away from the screen. If you're in a time crunch, move to another section and then return to the challenge with a fresh pair of eyes. It is usually when you are least focused on a problem that you are able to see it from a better perspective.
- Use a citation management software! A common error is to include an in-text citation that does not come up in the bibliography. Automate this easily with software like Mendeley or Zotero which can integrate directly into Microsoft Word.

6.2.5 Reviewing and Revising

This is where things can get tough. You've spent months drafting chapters, and now it's time for constructive criticism. There's no way to avoid it – all sections will need to be revised at least once or twice. In some instances, you may need to rewrite a chapter, or exclude huge sections you worked on for days. Revisions will help to highlight the most strategic and relevant aspects of your research. Trust the process.

Some Hints on Timing:

- Your supervisor should be the first to give a green light on your draft thesis
- Communicate with them in advance on your writing timeline so they can **thoroughly** review your work, and follow-up
- We suggest working chapter by chapter to (1) proactively incorporate supervisor feedback into chapters you have yet to submit, (2) continue writing additional chapters while your supervisor reviews other chapters, and (3) it will be less overwhelming for your supervisor/committee to read
- Discuss with your supervisor about reasonable estimations for your writing timeline, for example giving yourself one to two months per chapter rather than a few weeks.

6.3 Feedback

When receiving feedback, have a discussion with your supervisor about what is most effective for you. Do you prefer to upload the chapters to Sharepoint so that all committee members can edit at once? Do you prefer to review comments and track changes or receive a written document with feedback? Would it be helpful to have a conversation to discuss the feedback and help you interpret it? Make sure you set

aside consistent meeting times, check-ins and updates to ensure you stay on track. In the final rounds of feedback, it is worth asking your supervisor or committee members to point to topics or sections from your thesis where they may focus for your defence question period.

6.4 Committee Responsibilities

Does your committee need to review the revised draft before submission for defence? Agree in advance about responsibilities and expertise. For example, if one committee member is an expert on your methods section, will their main role be to revise this chapter in detail and provide minor edits to the rest of the thesis, or are all committee members expected to give a heavy revision of all chapters?

- Anticipate that it might take your committee longer than expected to read your thesis
- Set clear deadlines in your correspondence and follow up promptly when deadlines are reached
- Ask your committee about their own work priorities (e.g. field work, beginning/end of term teaching commitments, and sabbaticals) during the time you anticipate asking for their feedback so you can discuss the best time to submit and/or arrange reasonable deadlines for feedback
- Even setting calendar reminders can help your committee members stay on track (i.e., two weeks until thesis feedback is due)

Your Supervisor is responsible for identifying and contacting an External Examiner. As discussed above, you are allowed to share some ideas of who this person could be with your Supervisor, but in order for them to remain “arm's length” you must leave it to the Supervisor to make a final decision. Learn more about the [External Examiner](#).

6.5 Defending Your Thesis

Your job is to demonstrate a strong understanding of your research findings and their application for the broader field. A good PhD defence should be thought of as a discussion amongst qualified research colleagues. In fact, having been the principal investigator on your thesis all these years, you are ***the most qualified person in the room*** to speak on these topics. Let your confidence, understanding and curiosities shine!

6.5.1 Before you Defend

- Ensure you have completed the Seminar Milestone (see III. Timeline section)
- Recall this experience, and in particular the kinds of questions you received during the seminar. Were there discussions about your methodology? Your sample size? Your theoretical framework? These questions are likely to be repeated in the defence
- Attend at least one PhD defence of a fellow colleague - ideally someone in your field and especially where your committee members are examining students. Take note of the following: What did the student include in their presentation? How much time was allocated to theory, methodology, analysis and findings? What sorts of questions did the presentation inspire for you? What sorts of questions did the committee ask?
- Throughout the years of your PhD, make an ongoing list of possible external examiners that you can share with your supervisor closer to the time of your defence. Is there an author you repeatedly cite, or an article that strongly augments your work?
- Connect with Accessibility Services where appropriate for support regarding preparation, committee management, and even location of the defence itself

6.5.2 Preparing for the Defence

- Your job for defence day is to show up prepared. It is the supervisor and the department's responsibility to coordinate the defence date, time, and location, identify the external examiner (keeping you at an "arm's length"), read your thesis, and prepare thoughtful and provoking questions for your exam
- If you have a desired defence date in mind, there are tools to help you achieve that goal. You can use the Faculty's [Backwards Planning Tool](#) to prepare with realistic timelines and minimize any delay.
- Your PhD defence presentation should be a maximum of **30 minutes in length**
- Review each chapter, the take-aways, main seminal readings, opposing perspectives or anticipated criticisms and research limitations
- Host at least one practice defence with your friends or colleagues. Take note of slide timing, your breathing, transition between topics, and gaps in the presentation content. Practice answering questions and drawing from your research findings to defend your statements. Be sure to invite peers doing similar and different types of research to help you prepare for differing perspectives in the defence.
- You can ask your supervisor to arrange a practice presentation with your lab, or you can do this yourself
- Review the background of each committee member in detail – it is likely they will be drawing from this expertise to examine your thesis. Prepare answers or observations on your thesis from each of these expert areas. *For example, what would a feminist geographer ask, or a political scientist, or a behavioural economist?*
- Make a list of anticipated questions and make a note of various citations and thesis sections that help inform your answers
- Print your thesis and mark important sections to flip to during the defence
- Get prepared early – visit the room of your defence in advance to get a feel for the space, and inquire with the building, department or faculty about tech support to have on hand - check sound quality for example if you plan to play a video
- Reach out to your supervisor and discuss any guidance on how they suggest you prepare. They may give you hints on what to focus on and what is expected of you
- Save a PDF copy of your presentation in case the internet fails you. Some students choose to display their presentation straight from the cloud – plan for the chance that this doesn't work out

*Special note: When you submit your thesis for review, your External Examiner will provide a report to your supervisor explaining their position, critiques and concerns for your thesis. This will give a good indication as to whether the External intends to pass you. While you cannot access the full report, **you are entitled to request from your supervisor a summary of the External's position on your thesis in advance of the defence.**

If you find out that there are major concerns, and in fact the External is not confident about passing your work, you have the right to defer the defence date and revise the thesis to address the external's high-level concerns. You can only do this once. This external insight will highlight key areas to focus on during your defence presentation and examination answers. The external committee member is the most important committee member in the exam – they hold two votes when the time comes to assess your performance. Even if you receive a negative assessment, you have the right to proceed to a defence.

6.5.3 During the Defence

- Your 30 minute presentation is an opportunity to improve upon your thesis and should be a reflection of your research
- Mindset is everything. By the time you get to the defence stage, know that you've already passed! Your committee would not put you in this position if they didn't think you were ready. Embrace feelings of pride for how far you come, and excitement for the hours ahead where you are centre stage discussing your topic of expertise
- Make your defence day a celebration! Imagine how you would like to celebrate after the exam is finished and picture yourself in this scenario
- You don't have to know everything. Some questions will be out of the scope of your research and that's okay – this is an opportunity to learn and inquire, don't be afraid to ask questions of clarification and answer based on the research and findings of your work
- During the exam you can take time to write questions down to give you more time to think. You can also ask the examiner to rephrase or clarify the question
- For example, "I understood your question as _____, is this correct?", "Could you please clarify how you see [question] relating to [aspect of your research]?"
- While we often feel like there is pressure to answer questions immediately, committees prefer if you take a minute to think about your response rather than answering with whatever comes to mind (regardless of the awkward silence you may feel!)
- Don't be scared if your examiners express a different perspective on a topic - you don't have to agree! Treat this as a very nerdy conversation between colleagues. Differing opinions is okay. The committee wants to see WHY you've reached a certain conclusion, so draw from the literature or your analysis and SHOW them your stuff.
- **Take the break!** After the first round of questions, the Examination Chair will ask if you would like a break. Take it, even if you feel you don't need it. Catch your breath, check in with yourself, and give your mind a moment to rest and digest all the questions and ideas that have come your way. More are coming and there's no rush!

6.5.4 Following the Defence

- You passed! Read departmental emails slowly and give yourself time to digest your evaluation. You may have some minor or major edits ahead, but one thing is certain - you've been awarded your doctorate.
- Follow departmental email instructions for submitting your thesis, applying to graduate, and attending convocation
- Suggestion: Write thank-you notes to those involved in your PhD process – expressing gratitude is a great way to reflect and reminisce on the incredible journey you've been through and can put you in such a positive mindset about the experience
- CELEBRATE GOOD TIMES, COME ON. You deserve it. Congratulations, Doctor!

6.5.5 Resources:

SERS PhD Dissertation page:

<https://uwaterloo.ca/environment-resources-and-sustainability/graduate/phd-degree/phd-doctoral-dissertation>

Preparing for your defence:

<https://uwaterloo.ca/graduate-studies-postdoctoral-affairs/current-students/thesis/preparing-your-phd-thesis-defence>

GSPA Thesis Examination Regulations:

<https://uwaterloo.ca/graduate-studies-postdoctoral-affairs/current-students/thesis/phd-thesis-examination-regulations>

Regulations on Examination Committee Members:

<https://uwaterloo.ca/graduate-studies-postdoctoral-affairs/current-students/thesis/phd-thesis-examination-regulations#PhDthesisexamcommittee>

GSPA Thesis Defence Preparation:

<https://uwaterloo.ca/graduate-studies-postdoctoral-affairs/current-students/thesis/preparing-your-phd-thesis-defence>

Demystifying the PhD Defence: <https://www.youtube.com/watch?v=VTj6doxqktA>