On March 27/2017 and April 3/2018 SENSSA hosted panel discussions on preparing for comprehensive exams in a PhD program. The panel and audience represented both SENS and GIWS, and the natural sciences as well as social sciences and humanities. This document is a summary of the discussion and “tips” developed through the event, for the benefit of future PhD students and those who could not attend.

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**Panelists**: Naomi Maina (2017), Kathleen Aikens (2017), Emily Cavaliere (2017/2018), Prabin Rokaya (2017/2018), Heidi Walker (2018), Max Pospisil (2018)

**Participants**: Maria Garces (2017), Jaylene Murray (2017), Michelle Wauchope (2017), Heidi Walker (2017), Max Pospisil (2017), Fan Zhang (2017/2018), Eric Akomeah (2017/2018), Mauro de Toledo (2018), Rafaella Mayrinck (2018), Kristin Hargis (2018)

*General Process*

* See the SENS graduate student handbook for basic information on scheduling, reading list size, number of exams, options for type of assessment, possible outcomes, etc.
* The first phase is preparation. With your supervisor, you will have to determine: the specific subject areas for two exams, who will be on your exam committee, the reading lists (a minimum of 30 pieces for each exam), and the type of exam (i.e. two-month “take-home” typical for social sciences or 24-hour “in situ” typical for natural sciences).
* The second phase is reading. This starts when the reading lists and exam topics are formally finalized. If you are doing a two-month exam, you *will* get the questions at this time. If you are doing a 24-hour exam, you *will not* get the actual exam questions at this time. Either way, there is a two-month “reading” period.
* The third phase is writing the exam. If you are doing a two-month exam, you are expected to incorporate the writing (i.e. answering both exam questions) into the two months. If you are doing a 24-hour exam, you will get the exam questions at the end of the reading period, and will have one day to answer them in writing.
* The fourth phase is the oral defense. This is supposed to be within two weeks after writing the exam, but can be as early as two days after or as long as one month after (i.e. if there are difficulties coordinating the committee’s schedules). In general, sooner is probably better. They are typically about two hours long, although the intensity of the questions may decrease as it progresses.

*Setting Up the Comprehensive Exam Period*

* Speak regularly with your supervisor during these early days so that you understand what is to come and can seek advice on any concerns you may have. Use these conversations to focus the theme or guiding question for each exam to develop the expertise you want.
  + Your supervisor may have a strong preference about some of the options (e.g. “take-home” vs. “in situ”) and it may be best to go with their suggestions.
  + It might also help to ask what their past students have done.
* Consider letting your committee take the lead on developing the reading list. While you are expected to contribute, if you add too many of your own selections, the list can get unwieldy (although sources do take less time to review if you already know them). Do not fall victim to the “fear of missing out” on certain readings.
  + Especially since you are expected to read “around” and “outside” the list anyway.
  + For your own contribution, consider most-cited papers, as well as recent papers in central journals, for your topics of choice.
  + The minimum list size is 30 pieces for each of the two exams (i.e. 60 pieces total), but 50 pieces for each is more typical, so you may want to suggest no more than 10 to 15 for each.
  + Most of the list should be journal articles or book chapters. Beware including too many books; they count as one piece but may be 10 times as long as the others.
* Your committee is there to help you. That is an important part of their role. If you do run into a problem with a particular person, keep documentation on your interaction. This will be important if you need to seek help from the graduate chair or others.
* Try to schedule your comprehensive exam early on in your program, so that you have time to complete the research afterwards and buffer time for extra work if you get a conditional pass. Whether you do your proposal first is a matter of personal preference.
* Keep in touch with your supervisor (and maybe other committee members, if appropriate) throughout the process (e.g. while you are completing the reading list, during – or just before – the writing stage, while preparing for the oral defense)
  + Ask lots of questions (e.g. Will you make a presentation during the oral defense? Will you be allowed to consult notes? Can you ask for clarification after you get the exam question? What might each committee member ask?).

*Reading and Writing Strategies*

* You can save yourself some time by starting to read some of the most central pieces before the reading list is even finalized and the reading period has formally begun.
  + Consider starting with any longer books that are on your list. These tend to be more general/broad and so make sense to read first. It is also hard to tell how long they will take you to work through, so it is dangerous to leave them until the end.
* Acquire a copy of each piece early on in the exam period, so you have extra time if a few pieces are not available through standard channels (i.e. the library). If you cannot find a certain piece, ask if one of your committee members has a copy, and then consider requesting an inter-library loan or even contacting the original author.
* Take the information you have (i.e. number of days before exam is due, length of pieces, number of pieces) and use it to build a schedule (e.g. read three pieces a day). Set milestones (e.g. finish readings for exam A before the 20th day after the list is finalized).
  + You will generally need to know each piece quite well (especially if you have gone with the minimum list size of 30), so be thoughtful about when or whether it is appropriate to skim something.
  + Maintain your mental health by scheduling off days and times (e.g. evenings and weekends). You can always work into those times later if needed. Similarly, schedule some un-specified days near the end as buffer time in case you run into a crisis (although you can always talk your supervisor in an emergency).
  + If you are doing the two-month “take-home” option, you will also need to schedule in your own time to do outlining, drafting, and editing (e.g. you might leave two full days for each paper at the end of the exam period, just for editing).
  + Think about whether you want to completely finish one paper (i.e. reading, drafting, editing) before starting the next, or do each phase for each paper before moving to the next phase (e.g. reading for A, reading for B, outlining for A…), or use a more integrated strategy (i.e. if the questions/topics have some overlap).
    - Alternating between the topics can also be a way to break up the monotony of your work day.
* Employ a consistent and functional note-taking strategy. For example, use quotation marks (and page numbers) when you take notes from a source verbatim. This way, you will never have to re-locate something you have already read, and you will not have to worry about whether a passage in your notes is your own words or somebody else’s.
  + Consider colour-coded text, comments in “track changes”, square brackets around your own thoughts, highlighting… whatever works for you. But be consistent.
  + You may want to take notes by hand (which affords you some additional “kinesthetic” retention). If you have time, you can even type them up later for an extra layer of learning. This depends on your own preferences, though.
* A huge pile of unorganized notes is not very useful, so you will also want to “filter” the information you read. This might mean noting a key one-sentence takeaway from each piece, constructing a table that organizes the pieces by sub-theme, or even a free-form “mind map” or “concept map” that helps you situate each piece or category.
  + There is an excellent PowerPoint from Heather McWhinney (available at https://library.usask.ca/studentlearning/resources/grad\_writing\_videos.php) on literature reviews, which may helpful in this regard.
* It will be easier to keep track of everything if you use a reference management program like RefWorks or Zotero or Mendeley (note that EndNote does not have the standard ctrl+z undo function). This also saves you time when doing bibliographic entries later.
* You may find that you are more productive if you occasionally change locations (e.g. library, office, home, computer lab, outside, coffee shop, common area).
* If you are doing the 24-hour option, spend some time during the prep period writing up key paragraphs and sentences (or even whole essays answering anticipated questions if you have time). This will save you time during the very short exam period.
* Each written answer should typically be journal article length (e.g. about 6000 words) for the two-months option, and quite a bit less than that for the 24-hours option, although you can get close to the same length if you have done a lot of pre-emptive writing.
* After you have submitted the written portion, read recent abstracts and articles from your committee members and start to think about where their questions might come from.
  + Actually, if you have time, you might do this as part of your extended reading and work some of the citations into your answers.

*Oral Defense*

* Although you will definitely need a little bit of time to prepare for the defense, it is usually best to schedule it for as soon as possible after the written submission is due. This way everything will be fresh in your mind. Taking some time to calm down after the writing is also important, though.
* You will want to prepare by: reading over your answers and looking for areas you might want to clarify, preparing a short presentation for the beginning of the defense (if required), writing note cards for yourself (even if you are not allowed to consult them), doing a mock presentation and/or defense with peers, reading the work of your committee to anticipate their questions, and talking with your supervisor for support and guidance.
  + The discussion often goes broader than the specific topics you were assigned, so practice defining key concepts and answer broader questions (e.g. “What is sustainability to you?”)
* While the actual structure of your defense will depend on the chair, they generally follow the same basic process (i.e. one round of questions/discussions starting with the most external person and ending with your supervisor, then a second round). The second round may be much shorter, some committee members even choosing not to use their turn.
  + They may question you on both papers at once, or they may do one at a time.
  + Remember that the oral defense technically covers the general sustainability paper written as the final assignment in ENVS 809, and you may be questioned on what you wrote there as well.
* If you feel like you do not know the answer to a question, take a moment to think it over. If you still feel you cannot answer it, it is okay to say you do not know, but the best response is something like “I don’t know, but I do know this other thing that I think is related”. Do not try to bluff your way through and pretend you know the answer. Your committee will appreciate genuine self-awareness.
* The defense can seem like a very nerve-wracking experience, but remember that your committee is likely to be very supportive of you and will generally ask you questions about what you know.
  + If they seem to veer off topic, it may mean that they are already satisfied with your knowledge of the exam material and are seeing how high and broad your capabilities go (e.g. what original thoughts do you have about the general topic?).
* It is important to take the exam preparation seriously and put effort into reading and writing, but it is also possible to put too much pressure on yourself.
  + Know that it is very normal to get a “conditional pass” or even to fail the first attempt and then pass on the second one. Your committee is trying to make sure you are prepared for a career in this field, and you want that as well, so it is a good thing if they can help you identify an area that you need more training in.
* Ultimately, your own nerves will probably be the biggest obstacle. Hopefully the tips here will help alleviate them to some degree. It may even help to think of the defense as a chance to celebrate your newly acquired knowledge in a very important and interesting field of study!

*Mental Health*

* This document has already covered a few strategies for maintaining your mental health during comprehensive exams (e.g. scheduling down-time, managing stress for the defense), but it deserves its own section.
* It is very common for PhD students to encounter mental health issues (see Levecque et al. 2017), and comprehensive exams may be the most stressful part of a PhD program. This fact is not meant to scare you, but to help you acknowledge the normalcy of any mental health problems you may have, and know that others have had them as well.
  + Imposter syndrome (feeling like you are not qualified to be a PhD student or write your comprehensive exam) is also very common. You are not the only one feeling this way and you are not an imposter!
  + Comprehensive exams are difficult, but trust yourself. You can do this.
* Try to be aware of your own mental health markers. What does good mental health look like for you? Do your sleeping, eating, or exercise habits change when you are under great stress? Do you become drawn to “brain-dead” activities (e.g. Netflix binges)?
  + Self-awareness may help you to anticipate a forthcoming mental health crash before it actually occurs. A little bit of time off or self-care may be able to prevent things from reaching a “crash” state.
* Just as taking care of your physical health should not make you feel guilty, do not feel guilty about doing things to maintain your mental health (e.g. taking a day off)
* Recognize that what works for self-care varies between different people. Consider exercise, in-person socializing, unrelated reading, home projects (e.g. baking), being outside, phone calls, naps, baths, meditation, making a list of positive things, unplugging, and any number of other activities.
* Sometimes it is difficult to “decompress” and let go of your thoughts and stress around the exams. Try a “brain dump” (writing down thoughts on a piece of paper in a quick stream of consciousness) before you attempt to relax or sleep. Let the piece of paper do your worrying for you until tomorrow.
  + In general, it will help you tremendously if you can figure out how to “put down” the exam for an evening or a weekend and just take care of yourself without worrying about it.
* Maintain a support network. Talk to peers who are going through the same process or other students and researchers who have already completed their exams. Get their advice on strategies and seek emotional support. Look for reassurance about the process.
  + Perhaps more importantly, draw on an “external” support network. Keep connected with family, friends, and members of your off-campus communities. They will see your value independent of the exam process and your PhD program. Having someone simply listen without giving advice can be extremely helpful.

*Support Network*

In the event that you do not yet have an established internal support network, or if you would simply like another perspective, you are invited to get in touch with us, the panelists and moderator for this discussion. We will be happy to discuss our own experiences, offering advice and/or support to any current or future PhD students who are in need. It is our intention that this list will be updated over the years to include any current PhD students, postdoctoral fellows, or others that are willing to offer support.

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*Reference*

Levecque, K., Anseel, F., De Beuckelaer, A., Van der Heyden, J., and Gisle, L. (2017). “Work Organization and Mental Health Problems in PhD Students.” *Research Policy* 46 (4), 868-879.

*Sample Exam Questions and/or Reading Lists*

We also discussed including previous exam questions or readings lists for reference in the SENS student repository. There is a possibility, however, that SENS may not want previous exam questions to be shared, but keep an eye out anyway!