

October, 2024

Guidelines/Recommendations for PhD Qualifying Exams in the Carleton School of IT

Please note that these are guidelines, and you should discuss your particular case with your PhD supervisor.

General Notes:

The purpose of this exam is to assess the students' ability to do research and to serve as a starting point for the selection of a research topic and PhD literature review. Supervisors will NOT help the students in any way: this is treated as an examination where the student must demonstrate the ability to work independently, that they understand their field of study, and that they are capable of independent research.

Process:

The candidate initiates the process by establishing a general topic for the literature review and providing a list of 10 relevant papers to the supervisor. It is the supervisors' responsibility to invite two examiners: at least one internal to CSIT, and one ideally external to CSIT. During the oral exam there will also be a chairperson, who does not have a vote.

In consultation with the examiners, the supervisor will extend the candidate's list by an additional 20 relevant papers, for a total of 30 papers. The supervisor will verify that all included papers have sufficient quality and relevance. Supervisors must submit to the graduate admin and the Associate Director of Graduate Studies (ADGS) the chosen topic and the verified list of papers **on or before the last day to register for the student's second term**. These papers will form the basis of the student's work for the Ph.D. Qualifying Exam.

The student then **prepares their qualifying exam report**, which should provide a critical review based on the list of papers, in a way that meets the expectations listed below. *The student can include other cited work, but is limited to 10 additional papers.* The reference list should clearly identify which papers were from the provided list, and which were added by the student. In a separate section, the student should provide a bullet-form justification, where the reason for including each additional paper is explained in a single bullet point. Failure to follow this process could result in the exam being sent back for rewriting and resubmission.

As of 2024, you are also required to submit a list of databases and search terms used in your search for appropriate literature. **You must also be prepared to submit rough drafts with your official submission. You should keep at least 3 drafts of in-progress work, including an early annotated bibliography of all work found and not included in the final draft, a first draft of your summaries and critiques, and a subsequent draft.**

October, 2024

Task and expectations:

1. Read some existing literature reviews to get a sense of how they are structured and written. Ask your supervisor for an example of a good literature review in your field.
2. Develop your search terms based on your topic. You are first demonstrating your ability to conduct an academic literature search. **Be sure to keep your search terms in a list to include in your submission.**
3. Search academic sources using your search terms, Boolean operators and filters. Example sources include Google Scholar, ResearchGate, Scopus, Refseek, Litmaps, Semantic Scholar, IEEEExplore. Don't forget that you have access to the MacOdrum Library, which includes many useful catalogues! Assume that anyone looking at your exam is going to check that you have used relevant, up to date work and do their own quick literature survey. Using Generative AI to find sources often gives back the most prevalent outcomes, and misses alternative sides of an academic argument/alternative theory. It can also wholly fabricate or provide inaccurate information, especially in areas of knowledge that are under-researched. You should therefore always use multiple sources for your literature search. **Do not rely on Gen AI to do your search, summarize papers, or write any part of your work. You must submit the list of databases used in your submission document.**
4. Read the references & bibliographies of the papers that you find. In Google Scholar, for example, you can also see which papers cited the originals, so you can find other relevant work that way (this is called "snowball sampling"). See image below: and below each paper is "cited by". Papers that are cited by many people are generally the key papers in your field, however, be sure to also use search filters to check only recent papers as well, so you can see what the latest work is on your topic.

The screenshot shows a Google Scholar search for "qualifying exams phd". The search bar is at the top with a magnifying glass icon. Below the search bar, it says "Articles" and "About 35,200 results (0.08 sec)". There are three main results listed:

- Standards needed? An exploration of qualifying exams from a literature review and website analysis of university-wide policies** [PDF] emerald.com
Since 2024
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... The authors conducted a literature review of studies on **qualifying exams** and completed an ... **qualifying exam** requirements to inform our discussion of **qualifying exams** practices in **PhD** ...
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On the left side, there are filters for "Any time", "Sort by relevance", "Any type", and checkboxes for "include patents", "include citations", and "Create alert".

5. Read the abstracts to narrow the sources down to articles that are directly relevant to your topic. Make note of papers you are not including and why.

October, 2024

6. Submit the 10 most relevant high-quality papers to your supervisor, who will then proceed to add more papers of related work in consultation with your committee.
7. Wait to get the other papers list from your supervisor. **In the meantime**, continue by preparing thorough reviews of the work you have selected to include.
8. Summarize, in paragraph form, any important information and methods from each paper. Who are the authors and what are their qualifications? What were the strengths and weaknesses of their approach? What did they contribute to the subject area? What are the themes arising from the work? Summarize the themes. What questions came up from their work that they couldn't answer? What are other questions you thought of when reading the work that haven't been answered? Be critical of the work. Are the conclusions justified? Is it a major advance in the field, or a small incremental knowledge? Do not just summarize or list the papers and authors: critically engage with the texts. Remember that faculty may know the authors, or be the authors of the work: Be professional in your critiques.
9. Structure the review thematically: connect the dots between the literature by discussing the major themes in the field, then how each paper contributes to the topic chosen. What are the key themes, approaches, and solutions in the research area? Show how the work leads to your own argument/thesis topic. Alternatively, you could also structure the work chronologically, but this depends on your topic: If it is a topic that has changed a lot over time, chronological format may suffice, however, it is still important to find and discuss the themes in the work. You may wish to use tools to help you organize the themes, such as mind maps, concept maps, or tagging in Zotero or EndNote.
10. Synthesize the literature: Build an argument and a cohesive narrative around your research question or topic. Integrate theories to form a theoretical framework that will guide your own research, defining key terms, explaining relationships between concepts and guiding your hypothesis formation.
11. Remember that you must abide by the CSIT regulations around academic integrity, including not using AI to write your report. You will be tested to see if you understand the work you have cited; if you used AI to write your work, you will not pass the exam.
12. Revise for clarity. Check for grammatical errors, improper citations, and all formatting requirements.

General Advice:

Your aim is to qualitatively summarize the evidence on the topic chosen. This means your goal is to evaluate and critique the methodology of the sources you are citing, and demonstrate a clear understanding of the work's theories and methods. A literature review is not just a list of summaries of existing research works. It is a critical assessment of the research related to your topic. You should be highlighting any gaps, strengths, and weaknesses of the papers in your area. What are the themes that you see arising in the work you are reviewing? What are the gaps or weaknesses that your work can then begin to tackle? Are the gaps methodological, conceptual, or epistemological? What theories or

October, 2024

perspectives are the authors using, and how does that influence or bias the work? What are alternative perspectives they could have used?

The literature review is the backbone of your work: It shows what we already know about a topic, and what we don't. In order to demonstrate that you are making an original contribution to knowledge, you must show that you understand everything that is written on your topic, and what is missing from that knowledge. You should keep your literature review up to date throughout your PhD. Don't complete this exam, and then three years later hand in your final dissertation without having updated your review (and potentially your work). You can expect examiners at all stages of your PhD (qualifying, proposal, final dissertation) to do their own search of the literature, and you should demonstrate expertise through keeping on top of that work. A literature review is ongoing: throughout the PhD process, you will find new questions that you will need to answer, new statements that need substantiation, and so on.

For more help, consult the books "Conducting Research Literature Reviews" by Arlene Fink, or "Advanced Research Skills: Conducting Literature and Systematic Reviews" by Dermody et al. These and others are in the MacOdrum Library at Carleton.