Department of Natural Resource Sciences

MSc and PhD Thesis Guidelines

A MSc or PhD thesis is a scholarly piece of work that presents your original research in the context of previous knowledge and remaining questions. Guidelines for MSc and PhD theses at McGill University are available on the Graduate and Postdoctoral Studies (GPS) webpage (https://www.mcgill.ca/gps/thesis/thesis-guidelines). The GPS webpage is also where you will find the 'Initial Thesis Submission Checklist', a comprehensive document that describes university-wide requirements for all components of a thesis. The checklist must be filled out and uploaded to *my*Thesis before your initial thesis submission.

The NRS Guidelines described below are intended as a companion to the GPS checklist, providing NRS students and faculty with clarification on how to interpret the GPS guidelines according to norms within our department. Please refer to the GPS webpage and checklist first. Here, additional guidance is provided for selected sections only.

1. Contribution of Authors:

The student must be the first author on all submitted or published manuscripts that are included in the thesis. In the rare case where the first author position is shared between two people, only one of the co-first authors can include the manuscript in their thesis. For published manuscripts, an explanation of the contribution of any co-authors must be included. Other sections of the thesis (i.e. Introduction, Literature Review, Discussion, Conclusion) must be written solely by the student. The supervisor can provide suggestions and guidance but should not edit these sections.

2. Introduction:

This section briefly introduces the topic and the main research question explored in the thesis. The background rationale and justification of the research as well as any objectives or hypotheses should be included here. An appropriate length for the Introduction is 2-4 pages (excluding figures and references).

3. Comprehensive Review of the Literature:

The literature review is a critical assessment of current knowledge relevant to the thesis. It should situate the work within a broader context and provide adequate background information for the reader of the thesis to understand the research questions. A good literature review will summarize the state of science and identify gaps and weaknesses in the field that the thesis will address. The standard length for a literature review is 30 double-spaced pages for a PhD, and 15 double-spaced pages for a MSc (excluding figures and references). Typically, students will

start working on the literature review early in their degree as part of their thesis proposal. This text can then be expanded for the final thesis.

A multi-author review paper (published or in preparation) may be included as part of the comprehensive review of the literature. In such cases the candidate should be first author and the main contributor to the work. Additional text would normally be required if some aspects of the thesis are not covered in the multi-authored manuscript.

4. Body of the Thesis (aka "data chapters"):

Most students in NRS write manuscript-based theses. GPS guidelines (November 3, 2022) state that PhD students must include "a minimum of two manuscripts published, submitted or to be submitted for publication." MSc students must include "one or more manuscripts published, submitted or to be submitted for publication". These are rules that apply across *all* departments at McGill. As such, this minimum does not guarantee that the thesis will be passed by the examiners in a specific field of study.

NRS is a multi-disciplinary department, and we recognize that the scholarly contribution of NRS graduate students can take on diverse forms and be presented in different ways. Nevertheless, the expectation within our department is that a PhD thesis should consist of the equivalent of at least 3 manuscripts in well-regarded peer-reviewed journals in the student's field of study. For an MSc thesis, the expectation is for the equivalent of at least 1 manuscript. The data can be divided into chapters as deemed acceptable by the student's supervisory committee. For example, a PhD thesis may include only two data chapters if the supervisory committee feels that the data are sufficient for three manuscripts.

It should be noted that while these are not *official* requirements, they are the *standard for our department* and are what will be expected by external reviewers of your thesis for most scientific fields.

5. Comprehensive Scholarly Discussion :

This section should discuss the findings of the thesis holistically and not simply reiterate the discussion points from individual chapters. A mere summary of the data chapters is insufficient. The discussion must establish whether the original objectives of the thesis were met and what the significance of the work is to the specific field, and science in general. Other suggestions for appropriate content for the Discussion include:
- Elaborate on how the individual chapters of your thesis fit together into a bigger picture.
- Highlight data that you are particularly proud of, or that may have a strong impact.
- Discuss methodological difficulties encountered. Include information that you wouldn't necessarily put in a published paper but that might be helpful to other researchers or future students in your lab.
- Discuss implications of the work in a greater context. What are the societal impacts of your work? How might they stimulate future research and innovation?

- Present limitations of the thesis and possibilities for future work. You can also present new objectives for future work that stem from the data presented.

The appropriate length for the Discussion is at least 5 double-spaced pages for a MSc thesis and 10 pages for a PhD thesis (excluding figures and references).

6. Conclusion

The conclusion should be about 1 page long and summarize the key findings of the thesis.

7. Appendices

Appendices may be included, at the discretion of the candidate and supervisor, to include supplementary data or other material necessary to evaluate the thesis.