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## **THESIS GUIDELINES SCHOOL FOR RESOURCE AND ENVIRONMENTAL STUDIES**

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Every MES student must research and write a thesis in order to fulfill the requirements for the degree. In a survey of MES graduates and in another of their employers, the thesis was identified as the most valuable part of the program. For students who hope to continue in doctoral studies, the rigorous exercise of researching and writing an MES thesis proves to be valuable training.

The thesis plays a particularly important role in the MES program. The course work is designed to give students a breadth of understanding as well as an area of specialization. That knowledge is used, assimilated and enriched as a research question is addressed for a thesis. An MES thesis differs from an M.A. or M.Sc. in that both the work and the supervision may be interdisciplinary. This is not easy, but it is invariably interesting and it has proved to be of inestimable value for the student. Considerable assistance is available for students starting and pursuing thesis work. This document provides a guide to accessing such assistance.

### **RESEARCH METHODS COURSES**

It is now required that all MES students take both Research Methods I and II during the first two semesters, in preparation for developing a thesis proposal. All MES students must use research skills and methods in thesis work, and while some graduates will continue to do research, many will find themselves in positions in which they must evaluate and use the results of research. These courses investigate the process of research and then introduce students to the theory behind a range of methods of investigation. The intention is not to provide comprehensive instruction in all research techniques, but rather to identify the suitability and strengths of particular methods for addressing a range of questions. Writing a research proposal is one requirement of the second of these courses.

### **THESIS PROPOSAL**

Each student is required to submit a statement of objectives and research interest when applying to the MES program. This is valuable as it serves to demonstrate a student's ability to move from academic interests to research questions, and because it enables the School to admit students whose general areas of interest can be accommodated. Most students find that their ideas and interests change as they study at SRES. In some cases, this results in an altered approach to the original problem, but for many the shift of interests may be greater. Thus the first stage in thesis work is to identify the general field of study and a particular area in that field that warrants investigation.

Writing a thesis proposal or indeed performing any facet of research is usually an iterative process. What is described briefly here as a sequence is likely to be less orderly in practice as

later stages of the process inform and change earlier ones.

The most important stage in doing research is narrowing an undeveloped or amorphous interest to a question or series of questions that can be answered. There are two important factors that the student should consider:

- Are the proposed research questions really interesting and intriguing?
- Is the proposed topic manageable? A Master's thesis should be, as far as possible, a small, contained piece of work which can be researched and written in the time available.

Other factors that the student may want to consider include the following:

- Might this research have any practical value? Many of the questions to be answered in environmental studies have immediate relevance and practical applications.
- Might this research have any theoretical value? Basic research is important for building the theoretical foundation of a discipline. Scholarly research that proposes or expands upon a particular concept, perspective or paradigm is acceptable for the MES thesis.
- Might this research have political importance? In resource and environmental studies, even work which doesn't have an obvious policy or political aspect is likely to contribute to such discourse.
- Is it interdisciplinary? Given that Master's theses must often be limited in scope in order to be completed in a timely manner, SRES students are not **required** to produce a thesis that is interdisciplinary. Subject to the scope of the thesis, however, students are encouraged to examine and incorporate different disciplinary perspectives into their thesis work wherever possible.

Once a question has been defined, a literature review is necessary. This provides the student with the background to the problem and allows an understanding of the scholarly relevance of the proposed work. A review of the literature may also guide the student to suitable methods. The choice of proposed methods should be justified on grounds of precedent, suitability, and feasibility. If a student decides on work which demands a novel or unfamiliar approach, extra study and preparation will be necessary.

When a student is fairly clear about both the general area and specific problem to be addressed, it is time to put together a thesis committee. At Dalhousie, Masters thesis (supervisory) committees consist of a supervisor and at least one committee member. The student may elect to identify a likely supervisor with whom to refine the proposal rather than preparing the first draft in advance of selecting a supervisor. Some students come to the School with the intention of working with one professor in particular, and then fit their thesis into the supervisor's research program; others may choose to try to match a supervisor to a project already conceived. In either circumstance, it is wise for the student to consider a potential supervisor's research interests, experience, communication style, availability, work patterns and willingness to undertake the project before the student asks him/her to supervise the thesis work. It may be wise to set up meetings with a number of potential supervisors in the first term to find the best student/supervisor match. The internal advisor assigned to the student by the School at the time of enrolment should provide advice to the student with regard to selection of the supervisor.

The committee must include a member of SRES faculty, though not necessarily as the supervisor. The choice and formation of a committee is the supervisor's responsibility, in consultation with the student. A committee is chosen to provide expert guidance to the student until the thesis is completed. MES committees may be larger than in some other academic fields because of the interdisciplinary nature of the work and the need for a range of expertise. All committee members must meet the Faculty of Graduate Studies criteria. These criteria stipulate that most committee members should be eligible for membership in the Faculty, holding Masters or Doctoral degrees. Additional members of the committee who are not members of the Faculty of Graduate Studies, including members of the non-university community (such as a practicing profession), may be appointed to the committee where their particular expertise makes it appropriate. Committee members can be drawn from any department or school in Dalhousie, from the faculty of other universities or from professional work. The student is not limited to seeking advice from members of the committee only; in some cases it may be necessary to consult on specific issues with persons who are not members of the thesis committee.

Students should be prepared for a continual process of change, redefinition and refinement as successive drafts of the proposal are submitted to and worked on by the supervisor and the committee. As the proposal is clarified, the student and the supervisor will negotiate the details of the work schedule, the budget and the thesis outline.

### **SCHEDULE OF THESIS PREPARATION, RESEARCH AND WRITING**

Scheduling is often a matter of working backwards from a fixed point or deadline and realistic time management takes full account of uncertainties and contingencies. A wise planner allows space and time for the unforeseen. A student looking ahead to thesis work should attempt to set time limits for various stages, and should take account of his/her own schedule and work patterns, schedules and work patterns of other people involved (particularly the committee), and external deadlines that may be imposed by the university or possible funding agencies. Each student, in co-operation with the supervisor or the internal advisor, should estimate the work and time needed for the following stages of thesis work.

#### **Thesis Proposal**

- investigation and determination of topic
- library research
- meetings and discussions
- definition of research questions
- draft proposal
- meeting with possible supervisor(s)
- further definition of proposal
- formation of committee
- further refinement of proposal
- acceptance of proposal by committee

**Ethics Review**

Any thesis-related work which will include human subjects or material relating to people must be submitted for review and acceptance by a Human Ethics Review Board. There are two such boards at Dalhousie - the Social Sciences and Humanities Human Ethics Review Board and the Health Sciences Human Ethics Review Board. As the guidelines for the two boards differ, the student should contact the Office of Research Services to determine which board should review his/her proposal. Reviews are coordinated through the Office of Research Services, Room 337, Arts and Administration Building. Application guidelines are available from Pat Lindley in this Office. A Board requires six to eight weeks to review a proposal. The thesis committee should be able to advise the student about measures necessary to protect people who might be affected by the work, so that the ethics reviewers would not require major changes to the proposal.

Any work which will include or affect animal subjects or populations must be approved by the University Committee for Use and Care of Laboratory Animals. The documentation must be submitted by a Dalhousie Faculty member on behalf of the student. Reviews are coordinated through the office of the University Veterinarian, Room 815, Biology Department (LSC). Contact Leslie Lord in this office for further information/guidelines. The student should allow 2-3 months for proposal review.

Students conducting thesis research outside of the University environment should be aware that they are bound by the Dalhousie University ethics guidelines along with any ethics guidelines in use at another institution where research may be performed (e.g. another university or college, a field station, a hospital, etc.). Before field work can be started, the proposal must be accepted by the thesis committee and, if necessary, approved by the appropriate ethics review body(ies). If an ethics review body requests changes, these must be discussed with the thesis committee, and the redrafted proposal must be accepted by the committee.

**MES Thesis Research**

The research may take many forms, ranging from library or documentary research to biological or anthropological field work. The time necessary to complete the research can be determined in consultation with the thesis committee, but recognition should be given to unalterable conditions such as the time available to the student, a natural season or cycle, or the availability of certain key informants.

**Analysis and Writing**

Students in graduate school generally have a fairly realistic sense of their own writing skills and can make some estimate of the time required to write a thesis. Each student should take account of the likely need to extend certain areas of the work through library research, correspondence or field-checking. The student should also be prepared for the process of writing and rewriting parts of the thesis in collaboration with the committee. Students may be unprepared for various conditions which affect many thesis writers. Perhaps the most serious of these is the inability to limit the scope of the thesis. Invariably the research will have yielded more information than was sought as well as posing many new questions, some of which may seem more enticing than the original problem. If the thesis is seen as a pedestrian report of the research done, the student

may suffer a feeling of anticlimax. SRES professors try to help students view thesis writing in another light, as a time of growing mastery and comprehension and as the real culmination of the program.

In reporting any research, it is often necessary to set aside some data in order to focus on what is most relevant. (These data may be worked with later, on another project or even by other researchers, so they must not be discarded.) One final circumstance leads to delays - many MES students are offered work before the degree is completed. While this is satisfying for both the students and the School, few people can take on a new, full-time job and rapidly complete a thesis.

### **Thesis Defense**

When the committee is satisfied with the thesis, the student makes a public thesis defense. This is a brief (about 20 minutes) public presentation of the work, followed by questions from the examination committee and from the audience. As per the Graduate Calendar, Section 9.3.1b), [at least one additional member of the graduate faculty shall be appointed [to the thesis examining committee] who may be from the candidate's graduate programme or department, but preferably should be from outside the involved programme or department.] If it is appropriate, this external examiner may be selected from another university or institution. The supervisor, in consultation with the student, should select the external examiner no less than one month prior to the proposed thesis defense date. Approaching the external examiner is the responsibility of the supervisor. In normal circumstances a student does not defend an unacceptable thesis, and usually only minor changes are required before the thesis can be submitted to Graduate Studies in preparation for graduation.

### **NEGOTIATING TIMELINES/LOGISTICS**

In attempting to schedule thesis work, a student should come to a clear understanding of expectations with the supervisor and the committee. Faculty members are often away from Dalhousie during the summer working on their own research, and some may need to travel extensively at other times, too. The student and the committee must reach an understanding as soon as the committee is in place about long-term deadlines (thesis proposal, field work, defense - check the Faculty of Graduate Studies deadlines for thesis submission and graduation) and working schedules. The student and the supervisor must decide who will co-ordinate meetings of the committee. Students who are not comfortable taking such a role should not be required to facilitate committee meetings, but all students are encouraged to participate actively in the decision-making process. Timelines that are acceptable to all parties for returning comments on the student's written work should be negotiated early on. While a student cannot expect a committee to provide instant criticism and comment, once a schedule is agreed upon, both the student and the committee members are responsible for ensuring that their respective commitments are met. If the student or the supervisor deems it necessary, any and all submissions, corrections (provided by the committee) and revisions of parts of the thesis may be date-stamped by the SRES secretaries to ensure documentation of adherence to deadlines. All decisions taken at meetings between the student and the supervisor or the committee must be documented in writing by the supervisor - forms for this purpose are available from the

department. The various rights and responsibilities of students and faculty are stated clearly in Section XIII of the Graduate Calendar (the calendar is available in electronic form on the Faculty of Graduate Studies website).

### **THESIS FORMAT**

The School does not have a hard and fast rule about the length of a thesis. Reference to the School's collection of approved MES theses will give the student an idea of the acceptable range. The expected length and citation style should be negotiated between the student and the supervisor, and documented in writing before the student undertakes thesis writing. Before preparing a final draft, students should check with the style guidelines available from the Faculty of Graduate Studies - a thesis presented in the wrong format will not be accepted. Graduate Studies can also supply information about the number of copies that must be submitted, and about printing and binding.

Appended to this document are two pages of instruction on how to insert page numbers in your thesis document using Microsoft Word.

### **BUDGET**

Most students need some financial assistance. Both the student and the supervisor should attempt to ensure that adequate funding is available to complete the project without putting an unreasonable financial burden on the student. The student and the supervisor should work together to draw up a budget appropriate to the work to be undertaken. All costs should be estimated, including those for equipment purchase or rental, transportation (e.g. to perform research, to undertake training or to present a paper at a conference), consulting fees, office supplies, and communication of results. Budgeting practice is part of the research methods course.

In some cases the supervisor may be able to support the student's work through a research grant. If so, the student and the supervisor must negotiate the amount of funding available from the supervisor to support the project, and to which expenses that funding will apply. Graduate Studies offers awards from the Research Development Fund to support social science and humanities research. SRES offers comparable support to students undertaking research in the natural sciences through the SRES Thesis Research Awards. External funding for research is also available from a variety of private and public organizations. Many of the deadlines, especially for external funding, occur during the first (autumn) semester. If the student intends to apply for these awards, it is his/her responsibility to check the deadlines to ensure funding availability at a time appropriate to performing the thesis work. Delaying the choice of a topic or a supervisor until after the first semester may mean missing out on many possible research awards, so students are advised to begin planning early.

### **COMPLETED THESES**

A copy of each MES Thesis is held in the SRES library.

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## LITERATURE AVAILABLE

The Killam Library, the SRES library, and individual professors all have collections of literature containing items that can give students guidance on research methods and thesis preparation. The literature for social-science research methods is in much more readily accessed form than that for the biophysical sciences. Here are some leads:

Creswell, J.W. 1994. *Research Design: Qualitative and Quantitative Approaches*. Sage Publications, Thousand Oaks, CA. 227 pp.

Fowler, F.J. Jr. 1993. *Survey Research Methods*. Sage Publications Inc., Newbury Park, CA.

Locke, L.F., W.W. Spirduso and S.J. Silverman. 1993. *Proposals that Work: A Guide for Planning Dissertations and Grant Proposals*. Sage Publications Inc., Newbury Park, CA.

Medical Research Council of Canada (MRCC), Natural Sciences Research Council of Canada, and Social Sciences and Humanities Research Council of Canada. 1998. *Tri-Council Policy Statement: Ethical Conduct for Research Involving Humans*. MRCC, Ottawa, ON.

Neuman, W.L. 1994. *Social Research Methods: Qualitative and Quantitative Approaches*. Allyn and Bacon, Boston, MA.

Newton, R.G. 1997. *The Truth of Science: Physical Theories and Reality*. Harvard University Press, Cambridge, MA. 260 pp.

Rudestam, K.E. and R.R. Newton. 1992. *Surviving Your Dissertation: A Comprehensive Guide to Content and Process*. Sage Publications Inc., Newbury Park, CA. 221 pp.

Sayer, A. 1992. *Method in Social Science: A Realist Approach*. Routledge, New York, NY. 313 pp.

Seidman, I. 1998. *Interviewing as Qualitative Research*. Teacher's College Press, Columbia University, New York, NY.

## Thesis Page Numbers

### Requirement:

For a paper prepared in Microsoft Word, on the first page of each chapter, the page number should appear centered at the bottom of the page. On the following pages of a chapter, the page number should appear at the top left corner of each page.

### Procedure:

Starting with a finished or near final document that has no section breaks:

1. Make a copy of the paper.
2. Go to the first page and click on the page
3. Open Header/Footer and
  - a. Click on the "different first page" icon
  - b. Ensure the header is blank
  - c. In the footer, position (using tab) at the centre of the line and click on the "insert page number" icon.
  - d. Go to the second page, click on the page
  - e. In the header, position (using tab) to the left of the line and click on the "insert page number" icon.
  - f. Ensure the footer is blank
  - g. Close Header/Footer
4. Go to the first page of the next chapter
5. Using the "Insert" menu, select "Insert Break" and choose a "Section Break" (either new page or odd page as required). If there are already page breaks in place, remove them.
6. Repeat from step 4 for remaining sections
7. Save

If this is done in this order, the page numbering will flow properly from chapter to chapter and the first page of each chapter will have the page number at the foot of the page while all other pages are numbered in the top left hand corner.

### Problems:

The key to getting the above instructions to work is that there must not be any section breaks in your document. If you do, those later sections may have their own headers and footers defined that will prevent those you define at the start of the document flowing through to the end of the document.

If you have made a failed attempt to place page numbers in your document's headers and footers and gotten messed up, it is probably easiest to remove all the section breaks and start over.

1. Make a copy of the paper
2. Under the edit menu, choose "Select All" (or press control-A)
3. Under the edit menu, choose "Relace..." (or press control-H)
4. In the "Find What" field, enter "^b" (without the quotes)
5. Ensure the "Replace with" field is empty
6. Set the "Search" option to "All"
7. Click on "Replace All"
8. If you omitted step 6, you may be asked if you want to check the rest of the document -- answer yes.
9. Save



Now you can setup the header and footer for the start of the document and insert new section breaks at the start of each chapter (as described above).

### **Multi-part Papers**

Sometimes a large paper is written in two or more parts, each a separate Word document starting at the beginning of a new chapter. It is necessary to set the starting page number for the second and subsequent documents so the page numbering flows from one document to the next in proper sequence.

To do this:

1. Set up the page numbers for the first document (as described above).
2. Note the last page number used.
3. Start to setup the page numbers for the next document. Proceed up to and including step 3c, to "insert page number" in the footer of the first page of the first chapter.
4. Now click "Format Page Number"
5. In the bottom half of the window, click on "Start At:", fill in the next page number, and click "OK".
6. Continue setting up the page numbers for this document.
7. Repeat steps 2-6 for each subsequent document.

If any final editing changes the number of pages in one of the earlier parts of the paper, you will have to adjust the starting page number for each of the subsequent parts of the paper.