

MEMORIAL UNIVERSITY OF NEWFOUNDLAND

Honours Handbook

Department of Earth Sciences

Last Updated: August 2018



Degree, admission requirements, deadlines and thesis guidelines.

THE EARTH SCIENCES HONOURS PROGRAM

If you are studying for a B.Sc. Major in Earth Sciences, completing an Honours degree can provide distinct advantages. For example, it is normally required for entrance into university graduate programs at Memorial University and other institutions. With an Honours degree you can obtain member-in-training status with Geoscientists Canada, leading to professional certification, P.Geo., as required for many jobs in Earth Sciences.

REQUIREMENTS

To receive a B.Sc. (Hons.) degree, you must take a specific number of credit hours in Earth Sciences, you must complete an Honours thesis, and you must achieve Honours academic standing by the time you graduate.

Students who lack Honours academic standing can still obtain professional certification by completing the same number of Earth Sciences major courses that the Honours students are required to take.

Comparison of Requirements for General and Honours Degrees in terms of the number and level of 3 CH (Credit Hour) courses in Earth Sciences

	General Degree	General Degree, Professional Registration	Honours Degree
Common Block	9	9	9
2000 + 3000 + 4000 level	6	11*	9
3000 + 4000 level	6	6	9
4000 level	3	3	4
Thesis (499A/B)	n/a	n/a	2
Total EASC courses	15	20	20
Earth Sciences grades	n/a	n/a	≥ 65% (or ≥75 % avg)
Overall GPA	n/a	n/a	≥ 2.75

* Select courses in other departments may be suitable substitutes for Earth Sciences courses for the purpose of professional registration.

HOW TO APPLY

If you are interested in participating in the Honours program, you are expected to declare your interest by submitting a form called Application for Admission to Honours Program, Faculties of Arts or Science. You can get a copy from the Manager of Academic Programs or online [here](#). Submit the completed form to the Manager of Academic Programs after the fifth semester of your Earth Sciences program, i.e., during the winter of your third year – or at least prior to the semester in which you want to start work on your Honours thesis.

You need not have met the academic standing requirements in order to be admitted to the Honours program; you must meet them in the future. You are encouraged to ask the Manager of Academic Programs to informally evaluate your academic standing before you apply.

OVERVIEW OF THE HONOURS THESIS

As a candidate for the B.Sc.(Hons) degree in Earth Sciences, you are required to submit a thesis (dissertation) documenting the results of an independent field and/or laboratory study. Your research is carried out under the direction of a faculty member in the Earth Sciences Department who serves as your supervisor. It is possible to have co-supervisors for your project, and a minimum of one must be from the Department of Earth Sciences.

Your supervisor will choose a second reader who will evaluate your thesis. The second reader may or may not be involved in the project, but should be available for additional supervision as required. The second reader must be a professor or professional equivalent in an external organization (e.g. Geological Survey) and have no personal or professional conflict of interest.

Writing a thesis gives you the opportunity to gain experience organizing and analyzing data and ideas, as well as communicating large amounts of information clearly. The thesis also makes your research accessible to others as part of the department and university libraries' permanent collections.

A well-written honours thesis normally will be no more than 60 pages in length (excluding figures, tables and appendices, but including bibliography).

Work Load, Credit and Grades

Work on the thesis occurs over a two-semester period in the form of two courses, EASC 499A and EASC 499B. The whole project is intended to require effort equivalent to one 3-credit course per semester; that is, about 10 hours per week.

For the purpose of evaluating course loads, EASC 499A and EASC 499B are each considered as 3-credit-hour courses. However, 499A is graded as a Pass-Fail course and no credit hours are awarded for either outcome. When you complete 499B, a numeric grade and corresponding letter grade (A, B, etc.) are assigned, and all six credit hours are awarded for EASC 499B.

Deferral of Deadlines for EASC 499A and EASC 499B

The course outlines for EASC 499A and 499B (see Appendices 1 and 2) specify a number of deadlines for submitting materials in fulfillment of course requirements. These deadlines are not flexible: if you miss them without obtaining a deferral, you will receive a failing grade.

If necessary, you may request a deferral by first discussing it with your supervisor, and then the Manager of Academic Programs. You may be required to provide medical or other documentation supporting your request.

Theses by General Degree Students

Students that are not honours students can only be admitted into EASC 499A once it is ensured that all honours students have supervisors and projects. As the seminars are graded, these students are required to present a seminar during 499B. However, their theses are not reviewed by the BSc Thesis Normalization Committee. Students do not have to submit a final, corrected version of their theses at the end of 499B. These theses are not sent to the Centre for Newfoundland Studies at the QEII Library.

Also note that General degree students cannot use EASC 499A and EASC 499B in place of 3000- or 4000-level Earth Sciences courses that are required for the degree.

FIRST SEMESTER HONOURS THESIS: EASC 499A

In the first semester of the Honours thesis, your focus is on defining your research project, reviewing previous studies relevant to your work, and gathering data. It is important during this phase to define a project of appropriate size quickly and then work consistently on a plan that ensures you obtain all the information you need (literature search and data acquisition).

How to Register for EASC 499A

Registration for EASC 499A takes some advance preparation. You must be accepted into the Honours program, and you need to identify a faculty member who agrees to serve as your Honours supervisor. The Manager of Academic Programs can help you find a project and supervisor if necessary.

To register for EASC 499A, use a Course Change Form, available from the Manager of Academic Programs or online here:

https://www.mun.ca/regoff/registration/Course_Change_Form_2013.pdf. First, get your thesis supervisor's signature, indicating that he or she agrees to serve in this role. Then get the signature of the Manager of Academic Programs and take the completed form to the Registrar's Office.

Requirements for Successful Completion of EASC 499A

To complete EASC 499A, you must submit the following items to the Manager of Academic Programs by the deadlines specified in the course outline (see Appendix 1).

1. A one-page Thesis Proposal summary defining the research problem and scope of the thesis. The summary should be written in consultation with your supervisor so that it clearly addresses:
 - The scientific purpose of the study (what are you trying to accomplish, the scientific aim(s), the scientific questions to be addressed)
 - The approach, the methods, the type(s) of data that will be employed to address that purpose
 - The broader context of the proposed study within a framework of existing knowledge

The Thesis Proposal is due three weeks after the start of the semester. The Manager of Academic Programs will forward the Thesis Proposal to your second reader for evaluation (see Appendix 1 for "EASC 499A: Thesis Proposal Comments Form") and will then route the second reader's review back to you and your supervisor.

2. Chapter 1 of your thesis, consisting of thesis title, definition of the problem to be addressed, nature and scope of the thesis, methods to be used, review of pertinent literature and geologic setting (if appropriate) and relevant figures

This chapter normally should not exceed 15 pages of text, in standard thesis format. Even though it may be revised during EASC 499B, it should be presented in final format.

3. A description of the analytical methods used in the study (eventually part of Chapter 2 of your completed thesis)

This section normally should not exceed five pages of text, in standard thesis format, and may be revised for the final version.

4. A file (on paper or, if too extensive for print, on digital media) containing rough copies of all the data you need for completion of your thesis (e.g., chemical analyses, core descriptions, seismic profiles, paleomagnetism measurements, etc.)

This file will be returned to you after grading of EASC 499A. An incomplete dataset will be accepted for consideration only under exceptional circumstances, such as equipment breakdown. In this case, a written explanation to the Department Head should accompany the data file. The data do not have to be in final thesis format.

5. A timetable for completion of EASC 499B, including dates of anticipated completion for each chapter, and date for thesis submission
6. The EASC 499A Submission Form (see Appendix 1), which includes a checklist of required items, signed in confirmation by you and your supervisor

Grading for EASC 499A

No course mark or credit is awarded for EASC 499A – the course is graded pass or fail. You will receive a mark and six credits once your thesis is completed in EASC 499B.

EASC 499A materials submitted to satisfy points 2, 3 and 4 above will be assessed by your supervisor and second reader. In addition to scientific content, they will comment on organization, writing style, grammar and spelling with respect to points 2 and 3, and they may annotate your manuscript. Your grade in EASC 499B will be influenced by how well you address any issues identified in EASC 499A.

SECOND SEMESTER HONOURS THESIS: EASC 499B

In the second semester of the Honours thesis, your focus is on analyzing your data and preparing your thesis. It is important during this phase to follow a plan that allows plenty of time for writing, reviews by your supervisor, rewriting and proofreading of each chapter or section.

How to Register for EASC 499B

To register for EASC 499B, use a Course Change Form. For that, you will need:

1. Your supervisor's signature, indicating his or her confirmation that you are well-prepared to complete EASC 499B in the allotted time
2. The signature of the Manager of Academic Programs (or the Department Head), confirming that you have successfully completed EASC 499A and thus have all the data you need to proceed with writing the thesis

If all analytical data needed to complete the thesis were NOT submitted in the data file (point 4 under EASC 499A requirements, above), then admission into EASC 499B must be fully justified by both the supervisor and the second reader.

An alternative may be to require you to wait one semester before registration in EASC 499B, to allow insertion of all required data into the file.

Requirements for Successful Completion of EASC 499B

To successfully complete EASC 499B, you must meet the following requirements with special attention to the deadlines specified in the course outline (see Appendix 2).

1. In preparing your thesis, follow all the guidelines given in Appendix 3, Thesis Formatting Guidelines.
2. About 1-2 weeks before your thesis is due for examination, present a seminar based on the results of your thesis research (see Your Honours Seminar, below).
3. Submit two unbound but neatly clipped, printed copies of the thesis, plus one copy in PDF format on digital media, to the Manager of Academic Programs no later than

three weeks before the end of the semester. A signed EASC 499B Submission Form must accompany the thesis (see Appendix 2).

These copies of your thesis will be used for the formal examination.

4. Submit two printed copies of your corrected thesis (one bound and one unbound in a clip), plus one copy in PDF format on CD/DVD, to the Manager of Academic Programs, along with a Corrected Thesis Submission Form and a Library Release Form (see Appendix 2), before the end of the examination period.

These copies of your thesis will be included in the permanent collections of the departmental and university libraries.

No grade will be submitted to the Registrar, and no course credit will be given, unless you submit the corrected thesis by this date. Also note that your degree will not be conferred until the corrected thesis is submitted in acceptable format and condition.

Your Honours Seminar

About 10 days before your thesis is due, a block of time is set aside for Honours seminars. The date will appear on your course outline. EASC 499B students will each present a 20 minute talk based on their research and then respond briefly to questions and discussion.

The seminars are open to all Earth Sciences students, staff and faculty. Professionals from outside the department may also attend, for example, second readers or collaborators from the Geological Survey of Newfoundland and Labrador or local industry.

For the Honours seminar, you are expected to make a professional-quality presentation complete with slides or PowerPoint presentation. You may want to prepare for your seminar by asking your supervisor to review your presentation, practicing your talk beforehand in front of fellow students, making sure your images are clearly readable from the back of the room, or other similar activities. The presentations will be evaluated and are worth 15% of the final EASC 499B grade.

Grading and Credit for EASC 499B

Your thesis will be examined by your supervisor and second reader. Each will prepare written comments, make annotations in the manuscript and recommend a grade for your work. The comments and thesis copies will be returned to you so that you can make corrections in preparation for submitting your thesis to the departmental and university libraries.

While you and other students are working on your corrections, members of the department's B.Sc. Honours Thesis Normalization Committee (TNC) read all honours theses submitted for the semester. They review grade recommendations from the examiners and recommend final grades to the Department Head for approval.

Unlike EASC 499A, which is pass or fail, you will receive a numeric grade for EASC 499B. All six credit hours for the Honours thesis project are awarded with this grade.

Each year, the TNC will recommend to the Head an honours student to be awarded the H.R. (Pete) Peters Award for Best B.Sc. (Hons) Thesis in Earth Sciences.

For more information on the TNC and how it operates, please see “Role of the B.Sc. Honours Thesis Normalization Committee” in Appendix 4.

PUBLICATION AND COPYRIGHT

Copyright

Your thesis is intellectual property and as its author you hold copyright to your work. If you include essentially unmodified material from other sources in your thesis, it is your responsibility to obtain permission for such use, where necessary. Once permission is obtained, you must acknowledge that permission in writing in your thesis.

Confidential data

If your thesis research will use confidential data (for example, provided by a company), you are required to obtain clearance from the source of the data before beginning your project. Obviously, data that cannot be disclosed to examiners is not acceptable.

Consult with your supervisor about confidentiality if your project involves data you did not collect yourself.

Submission of Thesis to Departmental Reading Room and University Library

The two final, corrected copies of your thesis will be included in libraries and will become reference materials available for research by others. The inexpensively bound copy will be included in the Earth Sciences library. The unbound copy will be sent to a professional bindery and hard-bound for use in the Centre for Newfoundland Studies in the QEII Library.

When you submit the final corrected copies, you include a signed Release Form (see Appendix 2). By signing the form, you acknowledge that the library will offer unrestricted public access to your work. Under very exceptional circumstances, you may choose, in consultation with your supervisor, to restrict access for a specified period of time, up to a maximum of three years. Restrictions require approval by the Head of Earth Sciences.

APPENDIX 1 COURSE DESCRIPTION AND FORMS FOR EASC 499A

DEPARTMENT OF EARTH SCIENCES
EASC 499A: COURSE OUTLINE
(SAMPLE ONLY)

To: Students and Supervisors of EASC 499A (Honours Thesis, first semester)
From: J. Hanchar, Head of the Department of Earth Sciences
Subject: 499A due dates and guidelines – Fall 2018

(1) Thesis proposal due date *

12:00 pm Wednesday, September 26, 2018

You must submit a one-page summary of your thesis proposal to the Manager of Academic Programs by email attachment. The proposal should reflect the intent of the thesis, i.e., to apply one or more analytical techniques, to undertake scientific interpretation of the data, and to document the investigation in a specified, written format. In consultation with your supervisor, define the objectives and scope of the project so that the work load equates approximately 10 hours/week. The proposal will be reviewed and commented on by the second reader, then returned to you.

Please note: all research activity at Memorial is subject to the current university policy on Intellectual Property. Therefore, you must review this policy and at the time of submission of the proposal, you must also submit a signed copy of the form *EASC 499A/B: Intellectual Property*.

(1) EASC 499A course work

The time estimated for completion of the work (about 10 hours/week) typically includes literature research, data acquisition (e.g. field work, descriptive and/or laboratory work), and writing. Data acquisition is usually the most critical component of EASC 499A: You and your supervisor should create a work plan for the semester that ensures appropriate data are available prior to the due date for item 4, below.

(3) Consultation with your supervisor

As you prepare your EASC 499A materials for examination, it is important that you consult with your supervisor. He or she can help you ensure that the content and format of the text are appropriate for submission and that your data file is adequate as a basis for EASC 499B. Plan carefully, creating a draft version of your materials early enough in the term so that you have time to make changes and corrections as needed before the final due date.

(4) EASC 499A materials submitted for examination *

12:00 pm Friday, Nov 23, 2018

All submissions, accompanied by a signed 499A Submission form, must be made to the Manager of Academic Programs. Please verify with your supervisor and second reader if they wish to receive a hard or digital copy of your submission, and indicate as such on the bottom of the submission form. If a hard copy is requested, please submit a printed, neatly clipped but otherwise unbound copy. If a digital copy is requested, please submit via Dropbox the “link for viewing” (please **do not “share” your folder or file**). The link should be sent to mmiskell@mun.ca. EASC 499A materials should include Chapter 1 of the thesis, a description of analytical methods used (i.e., part of Chapter 2), your data file (if your data collection is very large, this can be on CD), and an approximate timetable for the completion of EASC 499B (see detailed requirements in the *Department of Earth Sciences Honours Handbook* on the departmental Web page). A Submission form/checklist of required items, signed in confirmation by both you and your supervisor, **must** accompany the materials you submit.

* Any student who fails to complete the written assignment for legitimate reasons must discuss an alternative course of action with the supervisor and seek approval of the Head.



DEPARTMENT OF EARTH SCIENCES
**EASC 499A: THESIS PROPOSAL
 COMMENTS FORM**

Print Form

Date: Student Name: Student Number: Thesis Title: Supervisor: Second Reader: **Requirements for an honours thesis proposal:**

The thesis proposal is a one-page summary written by the student in consultation with the supervisor. It describes the research problem and scope of the thesis and should clearly address:

- the scientific purpose of the study
- the approach, methods and types of data that will be employed to address that purpose
- the broader context of the study within a framework of existing knowledge

The workload implied by the proposal should equate to approximately 10 hours/week throughout the term.

EXAMINER (second reader): Please comment on the thesis proposal in terms of the above defined parameters.

Comments:

Reader's Signature _____

Date: _____

Please return to: Manager of Academic Programs (w) 709 864-4464 (e) mmiskell@mun.ca



DEPARTMENT OF EARTH SCIENCES
EASC 499A: SUBMISSION FORM

Student Name: _____ Student #: _____

Thesis Title: _____

Supervisor Name: _____

SUPERVISOR:

I have read this report to be submitted by the candidate in partial fulfilment of the requirements for EASC 499A. I approve this submission for examination.

 Supervisor's Signature

 Date

STUDENT:

Supervisor wishes to receive the examination copy: ___ digitally or ___ hard copy

Co-supervisor wishes to receive the exam copy: ___ *digitally* or ___ *hard copy*

Second reader wishes to receive the examination copy: ___ digitally or ___ hard copy

I confirm that:

❖ The following required sections are included in this submission (please tick appropriate boxes):

Chapter 1 (not to exceed 15 pages)

- Thesis title
- Definition of the problem, nature and scope of the thesis
- Geological setting (if appropriate)
- Figures
- Review of pertinent literature

Chapter 2 (not to exceed 5 pages)

- Description of analytical methods used

Data file

- Contains rough copy of all data needed to complete the thesis for 499B
 (If data file is submitted on CD/DVD/USB, please provide 2 copies of disc/USB)

Timetable

- Includes dates of anticipated completion of each chapter of the thesis for 499B

❖ I have emailed to the Manager of Academic Programs the link for viewing this report in one PDF document via Dropbox (I have not shared this folder or file).

❖ If required by either or both examiners, I am submitting with this form a neatly presented, unbound copy (or copies) of this report.

 Student's Signature

 Date

**DEPARTMENT OF EARTH SCIENCES
EASC 499A: POINTS TO REMEMBER
WHEN WRITING YOUR HONOURS THESIS**

1. Abstracts should not be limited to a description of the method and approach taken, but should also selectively cite specific key results (i.e. data), specific key points of interpretation, and specific key implications presented in the thesis. Improperly written abstracts have been a significant issue in the past. If you are unsure of the proper way to write an abstract, ask your supervisor.
2. The thesis needs to clearly distinguish between the work of the student and that derived from other sources. The individual contribution of the student needs to be clearly stated and described early on in Chapter 1 (in Aims/Scope/Methods). For example, did YOU do the sample or data collection in the field (or were samples provided to you by others), did YOU do the mapping (how many days; describe the effort), did YOU work in the lab to generate the analyses or data (or was data generated by others on your behalf).
3. When writing introductory text about the geological setting, do not include lengthy, unrelated background. Be sure to include only pertinent background information that is less regional and more topical.
4. The Methods section should not just describe how a particular analytical instrument works (e.g., microprobe, ICP-MS, XRF). Students should also address/assess in a systematic manner:
 - (i) data quality - precision, accuracy, uncertainties, errors, error propagation in models etc.
 - (ii) treatment of data - filtering, averaging, criteria for rejection of samples/data
5. All data collected for the thesis must be reported in tables or appendices. For petrography-based theses, a table summarizing modal abundances and key petrographic features is highly recommended. If a calculation is important to data reduction or interpretation, a sample calculation is recommended as an appendix.
6. Figure captions, tables and appendices in the thesis should be clearly and fully annotated. Figures benefit from clear labeling that is linked to the text. Avoid "filler"; use only those figures, tables, etc. that are necessary.
7. Maps need a north arrow, scale and location coordinates. For digital maps, indicate a map datum/projection. Photomicrographs need a scale and phase labels (where appropriate).
8. The thesis must adhere to guidelines in terms of the structure and organization. Thesis Guidelines can be found in the *Department of Earth Sciences Student Handbook* located on the departmental web page.
9. Perform a careful editing of the final text prior to submission to minimize spelling, grammar and style errors. The presence of many errors can negatively impact the grade of the thesis.
10. The conclusions should summarize the findings of the study: Be sure to check that they are consistent with the Aims and Scope presented in Chapter 1. An account of the relevance or implications of the work is encouraged.
11. Where the relevance of the subject matter of the thesis to Earth Sciences is not obvious, an effort should be made in the Introduction and Conclusions to explain the significance of the approach and results to the non-specialist Earth Science reader.

APPENDIX 2 COURSE DESCRIPTION AND FORMS FOR EASC 499B



DEPARTMENT OF EARTH SCIENCES
EASC 499B: COURSE OUTLINE

To: Students and Supervisors of EASC 499B (Honours Thesis, second semester)
From: J. Hanchar, Head of the Department of Earth Sciences
Subject: 499B due dates and guidelines – Fall 2018

(1) Organizational meeting (suggested deadline) **on or before Sept 19, 2018**

An initial meeting between you and your supervisor is strongly suggested as a venue to briefly discuss the results of the evaluations from EASC 499A, the present status of the thesis project, and your timetable for completing EASC 499B. The work load appropriate to EASC 499B is approximately 10 hours/week, and should be focused on relevant data presentation, analysis and interpretation, and writing of the thesis. As the data file was completed as a part of EASC 499A, little (if any) time should be needed for data acquisition.

(2) Consultation with your supervisor

You are encouraged to consult with your supervisor on a regular basis throughout the semester. He or she can help ensure that you are prepared for your honours seminar (item 3, below) and that the content and format of your thesis will be appropriate for submission (item 4, below). Plan carefully, creating drafts of your presentation and of your thesis early enough in the term so that you have time to make changes and corrections as needed prior to the deadlines.

(3) Honours seminar *

Tuesday, Nov 13, 2018

Before submitting your thesis, you are required to make a presentation based on your thesis research including methods employed, research results and preliminary interpretation. All presentations will take place on the date above. Each will be 20 minutes in length followed by a short question-answer period. The honours seminars are open to all to attend. The presentations will be graded for 15% of the final thesis grade. Your presentation may be digitally recorded for examination purposes.

(4) Honours thesis submitted for examination *

12:00 pm Friday, Nov 23, 2018

All submissions, accompanied by a signed 499B Submission form, must be made to the Manager of Academic Programs. Please verify with your supervisor and second reader if they wish to receive a digital or hard copy of your thesis, and indicate as such on the bottom of the submission form. **All students** must submit **the “link for viewing”** of the entire thesis in one PDF document via Dropbox (please **do not “share” your folder or file**). The link should be sent to mmiskell@mun.ca. If a hard copy (or copies) is requested, please also submit a printed, neatly clipped but otherwise unbound copy. The grade assigned to the thesis will be based on both the seminar and the text as submitted by this deadline. Detailed guidelines for the format of the thesis, including the grading scheme, are given in the *Department of Earth Sciences Honours Handbook* which can be found on the departmental Web page. Please note that the suggested length of the thesis is normally limited to less than 60 pages (excluding figures, tables and appendices).

(5) Honours thesis final copy submitted *

12:00 pm Friday, December 14, 2018

Comments of the examiners will be returned to you normally within a week so that corrections can be made in consultation with your supervisor. You must submit two high-quality, hard copies of the final, corrected thesis to the Manager of Academic Programs in the main office, ER 4063. These copies must be accompanied by signed Submission and Library Release forms. One copy for the University library must be unbound (one fold-back clip only), while one copy for the departmental library must be inexpensively bound, for example, with spiral or ring binding. In addition to the printed copies, you must also submit a CD or DVD with the entire corrected thesis in PDF format. No grade will be submitted to the Registrar, nor will course credit be given, unless the corrected thesis is submitted by this deadline.

* Any student who fails to complete the assignment by the due date for legitimate reasons must discuss an alternative course of action with the supervisor and seek approval of the Head.



DEPARTMENT OF EARTH SCIENCES
EASC 499B: THESIS SUBMISSION FORM
Honours Thesis for Grading

Student Name: _____ Student #: _____

Thesis Title: _____

Supervisor Name: _____

SUPERVISOR:

I have read the thesis to be submitted by the candidate in partial fulfilment of the requirements for EASC 499B. I approve this submission for examination.

Supervisor's Signature

Date

STUDENT:

Supervisor wishes to receive the examination copy: _____ digitally or _____ hard copy

Co-supervisor wishes to receive the exam copy: _____ *digitally* or _____ *hard copy*

Second reader wishes to receive the examination copy: _____ digitally or _____ hard copy

I confirm that:

❖ My thesis includes the following:

- Title page
- Abstract
- Acknowledgments
- Table of contents
- List of tables
- List of figures
- List of abbreviations (if required)
- Text of thesis including tables and figures
- References
- Appendices

❖ I have emailed to the Manager of Academic Programs the link for viewing my entire thesis in one PDF document via Dropbox (I have not shared this folder or file).

❖ If required by either or both examiners, I am submitting with this form a neatly presented, unbound copy (or copies) of the completed honours thesis (a single fold-back clip per copy is recommended).

Student's Signature

Date



**DEPARTMENT OF EARTH SCIENCES
EASC 499B: CORRECTED THESIS
CHECKLIST / SUBMISSION FORM**

Date: _____

Student Name: _____ Student #: _____

Thesis Title: _____

Supervisor Name: _____

The following items are required for completion of EASC 499B. Your final grade for EASC 499B will not given, nor your degree awarded, until you provide:

(Please tick appropriate boxes):

- Your and your supervisor's signature at the bottom of this form verifying that all necessary corrections have been made to your thesis.
- One signed, witnessed, and dated copy of the University Library Release Form indicating your selection of option A or option B
- One inexpensively bound copy of the corrected thesis
- One neatly presented but unbound copy of the corrected thesis
- One CD or DVD containing the corrected thesis as a single PDF file

The attached copies of this thesis incorporate all necessary corrections identified by the examiners and are ready for deposit with the departmental reading room and university libraries.

Student's Signature

Supervisor's Signature

Appendix 2-4 Library Release Form
Memorial University of Newfoundland
Undergraduate Honours Essays and Dissertations

(Signed release forms must accompany an Honours Essay/Dissertation when it is submitted to the University Library.)

STUDENT NAME: _____ STUDENT NUMBER: _____

DEGREE PROGRAMME: _____ MAJOR: _____

TITLE OF ESSAY/DISSERTATION: _____

In accordance with the regulations for the Honours degree of Bachelor of Arts/Bachelor of Arts/Bachelor Science, a copy of the essay/dissertation which was required of me is herewith submitted to the University Library.

I recognize that the copyright on the essay/dissertation belongs to me, and that the Regulations require that the essay/dissertation shall be available for unrestricted consultation by students and faculty, except under very exceptional circumstances which must be approved by the Senate Committee on Undergraduate Studies.

PLEASE CHECK EITHER A OR B BELOW:

- _____ A. I do not wish to request restrictions on the time at which the essay/dissertation shall first be made available.
- _____ B. I do wish to request a restriction so that the essay/dissertation will be withheld from public use for a period of months from the date of submission. My supporting reason for this request is:
- _____ (a) It is my intention to have my work published.
 - _____ (b) An academic extension of the work will be made in a short time.
 - _____ (c) Patent possibilities exist which I wish to protect.
 - _____ (d) Other: _____ Please specify: _____
- _____
- _____

I hereby request the Senate Committee on Undergraduate Studies to consider this application for restriction and to inform me of its decision in due course.

I understand that the Senate Committee is entitled to receive applications for the restriction of availability of my essay/dissertation from third persons and to adjudicate on such applications.

Signature of Student

Signature of Head of Department

Signature of Witness

Date

APPENDIX 3 – THESIS FORMATTING GUIDELINES

THESIS FORMATTING GUIDELINES

Introduction

The Department of Earth Sciences strongly recommends that you and your supervisor follow these guidelines in the production of your honours thesis. Failure to do so can affect your final grade for EASC 499B.

The guidelines are in part adapted from the School of Graduate Studies Thesis Guide (2009; online at http://www.mun.ca/sgs/go/guid_policies/theses.php); however, note that honours theses are meant to be analogous to graduate dissertations only in format but *not in scope*.

Length

The thesis normally should be no longer than 60 pages (excluding figures, tables and appendices, but including bibliography).

While the department encourages you to be ambitious and enterprising, you should not be required to produce graduate level work in an undergraduate course. Both you and your supervisor are responsible for defining and controlling the length of your thesis. Discuss this issue with him or her at an early stage in the research and again during the writing process if you have concerns.

Thesis Organization

Organize your thesis in the following sequence:

- 1 Title page
- 2 Abstract
- 3 Acknowledgments
- 4 Table of Contents
- 5 List of Tables
- 6 List of Figures
- 7 List of Abbreviations and Symbols (if required)
- 8 List of Appendices
- 9 Text of Thesis
- 10 References
- 11 Appendices

Grammar, Spelling and Style

Your writing style as an Honours student is expected to reflect a high degree of clarity and professionalism. The thesis should be readable by fellow scientists outside your field of specialization. Avoid excessive use of jargon, undefined acronyms and other constructs that obscure the meaning of your text.

Given the intended scope of an Honours project, excess length may imply poor writing style and/or an inappropriately focused thesis topic and may affect the final grade.

Errors of spelling, grammar or typography are confusing to the reader, imply a lack of attention, and can affect your grade. Spelling should consistently follow the current edition of a major dictionary, for example, *Webster's Third New International Dictionary* or the *Oxford English Dictionary*. Whatever dictionary is used, spelling should be consistent. For Earth Science terms, you should follow spellings in the *American Geological Institute's Dictionary of Geological Terms* <http://www.agiweb.org/pubs/pubdetail.html?item=300260> .

In reporting measurements, use metric units (SI units wherever applicable). Numerous online references are available if you need further details; for example, at the National Institute of Standards and Technology site <http://physics.nist.gov/cuu/Units/units.html>.

Stratigraphic terminology should conform to the usage of the North American Commission on Stratigraphic Nomenclature (online <http://ngmdb.usgs.gov/Geolex/search>).

While it is important for you to meet these expectations for the quality of writing in your thesis, note that use of editorial services that involve substantive writing or re-writing of the thesis is unacceptable.

Details About Each Section

Title page

The title page must contain the following content and sequence:

1. The approved thesis title
2. The word "by" followed by your full name as author
3. The phrase "A thesis submitted to the Department of Earth Sciences in partial fulfillment of the requirements for the degree of B.Sc. (Hons.)" *
4. The phrase, "Memorial University of Newfoundland"
5. The month and year you expect to graduate

* For General degree students, "(Hons.)" must be omitted.

Note that the title, while concise, should contain key words which will identify the contents of the thesis as accurately as possible for the purpose of electronic searching in the libraries' catalogs.

Abstract

The abstract should, in 150-350 words, briefly describe the problem, the methods or procedures you followed in its investigation and your most important conclusions or results. References should not be cited in the abstract.

Acknowledgments

It is appropriate to acknowledge, in addition to your supervisor, any intellectual and practical assistance, advice, encouragement and sources of monetary support that contributed to the successful completion of your thesis.

Table of contents

As illustrated in the example below, in your Table of Contents you should:

- Follow a decimal system for numbering the headings and subheadings in your thesis.
- List each chapter title and subheading exactly as is worded in the thesis text.
- Follow the rules for proper capitalization of titles, without terminal punctuation.
- Indent each subheading sufficiently to distinguish it from the chapter or section title.
- Align the initial page number for each chapter or subheading at the right hand side of the page

<i>Example</i>	
TABLE OF CONTENTS	
Abstract.....	ii
Acknowledgments	iii
List of Tables	vi
List of Figures	vii
Chapter 1 Introduction	1
1.1 Scientific Background	1
1.2 Objectives	3
1.2 Scope	5
Chapter 2 Stratigraphic and Tectonic Framework	7

Lists of tables, figures, etc.

As illustrated below, include the following information in each list:

- The number you assigned to each table or figure. Use decimal numbering; for example, the second figure in Chapter 4 will be Figure 4.2.
- The brief title you assigned to the table or figure as worded in the thesis text. NOTE: Do not include the entire caption in the list, only the title.
- The page or pages on which the item appears, aligned at the right.

<i>Example</i>		
LIST OF FIGURES		
Figure 1.1	Sediment Delivery to Fjords	2
Figure 1.2	Published Chemical Analyses	3
Figure 2.1	Geological Context of Study Area	5
Figure 2.2	Sample CB 459-1	8

Thesis chapters

Discuss the organization of the text with your supervisor. Each Honours thesis is unique in some way and may require a particular sequence of chapters to explain your study effectively. However, we find that many theses follow a similar sequence, so what follows is an approximate starting point as you think about organizing your text.

Chapter 1 of the thesis usually provides readers with an introduction to the problem you studied. It often includes a review of previous scientific literature, a summary of the regional setting (if relevant) and other context for your research.

Chapter 2 often focuses on your research methods; describing data collection and analytical procedures or other descriptions of how the research was conducted.

Following these are often one or more chapters outlining the results of your study. It is important to separate the objective reporting of results from your thoughts about what the results mean. An additional, final chapter is reserved for your interpretation and discussion of the results and their significance.

Subheadings

Normally you should not use more than three levels of headings. Exceptions are possible, but if you think you need more than three levels, consider creating additional chapters in consultation with your supervisor.

- First-order headings (i.e., chapter titles) are centred and capitalized.
- Second-order headings (e.g., 1.1, 2.4) are capitalized at the left-hand margin.
- Third-order headings (e.g., 1.1.1, 2.4.1) are underlined or italicized at the left-hand margin.

<i>Example</i>	
CHAPTER 1 FIRST ORDER HEADINGS	
	Σαμπλε τεξτ Σαμπλε τεξτ Σαμπλε τεξτ Σαμπλε τεξτ Σαμπλε τεξτ Σαμπλε τεξτ Σαμπλε τεξτ Σαμπλε τεξτ Σαμπλε τεξτ Σαμπ.
	1.1 SECOND ORDER HEADINGS
	Σαμπλε τεξτ Σαμπλε τεξτ Σαμπλε τεξτ Σαμπλε τεξτ Σαμπλε τεξτ Σαμπλε τεξτ Σαμπλε τεξτ Σαμπλε.
	<i>1.1.1 Third Order Headings</i>
	Σαμπλε τεξτ Σαμπλε τεξτ Σαμπλε τεξτ Σαμπλε τεξτ Σαμπλε τεξτ

Use line spacing or page breaks to keep headings on the same page with at least the first two lines of text immediately after the heading.

References

As a scholar and scientist, you must clearly and honestly distinguish between your own efforts and insights and those of other workers. Plagiarism is a serious offence and will result in rejection of your thesis.

Within your thesis chapters, each reference should be cited using the author's last name and the year of publication in parentheses immediately following the statement derived from that reference (Example, 2009). Note that it is standard practice to quote the original source of an idea, not a subsequent review article or text book. However, if you have not read the original source you should quote the review or text book that you have read using wording such as: "as reviewed by ReviewAuthor (2010)" or "(e.g., TextbookAuthor, 2011)".

All references cited in the text should be listed in the References section of your thesis. In your References section, you should follow the format of the Canadian Journal of Earth Sciences. Their style guide provides examples of a wide variety of reference types and is available online, on pages 5-6 of the following document: https://instruct.uwo.ca/earth-sci/089g/cjes_instruct_e.pdf.

Examples from their style guide include:

Kovanen, D.J., and Slaymaker, O. 2003. Lake Terrell upland glacial resurgences and implications for late-glacial history, northwestern Washington State, U.S.A. *Canadian Journal of Earth Sciences*, **40**(12): 1767–1772.

Williams, R.A. 1987. *Communication Systems Analysis and Design*. Prentice-Hall, Inc., Englewood Cliffs, N.J. xxp.

Healey, M.C. 1980. The ecology of juvenile salmon in Georgia Strait, British Columbia. *In Salmonid ecosystems of the North Pacific. Edited by W.J. McNeil and D.C. Himsworth*. Oregon State University Press, Corvallis, Oreg. pp. 203–229.

Research papers not yet published may be cited by listing the publication and using the designation "in press" in place of the publication date. Private communications should be referred to, as pers. comm, with date, in parentheses in the text.

Appendices

Supplementary information or large volumes of data that interrupt the flow of your thesis text should be isolated into an appendix. However, only directly relevant material should be included at all. Your appendices must be produced to the same standard of legibility as the main text of the thesis.

Printing Specifications

Some advice

The appearance and physical condition of the thesis you submit can have an influence on your final grade. Printing, collating and neatly stacking your pages requires time and attention to detail, and can be subject to technology melt-downs beyond your control. Do not sabotage your own hard work at the last minute by trying to rush this important step.

If you have questions related to printing your thesis for examination or for library use, provide sample pages to your supervisor, the Manager of Academic Programs or a member of the Thesis Normalization Committee before committing yourself to full production of the thesis.

Cost

All aspects of producing physical copies of your thesis are your personal responsibility and must not be charged against departmental budgets or research grants.

Paper and print quality

Print your thesis single-sided using laser print quality on 8 1/2 x 11 white paper. The two copies submitted for examination can be printed on standard white photocopy paper.

For the final version (submitted after you make required corrections), at least one of the two copies must be printed on acid-free paper that adheres to the ANSI/NISO Z39.48 - 1992(R2002) standard (this may be indicated on the package by an infinity sign, sometimes contained within a circle), or equivalent. Both Domtar and Xerox brand photocopying paper meet these standards. This will ensure that the library copies will withstand long-term use as part of the library's permanent collection.

Colour or black and white?

Many scientific journals routinely print papers in black and white and grayscale, and publishing in colour can be expensive (e.g. \$500 per page). Thus it may be a good exercise for you – as well as saving you money – to produce your thesis in properly formatted grayscale. Note, however, that a grayscale map or diagram is NOT the same as a colour figure produced on a black and white printer! The decision on whether to use colour should be made in consultation with your supervisor.

Page layout, spacing and fonts

The pages of your thesis should be printed in portrait orientation. Use landscape orientation only when necessary for individual tables, maps or images.

The text of your thesis should be double-spaced, with single spacing used for lengthy quotations. Triple or larger spacing may be used where necessary to set off headings, subheadings, equations or illustrations. Incorporate citations and other annotations into the text flow rather than using footnotes.

Font type and size should be consistent throughout the entire thesis. Times New Roman or similar font of at least size 12 is recommended. Smaller fonts may be used for graphs, etc. but must be sufficiently clear to permit microfilming. Formatting should be applied consistently to all levels of heading or other specially formatted text elements.

The first line of each paragraph of text should be indented.

Margins

A margin of 3.8 cm (1.5 inches) on the left-hand side of the pages is required to allow for binding. Minimum margins of 3 cm (1.25 inches) are required at the top and the bottom. A 2.5 cm (1 inch) margin is required on the right-hand side. These requirements also apply to tables and diagrams.

For pages in landscape orientation, set the margins to correspond to the left, top, bottom and right edges of the page as bound into the finished thesis.

Page numbering

Each page in your thesis must be identified by a distinct number for ease of reference. Begin each chapter or section (e.g., References, Appendices) on a new page. Center your page numbers at the bottom of the page.

You should number all "front matter" (any items preceding the first page of the text, i.e., acknowledgments, table of contents, etc.) using lowercase Roman numerals. The title page is considered to be page (i) but is not so indicated, in other words, the first numbered page will be the Abstract as page (ii).

Beginning with the first page of your thesis text (i.e., Page 1 of Chapter 1), you should number the pages consecutively in Arabic numerals (1, 2, 3,...). All figures, plates, tables, appendices, and similar material are numbered as pages of the text through to the end of the thesis.

Tables and figures

Tables and figures (including photographs, maps, diagrams, scanned images and other non-text material) whether in black and white or colour should be legible, arranged neatly and effectively, and in the order in which they are referred to in the text. The smallest character should not be less than 1 mm high.

Tables and figures should be numbered in separate sequences within each chapter (e.g., Table 1.1, Table 1.2, Figure 1.1, Figure 1.2, etc. in Chapter 1), have a brief title, and be referred to consecutively in the text. Additional descriptive material should follow each title so that the significance of the table or figure is evident without reference to the text.

The number and title of a table should be placed above the table. The number and title of a figure should be positioned below the figure. (In cases where this is impossible, the title and explanation of the figure or table may be placed on the reverse side of the immediately preceding blank page so that it faces the figure or table. The number of such a page must appear on the blank side in conformity with the placement of page numbers in the rest of the thesis.)

If photographs are used, choose only those which clearly illustrate the subject; they should be trimmed to show only essential features.

Scale, orientation (e.g., true north) and legend should be provided where appropriate.

Over-size pages

Oversize maps, charts or diagrams must be folded so that they can be bound with the pages or, as is most common, inserted in a pocket fastened to the inside of the back cover when the thesis is bound.

Binding

The examination copies of your thesis should be submitted with pages neatly stacked and clipped with a single fold-back clip but otherwise unbound.

Of the two final copies you submit, the copy for the departmental library must be inexpensively bound, for example, with spiral binding. The copy for the university library (which must be on acid-

free paper as noted above) must be submitted with pages neatly stacked and clipped with a single fold-back clip but otherwise unbound. The university will send it to be bound in an archival-quality hard cover.

Number of copies

You must submit two printed copies of your thesis for examination by the department. After you have made changes to the thesis as directed by examiners, you must submit two complete, final copies for deposit with the department and university libraries.

In some cases additional copies may be desired by yourself, your supervisor, the department, the university or funding agency. Consult with your supervisor when determining the total number of final copies required.

Digital Media Specifications

Both versions of your thesis (for examination and for library use) must also be submitted in PDF format on a digital media disc such as a CD or DVD.

The PDF version must be an exact, page-by-page copy of the printed version you submit at that time. All content including landscape and oversize pages and all appendices must be combined in correct page sequence into one, single PDF file for this purpose.

In submitting your digital media file, you must:

- Name the file with your last name and the date of submission (e.g., Hickman 12-June-2012).
- Test the disc to make sure your file is present and can be opened.
- Label your disc "Honours Thesis" and include your last name and the date of submission.

**APPENDIX 4: Role of the B.Sc. Honours Thesis Normalization Committee (TNC)
and Suggested B.Sc. Thesis and Presentation Grading Scheme**

Role of the B.Sc. Honours Thesis Normalization Committee (TNC) and Suggested B.Sc. Thesis and Presentation Grading Scheme

There is a detailed guide to the requirements for a B.Sc. Honours thesis on the Department of Earth Sciences website. Students and faculty are expected to know these and so they are not repeated here.

Once the thesis is submitted for examination, the role of the thesis supervisor and the second reader is to assign grades for the work following the grading rubric provide below. These grades are submitted to the Head for approval and final submission.

About the Committee

The B.Sc. Honours Thesis Normalization Committee (TNC) is made up of faculty members appointed by the Head, covering the main areas of research in the Department of Earth Sciences, and the Manager of Academic Programs. It will meet up to three times a year, once a semester, shortly after grades have been submitted by the theses supervisors and second readers. The committee will elect a Chair prior to the last day of classes, and the Chair will assign members of the committee to read specific theses, taking into account expertise and conflicts of interest. Theses will be distributed electronically to TNC members as soon as possible after submission by the students. Once read, the Chair will call this meeting.

The fundamental goal of the TNC is to maintain a 'level playing field' for grading of all honours theses over the year and multiple years. The committee will review all theses submitted in an academic year, and the grades assigned to those theses by the supervisor and second reader. If a TNC member is involved in a thesis, that member will leave the room during discussion of that thesis.

Recommending Grades

In the first instance, the provisional thesis grade is the average of the two examiners' assigned grades. The purpose of the TNC review is to flag anomalies and discuss these, and to recommend to the Head changes to the assigned grades if the committee feels it necessary. The committee members have a perspective that an individual supervisor does not, because they see and compare all (15 to 20) theses for the year, while an individual supervisor sees only one or two. The committee will report to the Head: a list of all grades from supervisors and second readers, the average of these for each thesis, and the recommended grade after the review is complete. For any thesis for which the TNC-recommended grade is 5% or more shifted from the average of the 2 examiners grades, a written explanation will be provided to the Head.

Circumstances where the committee might recommend that a grade be changed include:

- A wide discrepancy between the grades assigned to a thesis by the supervisor and second reader (>10% usually triggers a closer look).
- A thesis grade surprisingly high for a thesis that the committee feels is not deserving of such a high grade in comparison to others.
- A thesis grade that is anomalously low for a thesis that the committee feels deserves better, again by comparison with the rest.

These are not mutually exclusive; circumstance in items 2 or 3 may be the result of item 1.

If the original thesis grade (average of the two examiners) is reasonable, and the majority each year are so, then the TNC will not change it. And the committee will endeavour not to change a thesis grade outside the range of the two examiners' grades. But the committee may change a grade outside the range of the supervisor and second reader's grades in extreme cases. Note that any TNC-altered grades are recommendations to the Head and, when submitted, any changes from the supervisors' and second readers' grades are flagged for the Head's attention and final decision. The TNC does not submit grades.

Once the Head has signed approval of the final grades, the Manager of Academic Programs will advise in writing the supervisors, second readers and members of the TNC Committee what the final grades are, before submission to the Registrar's Office.

Grading Rubric

B.Sc. Honours thesis presentations are graded. These presentations occur about ten days before thesis submission, and give the students a chance to present and get feedback before submission. The presentation will be evaluated by the supervisor and second reader.

What follows is a suggested grading scheme for the written thesis and for the presentation that together total 100% for the final course grade. It is the preference of the TNC to keep the B.Sc. thesis grading scheme general and flexible, rather than be specific as theses in this department are highly variable in subject area, type of data, method of data collection and handling by the student (and by others) and overall scientific approach. The following are components for marking with examples of the sort of material that would likely fall in each part. These have been incorporated in a modified *Evaluation Form for 499B Thesis*.

Overall format and presentation 15%

Are all relevant parts of the thesis as outlined in the guidelines present? This includes the 'nuts and bolts' of the thesis; page format and spacing, figure captions, scales, well formatted and labelled tables, charts, appendices, thesis length.

Set-up of the scientific problem/background 20%

This would include the question to be addressed, previous work, literature review, proper and complete referencing, location of the study, logistics, techniques employed.

Data Presentation -the 'meat' of the thesis 25%

Description of the field area, or sample collection, or code written or experiments carried out. Presentation of data, eg; running of computer programs, or report on rock petrology or chemistry, description of fossil assemblages, or water analyses ...

Treatment of the data; charts diagrams, assessments of trends, statistics, grouping of populations...

Discussion of Results 25%

Advanced interpretation, including what worked, what one can interpret from it, what did not work (also important), Importance of results in the context of the discipline and what are the implications of this work.

Total grade for the written thesis	85%
Grade for thesis oral presentation	15%
Total grade for EASC 499B course	100%

A presentation can be assessed on a combination of these criteria which are the equivalent to the divisions above for grading the written thesis:

- Quality of presentation – logical flow, smooth, professional (i.e. not thrown together the night before)
- Introduction to the subject/area, the 'question' and how it will be addressed
- Work completed
- Results so far – key data that addresses the question
- Brief interpretation/summary
- Steps still to be completed (hopefully not too many)

Recommending the Best Honours Thesis Award

Each year, the TNC will recommend to the Head an honours student to be awarded the H.R. (Pete) Peters Award for Best B.Sc. (Honours) Thesis in Earth Sciences. If this recommendation is approved by the Head, the Manager of Academic Programs will notify the recipient by letter.

*This document was approved at a faculty meeting on Sept 9, 2015.
It was updated by the MAP and TNC Committee Chair, June 10, 2016.
Minor revision by MM on August 17, 2018*