BROCK UNIVERSITY
Department of Earth Sciences

GUIDELINES FOR HONOURS THESIS PROJECT ERSC 4F91 (2013-14)

[approved (September 7, 2006) by the Earth Sciences Departmental Committee]

INTRODUCTION

This document outlines the procedures for the completion of the thesis and sets out the rules which must be followed. Further guidelines and work schedules may be established by an individual supervisor.

The objective of the Thesis (ERSC 4F91) is to provide the student with an opportunity to plan and carry out a research project, write a report on the study, synthesize the results and arrive at meaningful conclusions. Students may register for D1 (Fall/Winter), D4 (Winter/Summer) and D7 (Spring/Fall) sessions.

The selection of the thesis project should be made in consultation with a faculty member or faculty members within the department of Earth Sciences whose field of specialization covers the area in which you wish to specialize. Normally a student should approach one or more faculty, towards the end of third year and discuss possible topics. It is permissible to begin work during the summer on the project, i.e. sample collection, mapping, etc., while engaged in summer employment. The final date for selection and approval of a thesis project is the Friday of the third week of classes of the first term of D1, D4 or D7.

The scope of the project should be such that it normally includes a survey of pertinent literature, a field component when appropriate (the extent and nature of the field work will be determined by the actual project), a laboratory and/or office component (analytical work or data compilation). Projects which involve only data compilation must involve detailed analysis and interpretation of the results.

The **B.Sc. Thesis Coordinator** is the faculty member in Earth Sciences who will distribute and explain the thesis guidelines and aid in the selection of a suitable supervisor, if necessary. Any questions regarding the thesis format and schedule of deadlines should be directed towards the Thesis Coordinator.

The **Supervisor** is the faculty member from Earth Sciences who serves as the main advisor to the student and supervises the progress of study and compilation of the thesis. The student may consult with any faculty member within the Department concerning scientific advice dealing with the thesis project. In the case of interdepartmental studies, a faculty member from both Earth Sciences and the other Department should be consulted in completion of the thesis.

DEADLINES

The following deadlines regarding submission of the thesis apply to all students.

1. Submission of a Thesis Proposal (see page 3) by the first Friday in November for D1, the last Friday in March for D4 and the last Friday in July for D7.

2. Submission of final draft (original) in manuscript form to the Thesis Coordinator by 4:00 PM of the last Friday in March for D1, the last Friday in August for D4 and the last Friday in November for D7.

3. A public seminar, to be given about one week after submission of final draft copies.

4. Submission of final copies (original + 2 photocopies) of the corrected thesis to the Department Administrative Assistant 7 days following the last scheduled exam for that term.

No exceptions to the above will be granted except for verified medical and other approved reasons (equipment breakdown, etc.). Dates for the above are given at the end of this document.

ADMISSION OF STUDENTS TO ERSC 4F91

(a) Students considering enrolling in ERSC 4F91 must apply to the Department using the "Application to Year IV Studies" form available from The Office of the Registrar. This form should be completed and returned to the Registrar's Office, before the last day of classes one calendar year before the anticipated completion date in April, August or December.

(b) Admission to ERSC 4F91 will normally be restricted to students who have been approved for admission to Year IV by meeting the following requirements, a minimum of 13 overall credits, a major average of 70 percent and a non-major average of 60 percent. Preference for admission will be given to students whose major average is 75% or greater. Students who are eligible for admission on this basis will be notified by the Chair two months prior to the expected start date. The Department will attempt to accommodate all students who wish to enroll in the ERSC 4F91 program.

(c) Year IV students who do not meet this standard may be admitted to the program at the discretion of the Chair and the supervising faculty member, to the extent that space and facilities permit.

(d) Students who withdraw from ERSC 4F91 at any stage or who do not complete their thesis project within the approved time, and wish to re-register for ERSC 4F91 must begin with an entirely new topic.

(e) Every faculty member has the right to refuse supervision of a specific student, however, such a decision must have a defensible basis.

(f) An ERSC 4F91 student shall not normally be paid by the supervisor while enrolled in the course.

(g) Faculty will not normally supervise ERSC 4F91 students while on sabbatical.

THESIS PROPOSAL

The thesis proposal is a brief document (three pages maximum), prepared in consultation with the thesis supervisor, to be submitted to the Thesis Coordinator on the first Friday of November for D1, March for D4 and July for D7. The aim of the proposal is to provide information to faculty on the specific projects being undertaken by ERSC 4F91 students and to give students an opportunity to formally establish their goals and methods of achieving them. The proposal will include:

1) Title of the Thesis;
2) Student's name;
3) Supervisor's name, and department, if not Earth Sciences;
4) Statement of the specific aims of the thesis;
5) An outline of the methods to be used;
6) A statement of the significance of the expected contribution of the thesis to Earth Sciences.

The proposal is to be submitted to the B.Sc. Thesis Coordinator, on the due date, who will circulate copies to faculty in the department.

LABORATORY WORK

The following are several rules to be followed during laboratory work for the thesis. It is also important that you read and follow specific regulations given in Appendices III and IV.

1) Normally, microscope work must be carried out in the teaching labs, D308 or D309, to reduce the likelihood of damage to the equipment. Microscope keys, for reflected and transmitted microscopes, can be signed out through the thesis Supervisor.

2) Any materials required for laboratory work must be ordered through the Supervisor and the Chair of the Department.

3) All glassware and other equipment used during the project must be returned or accounted for and all labs cleaned. Students will be charged for breakage and loss of equipment.

4) Any Departmental keys requisitioned during the course of the project must be returned to P. Barclay prior to submission of the final copies.

5) Arrangements for the storage of samples required during the course of the work and their disposition upon completion should be made with the Supervisor. Any items stored in Departmental cabinets must be labelled as to ownership and dated. Normal storage time is 5 years.

6) Each ERSC 4F91 student may be reimbursed up to a maximum of $100 by the Department to cover some of the costs (field expenses, film developing, duplication costs, etc.) incurred in completion of the thesis. Reimbursement requires that receipts be submitted and requires the signature of the Supervisor and Chair.

KEYS

Final grades for each student will not be transmitted to the Office of the Registrar until his/her university keys have been returned to the departmental Bookkeeper/Storekeeper (P. Barclay). Exceptions will be made for students who continue to work in the same laboratory as graduate students, student assistants, or research assistants following completion of their thesis studies.

INSTRUCTIONS AND GUIDELINES FOR THE PREPARATION AND SUBMISSION OF THESES FOR THE HONOURS BACHELOR OF SCIENCE DEGREE

A student submitting a BSc (Honours) thesis for degree credit must ultimately submit a minimum of **three copies** (original + 2 photocopies) of their approved thesis to the Thesis Coordinator no later than seven days after the final date of scheduled exams for the appropriate term or session before the degree will be conferred. To ensure that consistent, high quality theses are submitted the following guidelines must be adhered to in preparing the written reports.

GENERAL INFORMATION

(1) Arrangements regarding the timing and style of the rough draft (e.g. written vs. typed; complete text or in sections; etc.) should be made between the student and Supervisor. It is important that the rough draft be submitted to the Supervisor by the date indicated in the Deadline section, thereby providing adequate time for thorough reading, comments and revision. **All changes and corrections must be made prior to submission of the final copies of the thesis.**

(2) Copies of the thesis submitted for review up to, but not including, the final copy can be in "*manuscript*" form. In this form all figures appear in order after references and appendices and are immediately preceded by a full set of figure captions. Headings, references, etc. must be in the format specified by the **Canadian Journal of Earth Sciences (CJES)** Guide to Authors, published in the first number of the most recent volume - **CHECK OUT THIS FORMAT BEFORE YOU WRITE ANYTHING!** As the distribution of tables and figures may differ in the final copy from that in the manuscript copy, the manuscript form of the draft facilitates final corrections to text, figures and tables and allows the placement of figures and tables in their proper position.

(3) Each figure and table must appear on the text page immediately following the first reference in the text to that figure or table.

NUMBER AND DISPERSEMENT OF THESIS COPIES

(1) **Number of copies after thesis seminar**. When the thesis has been approved by the Supervisor(s), the candidate shall submit a minimum of three unbound copies, each secured in a large envelope or a spring-back folder, of the approved thesis to the thesis coordinator, no later than seven days after the final date of scheduled exams in that term. These copies must be corrected of any errors noted by the examiners and must contain all charts, maps, figures, tables and appendices as finally approved.

(2) **Distribution of submitted copies**. The original copy is retained by the department, the first copy is retained by the supervisor and the second copy is given to the student. These copies

are bound at the expense of the department. Any additional copies that the student wishes to have bound must be paid for by the student, at a cost of $12.00 per copy, when the thesis copies are submitted to the department Administrative Assistant.

(4) Any student that does not submit the final copies of the approved thesis on time will receive a grade of IP for ERSC 4F91. Grades will not be submitted to the Office of the Registrar until the final copies of the thesis have been submitted and until all keys have been returned.

PAPER AND PRINTING

(1) A good quality bond paper must be used for all copies of the thesis. The size of the paper must be A3 or 30 x 21 cm (8-1/2 x 11 inches), except for larger drawings and maps, on which no restriction is placed. A margin of 3.8 cm (1-1/2 inches) must be left on the left-side of all bound pages, and margins of 1.9 cm (3/4 inch) on the other three sides. All figures and plates which appear in the text must also fit these margins.

(2) Theses must be printed on laser printers and must be clearly legible. Times Roman 12 point font must be used for all printed text. **Output from a dot-matrix printer is <u>not</u> acceptable.** It is the responsibility of the student to ensure consistent high quality of all printed copies.

(3) All portions of the thesis must be one and one-half spaces, except for quotations, footnotes, legends, tables and references, which shall be single spaced.

(4) The student is responsible for bearing the costs for: i) printing, and; ii) reproducing the required number and any additional copies of the submitted thesis.

(5) Right-hand pages only should be numbered (page number placement to be consistently upper right corner). These should be numbered in one continuous sequence, i.e., from the title page (or from the first page of any matter that precedes it) to the last page of type, in Arabic numerals, from 1 onwards. This sequence should include everything bound in the volume, maps, diagrams, tables, etc., even blank pages.

(6) Photographs and other illustrations should be trimmed and securely fixed, preferably by dry-mounting; photograph album pockets or slits in the pages are not adequate. Under no circumstances should 'cellotape', rubber-based cement or similar material be used for any purpose in any copy of the thesis. Good quality, colour copies or scanned images of photographs and diagrams are permitted. Folded maps, charts and tables should be placed in a pocket for such material at the end of the thesis. Any such loose material should bear the candidate's name and initials, date, title of thesis and "B.Sc. (Hons.) (Earth Sciences) thesis".

DRAFTING LINE DRAWINGS

(1) All line drawings in the submitted thesis must be drawn by the student, either by hand or using graphics software, or someone hired by the student.

(2) Under no circumstances will the departmental draftsperson provide any services, except consultation to thesis students.

(3) All drawing materials must be purchased by the student.

(4) All figures must be neatly drawn and in proper form (e.g. all maps must have scale and north indicated). Hand lettering or "stuck on" typewriter or dot-matrix printer text is not suitable.

(5) As a cautionary note keep in mind the final size of the line drawings in the thesis (i.e., if reduction is necessary ensure that all lines/letters are legible at the necessary reduction). Minimum letter height on final published figures is 1 mm.

GRADUATION

Students intending to graduate at the Spring Convocation must complete an "Application to Graduate" by March 1st. And, students intending to graduate at the Fall Convocation must complete an "Application to Graduate" by August 1st. These applications are available in the Office of the Registrar and must be submitted to them by the dates listed above.

EVALUATION OF THE THESIS

Grades for B.Sc. Thesis will be assigned solely by the Thesis Supervisor(s) and submitted to the Chair for approval.

SEMINARS

All students registered in ERSC 4F91 will present a seminar outlining the results of their thesis research. The seminar will be open to all interested students and faculty and will be advertised within the University. The normal format of the seminar will include an oral presentation of no more than 20 minutes duration followed by up to 10 minutes of questions from the audience. The seminar will not be considered in assigning a final grade for ERSC 4F91 but a grade will not be submitted to the registrar until the seminar has taken place. Normally all ERSC 4F91 seminars will be scheduled for one day during the last full week of classes of Winter Term for D1 and the first week of classes of Fall Term for D4. The specific date will be determined by the Departmental Committee and communicated to students registered in ERSC 4F91 at least one month prior to the seminar date.

APPEALS

It is recognized that under some circumstances students may wish to appeal a final grade. In such instances, the Chair of the Department will appoint an *ad hoc* committee to deal with the appeal.

Appendix I

D1/D4/D7 SCHEDULE FOR ERSC 4F91 (B.SC. THESIS)
2013/14

Thesis Coordinator: TBD
Meetings: Room MC-D441, or as scheduled.

Dates given in bold are firm deadlines. NO EXCEPTIONS

1.	Submission of Supervisor's name to Coordinator	**Friday, September 13, 2013 (D1)** **Friday, January 10, 2014 (D4)** **Friday, May 2, 2014 (D7)**
2.	Submission of Thesis title and meeting with Coordinator: Discussion of Thesis Proposal	**1:00 p.m., Friday, October 4, 2013 (D1)** **1:00 p.m., Friday, February 7, 2014 (D4)** **1:00 p.m., Friday, June 6, 2014 (D7)**
3.	Submission of Thesis Proposal to Coordinator and meeting	**12:00 p.m., Friday, November 1, 2013 (D1)** **12:00 p.m., Friday, March 28, 2014 (D4)** **12:00 p.m., Friday, July 25, 2014 (D7)**
4.	Submission of Thesis rough draft to Supervisor	**Supervisor's deadline**: **March 7, 2014 recommended (D1)** **July 11, 2014 recommended (D4)** **October 31, 2014 recommended (D7)**
5.	Deadline for Final Draft: Original to Thesis Coordinator	**4:00 p.m., Friday, March 28, 2014 (D1)** **4:00 p.m., Friday, August 29, 2014 (D4)** **4:00 p.m., Friday, November 28, 2014 (D7)**
6.	Thesis Seminars	**1st week in April, 2014 (D1)** **Last week in August, 2014 (D4)** **1st week in December, 2014 (D7)** **Exact dates to be determined.**
7.	Deadline for corrected Final Thesis: original & 2 copies to Department Administrative Assistant	**7 days following the last scheduled exam for durations (D1); (D4); (D7).** **Dates as published in the undergraduate calendar.**

Appendix II

An experimental Study of Antidunes on a bed of 0.18 mm sand: Bedform behaviour, internal stratification and fabric

A thesis presented to

the Department of Earth Sciences

Brock University

In partial fulfilment of

the Requirements for the Degree

Bachelors of Science With Honours

in Earth Sciences

by

Andreas Udri

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Appendix III

Earth Sciences Safety Regulations

1) Everyone is bound by the regulations set out in, "Safety in the Sciences, A Manual", (1992, Science Safety Committee, Faculty of Mathematics and Science) and future regulations determined by this committee.

2) All Faculty and technicians have an obligation to ensure that both they and their students adhere to safety procedures. When students are observed breaking safety procedures they must be reported to the Department Safety Officer.

3) Faculty must ensure that students working under their supervision in both teaching laboratories and research areas are fully acquainted with the operation of equipment and possible dangers involved in the use of equipment and hazardous substances. It is the supervisor's responsibility to ensure that students adhere to the Safety Regulations and to make regular checks on them.

4) Keys for laboratories will not normally be issued to students without the consent of the faculty member in whose laboratory the work will be carried out.

5) The Safety Committee of the Faculty of Mathematics and Science may make random checks on laboratories to ensure that Safety Procedures are being enforced. Faculty will ensure that copies of keys to research laboratories are accessible to the Safety Committee and the Chair.

6) Students engaged in field studies must comply with Sections 5.4 and 7.0 of the Faculty of Mathematics and Science, "Safety in the Sciences, A Manual". In particular, the student must wear suitable clothing and safety equipment appropriate to the work. It is the Supervisor's responsibility to ensure that Field Safety regulations are enforced.

7) Students engaged in studies/work outside Ontario must ensure that adequate health and liability insurance has been obtained, and complete the relevant Brock University forms. The Supervisor must ensure that all appropriate forms are completed, and that the Department Chair has approved them before the student leaves.

Appendix IV

THIN AND POLISHED SECTION LABORATORY REGULATIONS

1. All students will work under the direct supervision of the petrographic technician during normal working hours only. No keys will be issued for this laboratory.

2. Students will contact the petrographic technician regarding times they may work in the laboratory. This schedule will be posted by the technician. Students are expected to adhere to this schedule. Where students are unable to make their allotted time schedule, due to bona fide reasons, they must inform the technician beforehand (688-5550 Ext. 3523). Failure to keep allotted times due to unacceptable reasons may result in loss of laboratory privileges.

3. Before using the laboratory, students will be required to attend a series of instructions with the technician on the proper and safe use of equipment. Failure to comply with proper laboratory procedures may result in loss of laboratory privileges.

4. Students must clean all equipment before the end of their scheduled work period.

5. Students will prepare their own samples ready for mounting on glass slides. This will involve slabbing rocks on large trim saws, trimming slabs to thin section size on the trim saw, and grinding one side of thin section slabs with 120, 320 and 600 grit carborundum powder. The technician may request assistance in diamond wheel grinding of polished section slabs.

6. Rocks will be processed in batches of 12. In order to prevent cluttering of the limited work space available in the lab, faculty and graduate students are requested to store additional batches in their assigned rock storage cabinets (in the storage room), ideally in clearly marked trays. In the event that faculty or graduate students are away for extended periods they should submit to the technician a list of sample numbers to be processed and their storage location.

7. All students must consult their supervisors with regard to the number of thin sections to be made. Faculty are requested to attempt to keep this a reasonable amount, not to exceed 30 thin sections and 20 polished sections per student.