

**Western University – ES4490E 2015-2016
Senior Undergraduate Thesis**

Counsellor:

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Coordinator:

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ES 4490E Course Syllabus

Purpose: This course is intended to offer you the opportunity to conduct independent research under the guidance of a supervisor. Your supervisor(s) will also have the opportunity to evaluate your capability to conduct individual, independent research as you develop your Senior Thesis.

Prerequisites: Registration in year four of a Specialization, Honors Specialization, or Professional Program offered by the Department of Earth Sciences, or permission of the Department. Please note that, “Unless you have either the prerequisites for this course or written special permission from your Dean to enroll in it, you may be removed from this course and it will be deleted from your record. This decision may not be appealed. You will receive no adjustment to your fees in the event that you are dropped from a course for failing to have the necessary prerequisites.”

Responsibilities: The student will conduct *independent* research under the guidance of a supervisor and meet all deadlines (please see Course Outline and timetable for more detail). The supervisor will provide guidance similar to what is accorded to an incoming MSc student.

Meetings: The scheduled class meeting timeslot for ES 4490E is Tuesday 1:30-2:30pm in BGS 1084 during the Fall term and Monday 1:30-2:30pm in BGS 1084 during the Winter term. The meetings will be an important means of communication. The meetings, although scheduled weekly, will be held only as circumstances require (i.e., when there is information to convey).

ES 4490E Grading Scheme (for more detail, please see the Course Outline)

- | | |
|---------------------------------------|---|
| 1) Thesis (50%) | *5 mark deduction within 3 days; 10 marks after |
| 2) Research Performance (30%) | Based on reports, interviews and 1 st presentation |
| 3) Oral presentation (15%) | Final presentation |
| 4) Academic participation (5%) | Based on attendance & <i>participation in</i> Colloquia |

**All dates will be finalized at the first course meeting.*

Academic participation: As part of the learning process I expect all students to participate actively in meetings and Departmental Colloquia. **Remember that 5% of your grade is assigned to attendance and participation.** Here are some guidelines to keep in mind:

- You arrive at course meetings and Colloquia on time and are not absent without reason. ...Please arrange for absences beforehand if you anticipate not being able to participate.
- You display body language that communicates interest in what others are saying.
- You ask questions that are thoughtful, penetrating or help clarify concepts.
- You actively encourage others to express their ideas or questions.
- You make outstanding, original, and informative comments.

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Accessibility: Please contact the course instructor if you require material in an alternate format or if you require any other arrangements to make this course more accessible to you. You may also wish to contact Services for Students with Disabilities (SSD) at 661-2111 x 82147 for any specific question regarding an accommodation.

Illness: If you are unable to meet a course requirement due to illness or other serious circumstances, you must provide valid medical or other supporting documentation to the Dean's office as soon as possible and contact your instructor immediately. It is the student's responsibility to make alternative arrangements with their instructor once the accommodation has been approved and the instructor has been informed. In the event of a missed final exam, a "Recommendation of Special Examination" form must be obtained from the Dean's Office immediately. For further information please see:

<http://www.uwo.ca/univsec/handbook/appeals/medical.pdf>.

A student requiring academic accommodation due to illness should use the Student Medical Certificate when visiting an off-campus medical facility or request a Records Release Form (located in the Dean's Office) for visits to Student Health Services. The form can be found here:

https://studentservices.uwo.ca/secure/medical_document.pdf

Statement on Academic Offences: Scholastic offences are taken seriously and students are directed to read the appropriate policy, specifically, the definition of what constitutes a Scholastic Offence, at the following Web site:

<http://www.uwo.ca/univsec/handbook/appeals/scholoff.pdf>.

Plagiarism: The following official statement on Plagiarism is standard for all Western courses and is especially pertinent here!

“Plagiarism: Students must write their essays and assignments in their own words. Whenever students take an idea, or a passage from another author, they must acknowledge their debt both by using quotation marks where appropriate and by proper referencing such as footnotes or citations. Plagiarism is a major academic offence (see Scholastic Offence Policy in the Western Academic Calendar).”

Note that student submitted written materials in ES 4490E may be subject to analysis using a similarity score software package such as Turnitin. ...But I trust that this will not be necessary in a Senior Undergraduate course.

Earth Sciences 4490E, 2015-2016 Purpose, Outline, Evaluation & Schedule

Counsellor: Dr. Sean Shieh, Tel: 519-850-2467; e-mail: sshieh@uwo.ca

Coordinator: Mr. Kevin Jordan, Undergraduate Officer; Tel: ext 84523; e-mail: kjorda5@uwo.ca

The Course Outline

Welcome to ES 4490E, your thesis course!

1. Research Project

Purpose: This course is intended to offer you the opportunity to conduct independent research under the guidance of a supervisor. Your supervisor(s) will also have the opportunity to evaluate your capability to conduct individual, independent research.

Responsibilities: You will conduct **independent** research under the guidance of a supervisor and meet all deadlines. The supervisor will provide the same guidance as would be accorded to incoming MSc students. ...Take advantage of this opportunity!

Procedures: Under supervision of a faculty member, you will choose a research project, carry out research, submit progress reports, write a thesis describing the research findings, and **submit a complete copy** of your thesis, ready for examination **by Monday March 14th, 2016, 12:00 noon to the coordinator, Kevin Jordan, Room BGS 1036**. The thesis will then be examined by two independent reviewers, who will be asked to provide comments.

The examined thesis will be returned to you on Monday April 11th. **One corrected copy must then be submitted to the coordinator and your supervisor(s) by 12:00 noon Friday, April 22nd**. This final submission of your revised thesis marks the completion of ES 4490E. You **must** submit a revised version with corrections by **April 22nd** in order to complete the course! Please note that your supervisor(s) may be asked to confirm that you have indeed completed your thesis, so it is in your best interest to send then a final version with associated data files at or before this time!

2. Weekly meeting times

There is a scheduled, weekly, one-hour meeting for ES4490E students during the fall term on **Tuesday 1:30-2:30 in BGS 1084** and during the winter term on **Monday 1:30-2:30 in BGS 1084**. Please keep these weekly times clear in your schedule. The meetings, although scheduled weekly, will take place only as circumstances require. All ES4490E students will be expected to be at these meetings, as they are an important means of communication among students and faculty.

3. Choosing a thesis topic

Some of you may have a thesis topic lined up already, but many of you will still be trying to define a topic, even if you have already chosen your Supervisor(s). Check through the possible thesis topics offered by Professors and by all means also visit Professors in person to talk about possible projects. By the end of day **Wednesday, September 30** you will need to provide to the coordinator Kevin Jordan your choice of **Supervisor, Thesis title, and Project Description** (less than 100 words). Please use the one page form for this, and make sure that your supervisor has signed it! Please also let me know by e-mail your thesis topic title and supervisor(s).

4. Reports, Interviews and Presentations

During the two terms there will be **three progress reports** and **two presentations** leading to **one final thesis**.

REPORT 1: Due to your supervisor(s) on **Friday Nov. 6, 2015**, this report includes:

- **Thesis Outline:** One page overview of the intended study, including rationale and methods being used.
- **Introduction:** State the problem (that is, your “thesis”) in general terms. Provide here a detailed section on “Previous studies,” leading to a discussion the anticipated significance of your work in the context of these previous studies.
- **References:** Back up your literature review with a comprehensive bibliography that provides appropriate general and specific references for the thesis topic that you are investigating.

You will meet for an official interview with your supervisor(s) at this time to evaluate your progress thus far.

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Bring your lab and/or field notes along with any other relevant documents for your thesis discussion.

Thesis Proposal Presentation: You will give a 5-minute presentation on your thesis proposal and preliminary findings to the assembled class and faculty on **Friday Jan 8, 2016**. A maximum of 5 slides will be used for each presentation. Preparing well for this presentation will help focus your thesis!

REPORT 2: Due on **Friday, Jan 22, 2016**. Building on the first Report, your Second Report should:

- Improve the Introduction to provide a more accurate articulation of the problem, previous work and significance of your work in this context.
- Methods: Describe in detail the methodology (theory, experimental, numerical, and field techniques) used for your work.
- Preliminary Results: Present your preliminary results.
- Discussion: Discuss any interpretations arising from your methods and results thus far, leading to preliminary conclusions.
- In a separate one page document, outline a reasonable plan for completing your project!

You will meet for another official interview with your supervisor(s) at this time to evaluate your thesis at this later stage. This is an excellent opportunity to define the work that remains, and how to best achieve it! As before, bring your lab and/or field notes along with any other relevant documents for your thesis discussion.

REPORT 3: Due on **Thursday February 25, 2016**, this report will be a **complete draft** of your entire thesis, submitted to your supervisor(s) who will evaluate the draft and provide a mark. Your supervisor(s) will meet with you for a third formal interview and provide comments to you so that you can improve your draft for its official submission to coordinator Kevin Jordan on March 14th.

By Tuesday March 15, 2016, please submit to me (on OWL) a one page publication-ready **Abstract** (a “lastname.pdf” or doc file) to be included in the *Program and Abstracts* for the Presentation Day event.

Submission of Thesis and its data for Review

A copy of your complete thesis incorporating all supervisor corrections must be submitted to the Coordinator Kevin Jordan by high noon on **Monday March 14th, 2016**. *With this submission, there must be included a separate statement from the supervisor(s) that all relevant field or laboratory data have been given to the supervisor(s)*. The thesis will be reviewed by two examiners, who will contribute to determining its mark.

Thesis Final Presentation Friday March 18, 2016:

Reserve now in your calendar the afternoon of Friday March 18, 2016 for the final presentation of your thesis. Faculty members, Professional Geologists, other researchers and your peers will be in attendance. Faculty members including supervisors will participate in evaluating the presentations. Details on the program will be available closer to the date.

5. Submission of Final, Revised Thesis Copy

Reviewed copies will be returned to students (see K. Jordan) on **Monday April 11, 2016**. You must now incorporate all the reviewing comments and prepare one final **complete copy** to be submitted to the Coordinator K. Jordan by **high noon Friday, April 22nd**, as well as a **copy for your supervisor(s)**.

Note it is mandatory that every student submits a **final complete thesis by April 22, 2016** as a partial fulfillment of this course. ***Failing to do so will result in a failing mark of 40% for the course!***

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ES4490E Course Evaluation Details

The course will be evaluated using the following rubric:

1) Thesis quality	50%
2) Research Performance	30%
3) Oral Presentations	15%
4) Academic Participation	5%

Details of the evaluation are as follows:

1. Thesis (50% of total course mark)

The thesis submitted on March 14, 2016 will be evaluated by at least two examiners, as well as by the supervisor(s) and the faculty, leading to a final thesis mark. Late submissions within 3 days of due date will receive a 5 mark deduction. A 10 mark deduction will be imposed thereafter. Just don't be late!

Introduction (20% of thesis mark): This is a fundamentally important section. It informs the reader as to: (1) the topic on which you are reporting; (2) previous studies; (3) the goal of the present study and its relevance to (and distinction from) previous studies. The Introduction should serve as the starting point for any reader who wants to know more about the context of what you are studying. Use of simple context figures and extensive use of relevant references is encouraged! Previous studies (e.g., Geological Setting) may be presented under a sub-heading in the introduction or under an entirely separate chapter heading.

Methods [Theory, Experimental, numerical, and Techniques] (15% of thesis mark): Complete development of theory, experimental techniques, numerical methods, and field study work. Use diagrams, maps or tables where appropriate, definitions, expressions etc. relevant to the research should be included. The Methods section is where you demonstrate your grasp of the tools that you used to conduct your research. You may defer items such as a glossary of terms or instrument calibration, etc. to an Appendix following the main text of your thesis.

Results (20% of thesis mark): Presentation of your findings, critically including the use of example figures and summary tables where applicable, as well as a demonstrated understanding of sources of error, this being an evaluation of the quality and quantity of your results. This section does *not* include scientific interpretations or conclusions arising from your results, just a clear and full presentation of the results! An Appendix reporting more detailed results (e.g., a full table of analyses, additional results figures) is encouraged and would be considered as part of this mark.

Discussion and Conclusions (15% of thesis mark): A complete interpretation of your results through a clear, logical discussion of their immediate and long-term implications for the science. There must be a clear statement of the accomplishments of your study, and a clear statement of how results might be ambiguous or incomplete. In this section you can also identify areas for improvement or future work.

References (10% of thesis mark): It is vitally important that you demonstrate an ability to conduct a comprehensive, scholarly, **independent**, literature search. This is an acquired skill that is required in many vocations. Web searches by keyword are by no means comprehensive! A scholarly search includes perusal of reference lists of recent or older significant articles for important contributions missed by web searches. You will benefit from a 'deeper' literature search.

Overall presentation (20% of thesis mark): Format (sub-sections, figures and tables, references), presentation quality (grammar, lack of typographical errors), proper content in Abstract and Front Matter (list of Figures; list of Tables).

2. Research Performance (30% of total mark)

The three reports & interviews with supervisor(s) along with the Thesis Proposal presentation will constitute the mark.

3. Final Oral Presentation (15% of total mark)

This will be based on the Final Presentation:

- quality of the presentation (content, organization and clarity of presentation)
- response to questions, discussion

4. Academic Participation (5% of total mark)

This mark will be based on attendance *and participation in* Colloquia talks given throughout the fall and spring academic terms (holidays and term breaks excluded). Attendance in the Colloquium is mandatory. The Colloquia

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are scheduled for Fridays from 3:30 – 4:30 pm in B&GS 0153). Please check the Earth Sciences website [<http://www.uwo.ca/earth/>] for details.

Thesis Evaluation

Thursday April 7th 2015 – all Faculty Members and thesis supervisors will meet to evaluate ES4490E theses. There will be a meeting commencing at 10:30 am and it will convene until marks are assigned to each thesis. This exercise is part of Faculty teaching responsibility and we ask that all faculty members and supervisors arrange their schedules to keep this time slot (on the last day of classes) free. Prior to the meeting, faculty including the supervisor will have been asked to read and evaluate one or more theses and to comment on them. An attempt will be made to rank the theses one relative to another to ensure that all are reasonably judged. A final mark for the ES4490E thesis will be assigned at this meeting. The Counsellor will arbitrate conflicts and, if necessary, will have final say on marks.