

Dalhousie University  
Department of Earth and Environmental Sciences  
ERTH 6300/3 Credit Hours/Research Design and Scientific Presentations  
Fall/Winter 2022/2023

*Dalhousie University is located in Mi'kma'ki, the ancestral and unceded territory of the Mi'kmaq. We are all Treaty people.*

*We acknowledge the histories, contributions, and legacies of the African Nova Scotian people and communities who have been here for over 400 years.*

**Instructor:** Dr. Owen Sherwood

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**Instructor (Fall term):** Dr. Vittorio Maselli

**Office:** LSC 4618

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**Instructor (Winter term):** Dr. Shannon Sterling

**Office:** LSC 3065

**Email:** [Shannon.Sterling@Dal.Ca](mailto:Shannon.Sterling@Dal.Ca)

**Course delivery:** Classes will be held in person in LSC room B8007 ("Milligan Room", 8<sup>th</sup> floor Biology wing). Classes will be scheduled once per month from September through March. Classes will last for approximately 3-4 hours, depending on enrollment.

### **Course Description**

The focus is on preparing and presenting a research (thesis) proposal, using a format based on NSERC Discovery Grant proposals. Most "in class" time is spent on research design, related topics such as critical reading and error analysis, and on student presentations of the various components of their proposals. Limited instruction in effective writing and presentation will be given in class, with extensive written feedback from the course instructors and classmates on oral and written assignments. Attendance at departmental seminars is compulsory.

### **Course Pre-requisites, Co-requisites and/or other Restrictions**

This course is restricted to current graduate students in the Department of Earth and Environmental Sciences

### **Learning Outcomes**

- Learn the elements of effective research proposal design
- Acquire extensive practice in oral presentation
- Develop skills in effective technical writing
- Practice critical reading and peer review
- Evaluate quantitative methods and uncertainty

### **Learning Management System Site Information**

Lecture materials, handouts and announcements will be posted on the course Brightspace page. Please notify the instructors of any access issues.

## Required Text(s)

There are no required texts. Essential reading material will be emailed or handed out in class or posted on Brightspace.

Assessment	Deadline	Weighting
<b>Fall term:</b>		
Assign. 1 (Oral presentation)	Oct 7, 2022	3%
<ul style="list-style-type: none"> <li><i>Presentation on previous research project: Describe a research or technical project that you have been involved in recently (e.g., honours thesis, summer job, contract, etc).</i></li> </ul>		
Assign. 2 (Written report)	Nov 4, 2022	5%
<ul style="list-style-type: none"> <li><i>Statement of the problem and critical reading: Part 1: Provide a brief summary of your research problem and questions arising from it. Part 2: Provide critical reviews of two peer-review articles relevant to your thesis research.</i></li> </ul>		
Assign. 3 (Written report and oral presentation)	Dec 2, 2022	7%
<ul style="list-style-type: none"> <li><i>Methods and error analysis: Part 1: Describe one of the quantitative methods that you expect to use during your thesis research. Part 2: Evaluate sources of error and uncertainty associated with the particular method.</i></li> </ul>		
<b>Winter term:</b>		
Assign. 4 (Written report)	Jan 10, 2023	5%
<ul style="list-style-type: none"> <li><i>Background section: Prepare a detailed first draft of the "Background" section of your research proposal, incorporating your statement of problem, previous work, need for further work, and scientific significance.</i></li> </ul>		
Assign. 5 (Oral presentation)	Feb 7, 2023	5%
<ul style="list-style-type: none"> <li><i>Objectives and Methods: Prepare the "Objectives" and "Methods" sections of your research proposal, with a diagram showing how they are linked.</i></li> </ul>		
Assign. 6 (Written report)	Mar 7, 2023	NO Grade
<ul style="list-style-type: none"> <li><i>Proposal 1<sup>st</sup> Draft: Prepare a first draft of your complete research proposal, incorporating sections developed in previous assignments.</i></li> </ul>		
Assignment 7	Mar 14, 2023	5%
<ul style="list-style-type: none"> <li><i>Peer Review: Provide a critical peer-review of one of your classmate's draft proposals.</i></li> </ul>		
Final Proposal	Mar 21, 2023	35%
<ul style="list-style-type: none"> <li><i>Final 10-page thesis research proposal according to guidelines below</i></li> </ul>		
Final Presentation	Apr 7, 2023	25%
<ul style="list-style-type: none"> <li><i>Presentation of your research proposal during the Earth Sciences Graduate Symposium, according to the guidelines below, to be held in early April (date TBA)</i></li> </ul>		
Departmental Seminars:	TBA	10%
<ul style="list-style-type: none"> <li><i>Assist with managing departmental seminars during the fall and winter terms (5%); Write a critique of one departmental seminar (5%)</i></li> </ul>		

## Assessment Notes

- Assignments 1 – 6 consist of a 5-10 page written report and/or a 5-10 minute oral presentation (to be specified with each assignment) to be delivered during class in front of the instructors and other students in the class.
- Late assignments will be penalized 20% per day, unless prior permission has been obtained from the instructors.
- Assignments resubmitted after the deadline because “I submitted the wrong file” will be penalized as late. Please ensure that the assignment you submit is the one you intend to submit.
- Missed assignments will be graded as zero unless accompanied by a [Student Declaration of Absence](#) for each of the missed assignment(s), in which case the instructors may offer make-up assignments or reweighting of grades on a case-by-case basis.
- Written assignments may be scanned using plagiarism software.
- Participation in departmental seminars (typically scheduled Thursdays at 11:30am) is mandatory and counts for 10% of the course grade. The departmental seminar coordinator will assign roles (e.g. hosting seminars). You will also be required to write a critique of one seminar.
- The Fall portion of the course needs to be passed with a minimal mark of “B-” in order to continue in the Winter term.
- M.Sc. students seeking transfer to Ph.D. should receive no lower than “A” for the course.
- Conversion of numeric to letter grades and university scale descriptors is available in the Grading Practices Policy at: [https://www.dal.ca/dept/university\\_secretariat/policies/academic/grading-practices-policy.html](https://www.dal.ca/dept/university_secretariat/policies/academic/grading-practices-policy.html))

## Conversion of numerical grades to Final Letter Grades follows the Dalhousie Common Grade Scale

A+ (90-100)	B+ (77-79)	C+ (65-69)	D	(50-54)
A (85-89)	B (73-76)	C (60-64)	F	(<50)
A- (80-84)	B- (70-72)	C- (55-59)		

## Detailed Requirements For Research Proposal And Defense

*Thesis proposal (written):* Ten page (single spaced, including tables, figures and references) proposal of your thesis research, written in a style much like the format your supervisor uses when they submit proposals to NSERC. The general format consists of:

- Identification form (p. 1);
- Summary of proposal and timeline (p. 2);
- Budget (p. 3);
- Actual proposal (p. 4-10), consisting of:
  - Statement of Problem
  - Background
  - Objectives
  - Approach and Methods
  - Anticipated Results and Significance
  - References

The length and format of written proposals is the same for MSc and PhD students, the only difference being that the PhD-level proposals should have **only limited input from the supervisor** (limited editing, but suggestions for content are encouraged and the timeline and depth of the project should be consistent with the length of the degree program: 2 years for MSc; 4 years

for PhD). *Grading:* Written proposals will be graded by a four-person Examination Committee consisting of: one of the EARTH 6300 Instructors, the student's Supervisor, and two Readers. Readers will generally be drawn from the student's thesis committee, and must be members of the Dalhousie Faculty of Graduate Studies. The final grade will be calculated as the average of all grades from the Examination Committee.

*Proposal presentation (oral):* Thesis proposals will be presented at a EARTH 6300 Graduate Symposium to be held in early April (date TBD). Presentations will be 20 minutes in length followed by questions from the examining committee and audience. There will be one round of questions from each member of the examination committee, 20 minutes total. An additional 10 minutes will be allotted to questions from the wider audience. The date, schedule, advertisement, membership of the examining committees, organisation before and during the symposium, and assignment of a grade for the oral grade, will be the responsibility of the instructors of EARTH6300. The questions will evaluate the student's knowledge of, preparation for, and ability to communicate the following: (i) objectives, hypotheses, and important research questions, why they are important, and how they impact current fundamental or applied research at regional or global scales; (ii) a firm understanding at the post-graduate level of background information including: earth system setting, the published literature up to the month of presentation, and methodological approaches including relevant methods that are not being attempted; (iii) innovations and original components of the expected results; (iv) application of proposed methods, justifying the choice, defending the feasibility including knowledge that assumptions and uncertainties are appropriate to achieve the objectives; (v) a time-table to accomplish the research. *Grading:* Presentation grades will be calculated as the average of scores on thesis proposal oral defence forms submitted by faculty members (including adjuncts and examining committee members) present.

## University Policies and Statements

**This course is governed by the academic rules and regulations set forth in the University Calendar and by Senate**

### Academic Integrity

At Dalhousie University, we are guided in all of our work by the values of academic integrity: honesty, trust, fairness, responsibility and respect (The Center for Academic Integrity, Duke University, 1999). As a student, you are required to demonstrate these values in all of the work you do. The University provides policies and procedures that every member of the university community is required to follow to ensure academic integrity.

**Information:** [https://www.dal.ca/dept/university\\_secretariat/academic-integrity.html](https://www.dal.ca/dept/university_secretariat/academic-integrity.html)

### Accessibility

The Advising and Access Services Centre is Dalhousie's centre of expertise for student accessibility and accommodation. The advising team works with students who request accommodation as a result of a disability, religious obligation, or any barrier related to any other characteristic protected under Human Rights legislation (Canada and Nova Scotia).

**Information:** [https://www.dal.ca/campus\\_life/academic-support/accessibility.html](https://www.dal.ca/campus_life/academic-support/accessibility.html)

### Student Code of Conduct

Everyone at Dalhousie is expected to treat others with dignity and respect. The Code of Student Conduct allows Dalhousie to take disciplinary action if students don't follow this community expectation. When appropriate, violations of the code can be resolved in a reasonable and informal manner—perhaps through a restorative justice process. If an informal resolution can't be reached, or would be inappropriate, procedures exist for formal dispute resolution.

**Code:** [https://www.dal.ca/dept/university\\_secretariat/policies/student-life/code-of-student-conduct.html](https://www.dal.ca/dept/university_secretariat/policies/student-life/code-of-student-conduct.html)

### Diversity and Inclusion – Culture of Respect

Every person at Dalhousie has a right to be respected and safe. We believe inclusiveness is fundamental to education. We stand for equality. Dalhousie is strengthened in our diversity. We are a respectful and inclusive community. We are committed to being a place where everyone feels welcome and supported, which is why our Strategic Direction prioritizes fostering a culture of diversity and inclusiveness

**Statement:** <http://www.dal.ca/cultureofrespect.html>

### Recognition of Mi'kmaq Territory

Dalhousie University would like to acknowledge that the University is on Traditional Mi'kmaq Territory. The Elders in Residence program provides students with access to First Nations elders for guidance, counsel and support. Visit or e-mail the Indigenous Student Centre (1321 Edward St) ([elders@dal.ca](mailto:elders@dal.ca)).

**Information:** [https://www.dal.ca/campus\\_life/communities/indigenous.html](https://www.dal.ca/campus_life/communities/indigenous.html)

### Important Dates in the Academic Year (including add/drop dates)

<https://academiccalendar.dal.ca/Catalog/ViewCatalog.aspx?pageid=viewcatalog&catalogid=117&chapterid=-1&topicgroupid=31821&loadusercredits=False>

### University Grading Practices

[https://www.dal.ca/dept/university\\_secretariat/policies/academic/grading-practices-policy.html](https://www.dal.ca/dept/university_secretariat/policies/academic/grading-practices-policy.html)

## Student Resources and Support

### Advising

**General Advising** [https://www.dal.ca/campus\\_life/academic-support/advising.html](https://www.dal.ca/campus_life/academic-support/advising.html)

**Science Program Advisors:** <https://www.dal.ca/faculty/science/current-students/undergrad-students/degree-planning.html>

**Indigenous Student Centre:** [https://www.dal.ca/campus\\_life/communities/indigenous.html](https://www.dal.ca/campus_life/communities/indigenous.html)

**Black Students Advising Centre:** [https://www.dal.ca/campus\\_life/communities/black-student-advising.html](https://www.dal.ca/campus_life/communities/black-student-advising.html)

**International Centre:** [https://www.dal.ca/campus\\_life/international-centre/current-students.html](https://www.dal.ca/campus_life/international-centre/current-students.html)

### Academic supports

**Library:** <https://libraries.dal.ca/>

**Writing Centre:** [https://www.dal.ca/campus\\_life/academic-support/writing-and-study-skills.html](https://www.dal.ca/campus_life/academic-support/writing-and-study-skills.html)

**Studying for Success:** [https://www.dal.ca/campus\\_life/academic-support/study-skills-and-tutoring.html](https://www.dal.ca/campus_life/academic-support/study-skills-and-tutoring.html)

**Copyright Office:** <https://libraries.dal.ca/services/copyright-office.html>

**Fair Dealing Guidelines** <https://libraries.dal.ca/services/copyright-office/fair-dealing.html>

### Other supports and services

**Student Health & Wellness Centre:** [https://www.dal.ca/campus\\_life/health-and-wellness.html](https://www.dal.ca/campus_life/health-and-wellness.html)

**Student Advocacy:** <https://dsu.ca/dsas>

**Ombudsperson:** [https://www.dal.ca/campus\\_life/safety-respect/student-rights-and-responsibilities/where-to-get-help/ombudsperson.html](https://www.dal.ca/campus_life/safety-respect/student-rights-and-responsibilities/where-to-get-help/ombudsperson.html)

### Safety

**Biosafety:** <https://www.dal.ca/dept/safety/programs-services/biosafety.html>

**Chemical Safety:** <https://www.dal.ca/dept/safety/programs-services/chemical-safety.html>

**Radiation Safety:** <https://www.dal.ca/dept/safety/programs-services/radiation-safety.html>

**Scent-Free Program:** <https://www.dal.ca/dept/safety/programs-services/occupational-safety/scent-free.html>

**Dalhousie COVID-19 information and updates:** <https://www.dal.ca/covid-19-information-and-updates.html>