

**Dalhousie University
Department of Earth and Environmental Sciences
ERTH 6300/3 Credit Hours/Research Design and Scientific Presentations
Fall/Winter 2021/2022
Class hours and location TBA**

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Course delivery: Classes will be held in person (room and time TBA), with the option to participate remotely (synchronously).

Course Description

The focus is on preparing and presenting a short 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.

Course Schedule

Classes will be scheduled once per month from September through March. Classes will last for approximately four hours, depending on enrollment.

Course Assessments

Assessment	Date of Evaluation	Weighting
Fall term:		
Assignment 1	Oct 7, 2021	6%
<ul style="list-style-type: none"> • <i>Report 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> 		
Assignment 2	Nov 4, 2021	6%
<ul style="list-style-type: none"> • <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> 		
Assignment 3	Dec 2, 2021	6%
<ul style="list-style-type: none"> • <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> 		
Winter term:		
Assignment 4	TBA - 2022	6%
<ul style="list-style-type: none"> • <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> 		
Assignment 5	TBA - 2022	6%
<ul style="list-style-type: none"> • <i>Objectives and Methods: Prepare the "Objectives" and "Methods" sections of your research proposal, with a diagram showing how they are linked.</i> 		
Assignment 6	TBA - 2022	6%
<ul style="list-style-type: none"> • <i>Proposal 1st Draft: Prepare a first draft of your complete research proposal, incorporating sections developed in previous assignments.</i> 		
Assignment 7	TBA - 2022	4.5%
<ul style="list-style-type: none"> • <i>Peer Review: Provide a critical peer-review of one of your classmate's draft proposals.</i> 		
Final Proposal	TBA – 2022	30%
<ul style="list-style-type: none"> • <i>Final 10-page thesis research proposal according to guidelines below</i> 		
Final Presentation	TBA – week of April 4-8, 2022	25%
<ul style="list-style-type: none"> • <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> 		
Participation	Every class and departmental seminars	4.5%
<ul style="list-style-type: none"> • <i>Attendance and participation at all classes and at least 80% of departmental seminars. Attendance at departmental seminars will be monitored by sign-in sheet.</i> 		

Assessment Notes

- Assignments 1 – 6 consist of a five to ten page written report (to be specified with each assignment) and a three to five 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. The written component is worth 70% and the oral component is worth 30% of each assignment.
- 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.
- Students are required to attend departmental seminars (typically scheduled Thursdays at 11:30am). If there are two or more seminars in a given week you must attend at least one of them; students are strongly encouraged to attend the summary presentations at thesis defenses (first 25 minutes of a graduate thesis defense).
- 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)

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.

Learning and Support Resources

- General Academic Support – Advising
Halifax: https://www.dal.ca/campus_life/academic-support/advising.html
Truro: <https://www.dal.ca/about-dal/agricultural-campus/student-success-centre/academic-support.html>
- Fair Dealing Guidelines <https://libraries.dal.ca/services/copyright-office/guidelines/fair-dealing-guidelines.html>
- Black Students https://www.dal.ca/campus_life/communities/black-student-advising.html
- International Students https://www.dal.ca/campus_life/international-centre.html
- Indigenous Students https://www.dal.ca/campus_life/communities/indigenous.html
 - (You may wish to include the following): The Elders in Residence program provides students with access to First Nations elders for guidance, counsel and support. Contact the elders at the Indigenous Student Centre (1321 Edward Street), by email at elders@dal.ca or by phone at 902-494-6803.
- Student Health Services http://www.dal.ca/campus_life/health-and-wellness/health-services.html
- Counselling https://www.dal.ca/campus_life/health-and-wellness/counselling.html
- Library <http://libraries.dal.ca>
- Copyright Office <https://libraries.dal.ca/services/copyright-office.html>
- E-Learning website <http://www.dal.ca/dept/elearning.html>

- Writing Centre https://www.dal.ca/campus_life/academic-support/writing-and-study-skills.html
- Faculty or Departmental Advising Support: Studying for Success Program http://www.dal.ca/campus_life/academic-support/study-skills-and-tutoring.html
- Student Finance page: https://www.dal.ca/admissions/money_matters.html

University Policies, Statements, Guidelines

This course is governed by the academic rules and regulations set forth in the University Calendar and the Senate. <https://academiccalendar.dal.ca/Catalog/ViewCatalog.aspx?pageid=viewcatalog>

Statements

- 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.

(read more: http://www.dal.ca/dept/university_secretariat/academic-integrity.html)

- Accessibility

The Advising and Access Centre and the Student Success Centre (Agricultural Campus) serve as Dalhousie's centres for expertise on student accessibility and accommodation. Our work is governed by Dalhousie's Student Accommodation Policy to best support the needs of Dalhousie students. Our team work with students who request accommodation as a result of: disability, religious obligation, an experienced barrier related to any other characteristic protected under Canadian Human Rights legislation. (read more at: 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. If an informal resolution can't be reached, or would be inappropriate, procedures exist for formal dispute resolution.

(read more: https://www.dal.ca/campus_life/safety-respect/student-rights-and-responsibilities/student-life-policies/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.

(read more: <http://www.dal.ca/cultureofrespect.html>)

- Recognition of Mi'kmaq Territory

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

- Missed or Late Academic Requirements due to Student Absence

Dalhousie students are asked to take responsibility for their own short-term absences (3 days or less) by contacting their instructor by phone or email prior to the academic requirement deadline or scheduled time and by submitting a completed Student Declaration of Absence to their instructor in case of missed or late academic requirements. Only 2 separate Student Declaration of Absence forms may be submitted per course during a term (Note: faculty, college, school, instructor or course-specific guidelines may set a lower maximum). (read more: [https://cdn.dal.ca/content/dam/dalhousie/pdf/dept/university_secretariat/policy-repository/StudentAbsenceRegulation\(OCT2017\)v2.pdf](https://cdn.dal.ca/content/dam/dalhousie/pdf/dept/university_secretariat/policy-repository/StudentAbsenceRegulation(OCT2017)v2.pdf))

University Policies and Programs

- Important Dates in the Academic Year (including add/drop dates) http://www.dal.ca/academics/important_dates.html
- Dalhousie University's Grading Practices Policy https://www.dal.ca/dept/university_secretariat/policies/academic/grading-practices-policy.html
- Scent-Free Program <http://www.dal.ca/dept/safety/programs-services/occupational-safety/scent-free.html>
- Faculty Information: Student Self-Declaration of Absence https://www.dal.ca/campus_life/safety-respect/student-rights-and-responsibilities/academic-policies/student-absence/student-absence---for-faculty.html

CLASSROOM SAFETY

To help with a consistent message for return to campus, faculty may want to cover the following items with their students at the start of term.

1.0 STANDARD ITEMS

1.1 FIRE ALARMS

In the event of fire alarm activation, immediately exit the building in a calm and orderly fashion. For your reference, the exits to this room are (POINT OUT EXITS TO ROOM), and the nearest exit from the building is (DESCRIBE CLOSEST EXIT OF BUILDING). Please remain outside of the alarming area. Once the alarms have ended, and the fire department has granted approval, someone will announce that people may safely re-enter the facility. In the event of an extended closure, additional information will be announced via DalSAFE.

If the alarm occurs during a test or exam, please remain separated from your classmates once you have exited the facility, and do not communicate with each other. Additional updates will be made by course instructors, once clearance to re-entry is made, should this occur.

1.2 STORM CLOSURES, POWER OUTAGES, etc.

In the event of a closure due to weather, power outage, flood, etc., additional information will be released via multiple channels through DalSAFE. Students should download the DalSAFE app and consider subscribing to text alerts as the most efficient way to receive information as things evolve.

1.3 EMERGENCIES

Due to the size and complexity of our campus, first responders often cannot find the location of the emergency. In the event of an emergency, please **contact Dalhousie Security at 902-494-4109** (or

via the mobile bluelight feature of the DALSAFE mobile app). Dalhousie Security will contact emergency services, and will bring them directly to your location on campus.

- If first aid is required, notify Dalhousie Security first, then contact 911 to have them help you with required first aid steps.
- In the event of a fire, please pull the closest fire alarm pull station and exit the facility. Once safely outside, contact Dalhousie Security to inform them of the location and nature of the fire.

2.0 COVID-19 SPECIFIC ITEMS

2.1 CONGESTION IN THE HALLWAY

Try to avoid congesting within the hallways – where possible, consider travelling from class to class outdoors instead of through our various tunnels connecting university buildings. Where possible, please arrive for your class no sooner than ~5 minutes before the start time.

2.2 ENTERING AND EXITING THE CLASSROOM

To help with traffic flow within classrooms, please enter and exit the room in an orderly manner. Consider filling the room from the front to the back, and exiting the room via the nearest exit to your location.

2.3 STAY HOME IF YOU FEEL UNWELL

If you are not feeling well, please remain home. If you experience symptoms of COVID-19, including a cough (new or worsening) or a fever, you should complete a COVID-19 self-assessment and schedule a COVID-19 test through the province. If you are ultimately diagnosed with COVID-19, follow all guidance you receive from Public Health.

2.4 MASKS

For the safety and comfort of your classmates, please wear your masks within the classroom for the time being. Briefly removing or lowering your mask while actively eating or drinking is OK, but please replace it once you are finished.

2.5 SEEKING HELP

We understand that everyone is experiencing an incredible amount of change this fall. If any students are struggling, and are looking for mental health support, please make sure you reach out for help. There are a variety of mental health resources and supports available for students at www.dal.ca/mentalhealth.

If you wish to chat with a mental health professional, same-day counselling appointments are available at the Student Health and Wellness Centre on the 2nd floor of LeMarchant Place. Appointments can be made by calling 902-494-2171 or online at: www.dal.ca/studenthealth/bookonline

In Truro, you can make an appointment at Health Services in the Dairy Building by calling 902-893-6300.

Students can also access free and confidential mental health counselling support 24 hours per day, 7 days a week, by calling Good2Talk at [1-833-292-3698](tel:1-833-292-3698) or by [texting GOOD2TALKNS to 686868](text:GOOD2TALKNS to 686868).

If you are in crisis, you can always call 902-429-8167 or 1-888-429-8167 to reach the Mental Health Mobile Crisis Team, 24 hours a day, 7 days a week.