

# Integrated Honours' & Research Project Syllabus

Department of Earth and Environmental Sciences

Term 1: ENVS 4901, EARTH 4101, EARTH 4201

Term 2: ENVS 4902, EARTH 4102, EARTH 4202

Fall 2023 / Winter 2024

*Dalhousie University acknowledges that we are in Mi'kma'ki, the ancestral and unceded territory of the Mi'kmaq People and pays respect to the Indigenous knowledges held by the Mi'kmaq People, and to the wisdom of their Elders past and present. The Mi'kmaq People signed Peace and Friendship Treaties with the Crown, and section 35 of the Constitution Act, 1982 recognizes and affirms Aboriginal and Treaty rights. We are all Treaty people.*

*Dalhousie University also acknowledges the histories, contributions, and legacies of African Nova Scotians, who have been here for over 400 years.*

<b>Course Instructor(s)</b>		
Name	Email	Office Hours
Dr. Tarah Wright	<a href="mailto:Tarah.wright@dal.ca">Tarah.wright@dal.ca</a>	LSC 810. Meetings by appointment.

## Course Description

This course is your opportunity to advance your knowledge and skills in a specific area of earth and/or environmental science. You'll work with the Honours Coordinator and a thesis supervisor to develop your skills in proposal writing, as well as executing an independent research project. Finally, you will further develop your skills in terms of research organization and project management.

## Course Prerequisites

Students enrolling in Term 1 ENVS 4901 and EARTH 4201 must have a minimum GPA of 3.5 in their Honours' subject courses (students enrolling in EARTH 4101 must have a minimum GPA of 3.5). Students enrolling in Term 2 ENVS 4902, EARTH 4102 or EARTH 4202 must have completed ENVS 4901.03 or EARTH 4101, or EARTH 4102. Students must meet all pre-requisite requirements as outlined in the course calendar. Further, all students must have attended an Honours' Thesis Information Session and filled out the appropriate paperwork prior to registering in the course (please see Honours' Coordinator and Undergraduate Advisor for more information). Finally, all students in this class must have fourth-year status, be enrolled in an Honours' degree in Earth and/or Environmental Science program and have received permission to enroll from the Honours' Thesis Coordinator.

## Student Resources

LIBGUIDES: The following subject guides can provide quick access to relevant databases, books and other resources for your thesis/major project research:

- a. Environmental Science subject guide  
<http://libguides.library.dal.ca/content.php?pid=454>
- b. Earth Science subject guide  
<https://dal.ca/libguides.com/earthsciences>

BRIGHTSPACE: Please refer to the course Brightspace site for updates, additional literature, course readings, and opportunities for peer support, discussion forums. The site will also be used to upload assignments or additional documents where required and grades.

## University Policies and Programs

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

[http://www.dal.ca/academics/important\\_dates.html](http://www.dal.ca/academics/important_dates.html)

Classroom Recording Protocol:

[https://www.dal.ca/dept/university\\_secretariat/policies/academic/classroom-recording-protocol.html](https://www.dal.ca/dept/university_secretariat/policies/academic/classroom-recording-protocol.html)

Dalhousie Grading Practices Policies:

[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)

Grade Appeal Process: [https://www.dal.ca/campus\\_life/academic-support/grades-and-student-records/appealing-a-grade.html](https://www.dal.ca/campus_life/academic-support/grades-and-student-records/appealing-a-grade.html)

Sexualized Violence Policy: [https://www.dal.ca/dept/university\\_secretariat/policies/health-and-safety/sexualized-violence-policy.html](https://www.dal.ca/dept/university_secretariat/policies/health-and-safety/sexualized-violence-policy.html)

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

## Learning and Support Resources

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

General Academic Support – Advising (Truro): <https://www.dal.ca/about-dal/agricultural-campus/ssc/academic-support/advising.html>

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

On Track (helps you transition into university, and supports you through your first year at Dalhousie and beyond): [https://www.dal.ca/campus\\_life/academic-support/On-track.html](https://www.dal.ca/campus_life/academic-support/On-track.html)

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

Indigenous Connection: <https://www.dal.ca/about-dal/indigenous-connection.html>

Elders-in-Residence (The Elders in Residence program provides students with access to First Nations elders for guidance, counsel, and support. Visit the office in the Indigenous Student Centre or contact the program at [elders@dal.ca](mailto:elders@dal.ca) or 902-494-6803:

<https://cdn.dal.ca/content/dam/dalhousie/pdf/academics/UG/indigenous-studies/Elder-Protocol-July2018.pdf>

Black Student 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.html](https://www.dal.ca/campus_life/international-centre.html)

South House Sexual and Gender Resource Centre: <https://southhousehalifax.ca/about/>

LGBTQ2SIA+ Collaborative: <https://www.dal.ca/dept/vpei/edia/education/community-specific-spaces/LGBTQ2SIA-collaborative.html>

Dalhousie Libraries: <http://libraries.dal.ca/>

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

Dalhousie Student Advocacy Services: <https://www.dsu.ca/dsas?rq=student%20advocacy>

Dalhousie 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)

Human Rights and Equity Services: <https://www.dal.ca/dept/hres.html>

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)

Study Skills/Tutoring: [http://www.dal.ca/campus\\_life/academic-support/study-skills-and-tutoring.html](http://www.dal.ca/campus_life/academic-support/study-skills-and-tutoring.html)

Faculty of Science Advising Support: <https://www.dal.ca/faculty/science/current-students/undergrad-students/degree-planning.html>

## **Safety**

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

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

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

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

## Course Structure

### **Course Delivery**

This course will be delivered in person.

### **Lectures**

Students are expected to attend class weekly in the Fall Semester. Class will be held on Mondays between 1435 and 1725 in the LSC Psychology Wing Room P5208. Students are expected to attend the 3 scheduled classes in the Winter Semester (see below).

## Course Materials

**REQUIRED:** Surviving Your Dissertation: A Comprehensive Guide to Content and Process by Kjel Erik Rudestam (Editor), Rae R Newton (Editor). Fourth Edition, 2015. You can purchase the text on Amazon.ca.

**RECOMMENDED:** Doing Science by Ivan Valiela, 2nd Edition. This can be found at the Killam Library if don't want to purchase.

## Assessment

<b>Component</b>	<b>Weight (% of final grade)</b>	<b>Due Date</b>	<b>Marked By</b>
Preliminary Proposal	5	Term 1 Week 3	Honours' Coordinator (+ peer evaluator feedback)
Research Project Approval Form	0	Term 1 Week 4	Honours' Coordinator
Draft Chapter 1 – Introduction	5	Term 1 Week 6	Honours' Coordinator (+ peer evaluator feedback)
Literature Review Outline	5	Term 1 Week 9	Honours' Coordinator
Methods Presentation	0	Term 1 Week 11	Honours' Coordinator + peer evaluator feedback
Mid-Term Research Presentation	10	Term 1 Week 13	Honours' Coordinator
Final Thesis Proposal	10	Dec 13	Honours' Coordinator + Thesis Supervisor
Conference Abstract	5	Term 2 (TBD)	Honours' Coordinator
Final Thesis/Research Report	60	April 1	Honours' Coordinator, Thesis Supervisor + Independent Reader
Final Thesis Revised	0	April 20	Honours' Coordinator + Thesis Supervisor

NOTE: The grades for Term 1 and Term 2 are added together to give an overall grade. Students will not receive a mark for Term 1 immediately, but rather a single mark for both terms once both Terms 1 and Term 2 are completed. Final grading will be based on the assignments listed above.

## **Other course requirements**

Students are encouraged to regularly attend research seminars within their own discipline.

### *Submit Contract Form*

A contract form (available on BRIGHTSPACE) must be signed by you and your advisor, and a copy must go to the Honours' Coordinator by Week 4.

### *Note on Student Participation*

Students will be assigned peer reviewers for their work. Each student is required to review their assigned peer's submissions 3 times throughout the term as detailed in the course syllabus. Reviews should be given online in the discussion section and may also be discussed in class. Students are not marked on their participation, but full participation is expected as it is essential to creating a robust academic community.

### *Honours' Qualifying Exam Term 2*

Faculty regulations for Honours' degrees require an "Honours' Qualifying Examination" which is over and above the 20 classes required for the degree. We meet this Faculty regulation by giving a grade for an oral presentation and defense of your thesis at the Department of Earth and Environmental Sciences Honours' Thesis Research Symposium which will take place during the exam period – likely on the first day of exams (April 11, 2024 - TBC) but will be confirmed mid-February when the exam schedule is completed. You are expected to be present for all of presentations that day, and the Registrar's Office will work to make sure that no student in the class has an exam conflict on that day. Presentations will be marked by all faculty present the Honours' Thesis Research Symposium. In addition, awards for best Earth and Environmental Science thesis, and best Earth and Environmental Science presentation will be given out after the Honours' Thesis Research Symposium Day. In addition, awards for best Earth and Environmental Science thesis, and best Earth and Environmental Science presentation will be given out at after the culmination of the Honours' Research Symposium.

### *A NOTE FOR STUDENTS TAKING A GIS CERTIFICATE*

Students who are pursuing a GIS Certificate and wish for their Honours' or Major Research project to count towards the Certificate must contact the EES GIS Certificate Coordinator (within the first 3 weeks of the semester (preferably at the time of application) to review their project plan and to receive advice on ensuring eligibility for the certificate. Please note, the software used is not restricted to any specific platform (can be ESRI, QGIS, R, Catalyst, etc.), but the primary analytical method for the project must inherently be a spatial method.

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Conversion of numerical grades to final letter grades follows the

Dalhousie Grade Scale

A+ (90-100)	B+ (77-79)	C+ (65-69)	D (50-54)
A (85-89)	B (73-76)	C (60-64)	F (0-49)
A- (80-84)	B- (70-72)	C- (55-59)	

### Course Policies on Missed or Late Academic Requirements

Assignments submitted late without an approved extension or acceptable reason will be deducted 10% a day. Extensions are granted liberally but must be requested at least three days prior to assignment's original due date. Assignments submitted 7 calendar days past the due date without an extension will be assigned a zero.

### Course Policies related to Academic Integrity

Students are expected to work independently on their thesis/major project research. Further, it is expected that all written assignments in this class be produced by the student alone, without the use of generative AI and large language models (e.g. ChatGPT). Plagiarism detection software Urkund will be used in course.

### Learning Objectives

Learning Outcome	Learning Sub-outcome
<ul style="list-style-type: none"> <li>Develop effective thesis questions</li> </ul>	<ul style="list-style-type: none"> <li>Summarize the four key components to a research question</li> </ul>
<ul style="list-style-type: none"> <li>Appropriately scope a research project</li> </ul>	<ul style="list-style-type: none"> <li>Develop appropriate research questions for thesis project</li> <li>Appropriately summarize three research typologies (exploratory, descriptive, analytic)</li> <li>Describe possible timeframes for research projects (retrospective, cross sectional, prospective)</li> <li>Clearly articulate delimitations of thesis project</li> </ul>
<ul style="list-style-type: none"> <li>Develop a literature review for thesis topic</li> </ul>	<ul style="list-style-type: none"> <li>Appropriately summarize literature on thesis topic</li> <li>Describe the different types of literature reviews</li> <li>Articulate four common approaches to organizing a literature review (topical, distant to close, debate, chronological)</li> </ul>
<ul style="list-style-type: none"> <li>Delineate effective methods for specific thesis topic</li> </ul>	

<ul style="list-style-type: none"> <li>• Demonstrate ability to gather data and generate evidence</li> </ul>	
<ul style="list-style-type: none"> <li>• Express research results effectively and succinctly</li> </ul>	
<ul style="list-style-type: none"> <li>• Use written strategies for the effective dissemination of research results</li> </ul>	
<ul style="list-style-type: none"> <li>• Communicate your project knowledge with accuracy and credibility to a target audience.</li> </ul>	
<ul style="list-style-type: none"> <li>• Develop project planning, implementation and evaluation skills</li> </ul>	

### Course Content

Week	Date	Lesson Topic(s)	Assignments	Readings
1	Sept 11	Introduction to the class Development of research question		
2	Sept 18	How to write a proposal Assignment of peer reviewers	Library assessment quiz	SYD Chapters 1 and 2
3	Sept 25	Preliminary Proposal Presentations  Students will present a 5-minute overview of your research to the class	Preliminary Presentation in Class and Proposal due online  <i>NOTE 1: All students should share this assignment with their supervisors to receive feedback.</i>  <i>NOTE 2: GIS Certificate Students must email a copy of this preliminary proposal to the GIS Certificate Coordinator this week (with cc to both your supervisor and the Honours' Coordinator)</i>	SYD Chapter 3

4	Oct 2	No Class – Truth and Reconciliation Day	Research Project Approval Form  Peer evaluations of preliminary proposal due October 6th online	
5	Oct 9	No Class – Thanksgiving Holiday		
6	Oct 16	How to write a literature review  Writing outlines (for Chapter 2 assignment)  In-person peer evaluation of preliminary proposals	Draft Chapter 1 due	SYD Chapter 4
7	Oct 23	Literature Research Training Session with Kirsten Huhn  Location: TBA		SYD Chapter 10
8	Oct 30	Methods chapters expectations  Peer evaluation of Chapter 1	Peer evaluation of Chapter 1 (in class and online in discussion forum)	
9	Nov 6	Applying to Graduate School and Tri-Council Grants with Niki Power, Scholarships Liaison Officer	Chapter 2 Outline due	
10	Nov 13	No class – reading week		
11	Nov 20	Methods presentations	Present a 5-7 minute overview of your methods to the class	
12	Nov 27	Preparing for Mid-Term Research Presentations  Peer evaluations in class re: methods presentations	Peer evaluation of methods presentations (in class and online in discussion forum)	SYD Ch. 12
13	Dec 4	Mid-Term Research Presentations	Complete SRI online	
	Dec 5	Mid-Term Research Presentations		
14	Dec 13		Final Proposal due	



## Course Schedule Term 2

### **Course Delivery**

In ENVS 4902, EARTH 4102, and EARTH 4201 we will have only 3 formal classes (dates below). Each formal class is designed to have students check in, get information about upcoming assignments (conference proposal, Honours' Qualifying Exam, etc.) and ask questions about the thesis process. In addition, students are expected to meet at least bi-weekly with their supervisors and work at least 6 hours/week on their thesis. Further, students are required to be in monthly contact with the Honours' Coordinator via the Brightspace site (you will be given prompts). The final thesis is due on April 1 and will be worth 60% of your final grade for Terms 1 and 2. The thesis will be marked by (a) the Honours' Coordinator, (b) an independent thesis reader (appointed by the Honours' Coordinator), and (c) your Honours' Supervisor.

### **Lectures**

Students are expected to attend the three lectures in the Winter semester. Classes will be held on Wednesdays between 1735-19:25 in the LSC Common Area C206

### **Course Schedule Term 2**

<b>Date</b>	<b>Topic</b>	<b>Readings</b>
January 17	Developing conference abstracts/proposals	SYD Chapter 9
February 28	Presenting data	SYD Chapters 6 and 7
March 20	Preparing for the HQE	SYD Chapter 12 (review)
April (TBD – likely April 11)	Honours' Qualifying Exam Day	

**Key Dates for Term Two**

- February 28, 2022. Independent readers for all theses chosen by the Honours Coordinator
- Winter Conferences (students are expected to attend at least one of the following):
  - February 2-3, 2024 (Moncton): Atlantic Geoscience Society Colloquium. *Note: the Faculty of Science makes funds available to support student travel to this conference and the Honours Coordinator can help you to apply for these funds.*
    - Students may also want to attend the AUCG at MUN from October 19-21
  - March 2024 (Date TBD): Science Atlantic Environment Conference at the University of Prince Edward Island. *Note: The Faculty of Science makes funds available to support student travel to this conference and the Honours Coordinator can help you to apply for these funds.*
- March 13 – it is HIGHLY RECOMMENDED, but not required to have a 1<sup>st</sup> draft of your thesis complete by now and submitted to your supervisor for feedback. That way your final thesis that will be marked (due April 1) will be in much better shape.
- April 1. Final copy of thesis due (this is the copy that will be marked). It is the students' responsibility to use a file share program to send copies to their supervisor, Independent Reader and the Honours' Coordinator, as well as upload a copy to the Brightspace assignment section.
- Tuesday April 9. Supervisors and Independent Readers are asked to submit their completed marking form to the Honours' Coordinator by noon. Failure to do so will put their students out of the running for the best Earth and Environmental Science thesis awards.
- Thursday April 11(to be confirmed). The Honours' Qualifying Exam (HQE) will take place at the Earth and Environmental Sciences Honours Thesis Research Symposium. Students give a 15-minute presentation followed by 15 minutes of questions from the supervisor, the independent reader and the general audience. If a supervisor or independent reader is unable to attend the HQE, she/he will submit questions to be asked by the Honours Coordinator to ask on their behalf.
- April 20. Submit the FINAL, corrected thesis. Your final grade will not be released until this is submitted to the Honours Coordinator. NB this document should include a copyright page.

## University Policies and Statements

### **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 at 1321 Edward St or [elders@dal.ca](mailto:elders@dal.ca). Additional information regarding the Indigenous Student Centre can be found at: [https://www.dal.ca/campus\\_life/communities/indigenous.html](https://www.dal.ca/campus_life/communities/indigenous.html)

### **Internationalization**

At Dalhousie, 'thinking and acting globally' enhances the quality and impact of education, supporting learning that is "interdisciplinary, cross-cultural, global in reach, and orientated toward solving problems that extend across national borders." Additional internationalization information can be found at: <https://www.dal.ca/about-dal/internationalization.html>

### **Academic Integrity**

At Dalhousie University, we are guided in all our work by the values of academic integrity: honesty, trust, fairness, responsibility, and respect. As a student, you are required to demonstrate these values in all 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. Additional academic integrity information can be found at: [https://www.dal.ca/dept/university\\_secretariat/academic-integrity.html](https://www.dal.ca/dept/university_secretariat/academic-integrity.html)

### **Accessibility**

The Student Accessibility Centre is Dalhousie's centre of expertise for matters related to student accessibility and accommodation. If there are aspects of the design, instruction, and/or experiences within this course (online or in-person) that result in barriers to your inclusion, please contact the Student Accessibility Centre ([https://www.dal.ca/campus\\_life/academic-support/accessibility.html](https://www.dal.ca/campus_life/academic-support/accessibility.html)) for all courses offered by Dalhousie with the exception of Truro. For courses offered by the Faculty of Agriculture, please contact the Student Success Centre in Truro (<https://www.dal.ca/about-dal/agricultural-campus/student-success-centre.html>)

### **Conduct in the Classroom – Culture of Respect**

Substantial and constructive dialogue on challenging issues is an important part of academic inquiry and exchange. It requires willingness to listen and tolerance of opposing points of view. Consideration of individual differences and alternative viewpoints is required of all class members, towards each other, towards instructors, and towards guest speakers. While expressions of differing perspectives are welcome and encouraged, the words and language used should remain within acceptable bounds of civility and respect.

### **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 (Strategic Priority 5.2). Additional diversity and inclusion information can be found at: <http://www.dal.ca/cultureofrespect.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. The full Code of Student Conduct can be found at:

[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)

### **Fair Dealing Policy**

The Dalhousie University Fair Dealing Policy provides guidance for the limited use of copyright protected material without the risk of infringement and without having to seek the permission of copyright owners. It is intended to provide a balance between the rights of creators and the rights of users at Dalhousie. Additional information regarding the Fair Dealing Policy can be found at: [https://www.dal.ca/dept/university\\_secretariat/policies/academic/fair-dealing-policy-.html](https://www.dal.ca/dept/university_secretariat/policies/academic/fair-dealing-policy-.html)

### **Originality Checking Software**

The course instructor may use Dalhousie's approved originality checking software and Google to check the originality of any work submitted for credit, in accordance with the Student Submission of Assignments and Use of Originality Checking Software Policy. Students are free, without penalty of grade, to choose an alternative method of attesting to the authenticity of their work and must inform the instructor no later than the last day to add/drop classes of their intent to choose an alternate method. Additional information regarding Originality Checking Software can be found at:

[https://www.dal.ca/dept/university\\_secretariat/policies/academic/student-submission-of-assignments-and-use-of-originality-checking-software-policy-.html](https://www.dal.ca/dept/university_secretariat/policies/academic/student-submission-of-assignments-and-use-of-originality-checking-software-policy-.html)

### **Student Use of Course Materials**

Course materials are designed for use as part of this course at Dalhousie University and are the property of the instructor unless otherwise stated. Third party copyrighted materials (such as books, journal articles, music, videos, etc.) have either been licensed for use in this course or fall under an exception or limitation in Canadian Copyright law. Copying this course material for distribution (e.g. uploading to a commercial third-party website) may lead to a violation of Copyright law.