

# Environmental Science Capstone Syllabus


Department of Earth and Environmental Science

ENVS 4100 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.*

## Course Instructor(s)

Name		Email	Office Hours
Ben Collison (pronouns: he/him) <a href="#">personal website</a>		b.collison@dal.ca	By appointment* Rowe Management Building, Rm 5058
Alexandre Legault (pronouns: he/him)		alegault@dal.ca	N/A
Cat Roche (pronouns: she/her)		catriona.roche@dal.ca	N/A

\* preferred method of communication to set up an office hours appointment is via Microsoft Teams instant message. Note contact times as follows for the instructors:

- Microsoft Teams instant message: Response time < 3 hours on working days (~8:00-16:30, Monday to Thursday). Responses from Ben will be delayed on Fridays due to work/research obligations.
- Email: 1-3 working days.

## Course Description

Students apply the multidisciplinary knowledge they have acquired during their program of study to real world environmental issues. Students work individually and in groups in preparation towards a formal debate. They evaluate evidence from science, economics, philosophy, and other ways of understanding the world to develop mastery and nuance among current environmental topics.

### *Course Prerequisites*

Must be a fourth-year student. Series of courses including ECON 1101 or ECON 1102, PHIL 2480, STAT 2080, ENVS 2100, ENVS 3200, ENVS 3501 and ENVS 3601 suggested, or have permission of instructor.

## **Course Structure**

### *Course Delivery*

The course will be delivered from January 8 through April 4, 2024. Course delivery will be very interactive through a mix of in-person lectures from your instructor, in-person guest lectures, lecture activities, student presentations, and debates. Supplemental online material will include videos, readings, podcasts, discussions, and other materials.

Since we will be learning actively in class, attendance is paramount. Attendance to each group presentation and debate is required. **If you must miss a presentation/debate class, inform the instructor in advance so accommodations can be made for your group to present/debate in a different time slot.** Not being present for a presentation/debate will result in a zero on that assignment.

Group work will be required. Students may coordinate group work as they wish, but a messaging channel and document storage space/virtual meeting room can be provided for each group in Microsoft Teams if needed.

While we intend to meet in-person for the duration of the semester, classes may need to be delivered online when required by the University. For online instruction, a laptop equipped with a microphone and camera will be required. These online meetings will be through Microsoft Teams. Students are expected to log on with their cameras turned on for the duration of classes and attendance will be taken.

### *Lectures*

**Tuesdays and Thursdays, Life Sciences Centre Common Area C332, 13:05-14:25**

## **Course Materials**

### *Required Resources*

Students must have access to the university library as well as a computer or a functional tablet for word processing, and consistent access to the internet. Learn more about digital tools available to students at this link. If you require support for the course or university technologies you can contact Information Technology Services (ITS) at 1-800-869-3931 or support@dal.ca



**Brightspace®** is our classroom space! All supplementary materials (inclusive of text, video, and audio materials) and lecture slides will be provided through Brightspace. This is where you'll find the syllabus, class announcements, course schedule, readings, dropboxes for

submitting assignments, and discussion boards for questions. Readings may be provided as little as one week prior to the next scheduled synchronous discussion to address current affairs.



**MS Teams®** is our conferencing platform. Should circumstances require us to switch to an online format, all students will be added to a Teams page for online classes. Groups may be designated a private channel they can use to organize and conduct meetings.

### *Optional Resources*

Students may find the following textbook useful. It is not necessary to purchase a copy as Dalhousie has a free e-book available for students (available through [libraries.dal.ca](http://libraries.dal.ca)).

Dalton, Philip and John R. Butler. *Public Policy Argumentation and Debate: A Practical Guide for Advocacy.* (PPAD) New York, USA: Peter Lang Inc., 2015.

## Assessment

Assessment	Format	% of total grade	Due date
1. Evaluating evidence in environmental law or policy	Individual	10	January 25
2.a. Using evidence to advocate for change - <i>hand-in</i>	Groups of 4	10	February 12
2.b. Using evidence to advocate for change - <i>in-class presentation</i>	Groups of 4	10	February 12
3. Briefing note to a policymaker	Individual	20	March 7
4.a. Information interview proposal (including TCPS 2 CORE completion)	Individual	5	February 15
4.b. Information interview with an environmental professional	Individual	20	March 26
5.a. Class Debate	Groups of 4	20	March 14 - 21
5.b. Class Debate - <i>self and peer evaluation &amp; reflection</i>	Individual	5	March 28
Course SLEQ (75% of students)	Individual	+1 (bonus)	April 9

Assignments are accompanied by a detailed instruction sheet, verbal instructions, and a marking rubric on Brightspace. Short summaries of the assignments are as follows:

### **Assignment 1: Evaluating evidence in environmental law or policy**

Evidence-based decision making is an approach that involves consciously setting aside the accepted conventions and hierarchy of opinion, and instead, using critical thinking and the best available scientific evidence to advise the path forward. Laws and policies that are informed by evidence are more likely to be effectively implemented and successful in causing meaningful change. In this

assignment, you will learn how to critically evaluate evidence used, or not used, in the drafting and implementation of an environmental law or policy.

### **Assignment 2: Using evidence to advocate for change**

Many environmental issues today, such as climate change and biodiversity loss, are daunting on a global scale. Environmental advocacy is a fundamental force driving positive change, influencing policies, behaviors, and societal norms. Often starting at grassroots local scales, advocacy will continue to be an essential component of global efforts to address the interconnected environmental challenges facing our society. However, changing the status quo is not always straightforward. You will build upon tools and techniques learned in-class to develop an innovative campaign, advocating for change related to an environmental issue.

For Assignment 2, you will choose groups of four and sign up with your campaign topic to advocate for change related to a contemporary environmental issue. The assignment will be completed in two parts: (a) a group hand-in submission with the written/visual/verbal components of your proposed campaign; and (b) an in-class presentation.

### **Assignment 3: Briefing note to a policy maker**

Briefing notes play a critical role in the workplace by providing concise, organized, and relevant information to decision-makers to understand the implications, risks, and benefits associated with proposed strategic directions (e.g., changes in policy, stakeholder communication, advocacy campaigns). By designing an effective briefing note, you will become familiar with one of the most common techniques for science/policy communication in fields such as environmental consulting, public outreach and education, environmental impact assessment, wildlife management, emergency response planning, and many more.

### **Assignment 4: Information interview with an environmental professional**

Working professionals can offer firsthand insights into the daily responsibilities, challenges, and rewards of working in the environmental field. This real-world perspective is intended to help you bridge the gap between academic knowledge and practical applications, particularly with regards to understanding how evidence is used in the environmental sector.

The assignment will be completed in two parts: (a) an information interview proposal and proof of completion of the Tri-Council Policy Statement Course on Research Ethics ([TCPS 2 CORE](#)) course; and (b) the information interview with an environmental professional and a written reflection about what you learned.

### **Assignment 5: Class debate**

Debating environmental issues fosters a well-rounded skill set that is valuable not only in academic settings but also in professional and civic contexts where critical thinking and informed decision-making are essential. Being successful in a debate requires effective communication skills, including the ability to articulate ideas, respond to counterarguments, and engage in respectful discourse.

We covered many techniques for evaluating evidence and formulating arguments in the first half of the course through in-class exercises and the previous assignments. The class debate provides the

opportunity for you to apply those skills and knowledge to practice – these include evaluating the status quo, synthesizing evidence, and targeting your audience.

### Grading

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

**All assignments are due at 10:00 PM Atlantic Daylight Time** unless stated otherwise on assignment instructions.

A deduction of 10% will be taken off for each day an assignment is late and will not be accepted more than five days after the due date. Arrangements to hand in assignments late due to extenuating circumstances must be made with the instructor at least 48 hours before the assignment is due. To improve time management skills, visit [Studying for Success](#) for a self-assessment, free workshops, and personal coaching.

### Course Policies related to Academic Integrity

Originality checking/plagiarism detection software will be used to ensure academic integrity in this course. When completing individual assignments, students are expected to develop their own original work. **The use of generative AI tools such as ChatGPT to complete assignments is not permitted.** Any suspected academic integrity violations will be immediately reported to the faculty academic integrity officer, and proven violates may result in dismissal from your university program.

### Learning Objectives

This course will encourage students to:

- Develop deep knowledge in a specific topic or issue in environmental science
- Apply and integrate knowledge/skills from prior courses in ENVS and other subjects
- Learn skills and tools for developing an argument or position on a specific environmental topic or issue; skills include evaluating evidence, realizing the limitations of evidence, and crafting an argument from evidence
- Identify key challenges faced by environmental decision makers, such as the scope and boundaries of the challenge to frame the debate statement
- Dissect current environmental debates and discuss their scientific basis including controversies and uncertainties
- Practice oral presentation and teamwork skills

## Course Content

The course is structured in a series of lectures and activities which occur on a weekly basis. The **schedule could be subject to further change**, particularly the scheduling of guest speakers and possible 'snow days;. You will be informed of schedule changes via Brightspace announcements.

Week	Date	Topic	Tasks and due dates
<b>1</b>	Tues - Jan 9	Course orientation	▪ <b>Read syllabus</b>
	Thurs - Jan 11	Part 1: Evidence in decision-making	
<b>2</b>	Tues - Jan 16	Part 2: Evidence in decision-making	▪ <b>Sign up for Assignment 2</b>
	Thurs - Jan 18	Leadership in environmental science and management (Guest lecture: Dr. Anika Cloutier)	
<b>3</b>	Tues - Jan 23	Environmental science communication	▪ <b>Sign up for Assignment 4</b>
	Thurs - Jan 25	Data visualization (Guest lecture: Poppy Riddle)	▪ <b>Assignment 1 due (10pm)</b>
<b>4</b>	Tues - Jan 30	Part 1: Advocacy in practice	
	Thurs - Feb 1	Part 2: Advocacy in practice	
<b>5</b>	Tues - Feb 6	Crash course on information interviews	
	Thurs - Feb 8	Interference in science communication (Guest lecture: Samantha Chu)	▪ <b>Assignment 2a due (Feb 12, 10pm)</b> ▪ <b>Assignment 2b due (Feb 12, 10pm)</b>
<b>6</b>	Tues - Feb 13	<b>Assignment 2b presentations (x 5)</b>	
	Thurs - Feb 15	<b>Assignment 2b presentations (x 5)</b>	▪ <b>Assignment 4a due (10pm)</b>
<b>7</b>	Tues - Feb 20	Reading Week - No Class	
	Thurs - Feb 22	Reading Week - No Class	
<b>8</b>	Tues - Feb 27	Part 1: Debate 101	▪ <b>Sign up for Assignment 5</b>
	Thurs - Feb 29	Part 2: Debate 101	
<b>9</b>	Tues - Mar 5	How to be an effective public speaker (Guest lecture: Dr. Susan Stackhouse)	
	Thurs - Mar 7	Debate preparation: opening arguments	▪ <b>Debate teams released</b> ▪ <b>Assignment 3 due (10pm)</b>
<b>10</b>	Tues - Mar 12	Debate preparation: rebuttals	
	Thurs - Mar 14	<b>Assignment 5a: Class Debate (x 2)</b>	
<b>11</b>	Tues - Mar 19	<b>Assignment 5a: Class Debate (x 2)</b>	
	Thurs - Mar 21	<b>Assignment 5a: Class Debate (x 1)</b>	
<b>12</b>	Tues - Mar 26	How to give and take constructive criticism	▪ <b>Assignment 4b due (10pm)</b>
	Thurs - Mar 28	Navigating a career in environmental science (Guest lecture: Dr. Alana Westwood)	▪ <b>Assignment 5c due (10pm)</b>
<b>13</b>	Tues - Apr 2	Resume and CV workshop (Guest lecture: TBD)	
	Thurs - Apr 4	Course wrap up and review	
<b>14</b>	Tues - Apr 9	No Class	▪ <b>SLEQ forms</b> (75% of students must complete for everyone to receive +1% on final grades)

## 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.



## Student Resources and Support

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>