

Environmental Informatics Syllabus

Department of Earth and Environmental Sciences

ENVS 2100 Summer 2025

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
Christiane Zoghbi	christiane.zoghbi@dal.ca	TBA

Course Description

Environmental Informatics is the knowledge, skills and tools which enable information to be collected, managed and disseminated to support research in environmental science. Students develop analytical skills using a variety of software including spatial querying in GIS. Identification of fallacies in the media and effective science communication are introduced and applied to current environmental issues.

Course Prerequisites: ENVS 1100.03 and ENVS 1200.03, and STAT 1060.03

Course Structure

Course Delivery: In-person. Course duration: May 5-15 excluding weekends.

Lectures: M, T, W, R, F; 09:35-12:25; Studley KENNETH C ROWE MANAGEMENT 3080

Laboratories:

M, T, W, R; 13:35-16:25 & F; 13:05-16:25; Studley KENNETH C ROWE MANAGEMENT 3080

Course Materials

Textbook. There is no textbook for this course. Reading materials will be posted on Brightspace.

Student Response Systems. Throughout the term we may use a series of online student response systems for polling the class. Examples include Socrative (www.socrative.com), Poll Everywhere (www.pollev.com) and functions built into Collaborate Ultra and BrightSpace and/or MS Teams. All platforms are free and no additional fees are required.

Assessment

Component	Weight	Due Date
Assignments		
DAILY Exercises x 7 (10% each)	70%	End of Class
Participation	10%	Ongoing
FINAL QUIZ	20%	Last Class (3h)

Assignments

There are multiple daily exercises that build on discussion topics and are based on work completed in the class and lab.

Final Quiz

The final quiz is computer-based and covers course materials from the start of class. A review session will be provided the day before the quiz.

Other course requirements

Participation: This is determined through your regular attendance and engagement in class activities.

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

Late penalties: Assignments handed in on the due date will be evaluated at 100% of their potential score. Late assignments will be subject to a late penalty of 10% per day (including

weekends). Assignments submitted 7 calendar days past the due date will be assigned a zero. If you require accommodation, please speak with me in advance of the due date or at most, two days after the due date has passed.

Missed Quiz, Field Excursion, or Final Exam: Students must email me prior to the quiz or exam day if they are not able to write the assessment. One lowest or missed quiz grade may be dropped.

Cases will be reviewed individually to determine if a missed assessment will be replaced by (a) a make-up quiz offered on another date, (b) an alternate assignment in lieu of the exam or (c) a re-weighting of already assessed components. Missing a field day without just cause will result in a 1% deduction from your final participation grade. The reason for this is your absence indicates no contribution to collection of data or the processing of samples, and in some cases, leaves group members with additional work. Students who miss a class must still complete the assignment and speak with classmates to have the data shared with them. We will help you get caught-up but your responsibility is to be proactive and seek out next steps.

Student Declaration of Absence: The new Student Declaration of Absence (SDA) Form will be used in this course and will replace sick notes for absences of three days or fewer that result in missed or late academic requirements. The form can be accessed through Brightspace or submitted to me via email. Submission does not provide automatic exemption from any academic requirements that were missed or late during an absence. Any alternate coursework arrangements for missed or late academic requirements are at the discretion of the course instructor. Students must also email the instructor prior to the due date if a deadline is going to be missed.

Course Policies related to Academic Integrity

Feel free to use AI-driven tool to assist you in learning but remember that the objective is for you to acquire these competencies and outcomes in this course. You are responsible for all work that you produce, whether assisted by an AI-driven tool or not. You must acknowledge all tools used to assist you. If applicable, you must provide links to chat logs. If the work that you produce is suspected to misrepresent your own competencies, you may be asked to complete a supplemental assessment to evaluate your mastery of course outcomes.

Learning Objectives

After successfully completing this course, students will be able to:

- Understand sources of information required for addressing environmental challenges
- Identify a suite of contemporary tools and techniques in environmental informatics

- Apply literacy, numeracy, and critical thinking skills to environmental problem-solving
- Utilize geographic information systems (GIS) at an introductory level
- Apply basic R coding language to view, query, and visualize environmental data

Course Content

List the lecture topics along with an approximate schedule of their delivery.

DAY	Date		Class Activity	Due Dates
1	May 5	LEC	Welcome, Course Intro, Group Activities	
		LAB	Excel Data Tools	
2	6	LEC	Graphing & Data Visualization	
		LAB	Excel Data Tools	Exercise 1 @ end of day (11 :59pm)
3	7	LEC	Census Guest Lecture with Julie Marcoux Power of Maps, Part 1	
		LAB	Creating Census Variables	Exercise 2 @ end of day (11 :59pm)
4	8	LEC	Intro to Geographic Information Systems Intro to Cartography	
		LAB	Mapping Census Variables	
5	9	LEC	Introduction to Remote Sensing	
		LAB	False Colour Imagery	Exercise 3 @ end of day (11 :59pm)
WEEKEND NO CLASS				Exercise 4 @ end of day Sunday (11 :59pm)
6	12	LEC	Intro to Coding in R	
		LAB	Creating R Graphs	Exercise 5 due, end of day @ 11:59pm
7	13	LEC	Logical Fallacies	
		LAB	Information visualization	Exercise 6 @ end of day (11 :59pm)
8	14	LEC	Science Advocacy	
		LAB	Letter for Change Campaign	Exercise 7 @ end of day (11 :59pm)
9	15	LEC	Course Review	
		LAB	Open Lab	
10	16	LEC	FINAL QUIZ (3 hours)	In-Class

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. Additional information regarding the Indigenous Student Centre can be found at: 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

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) 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

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

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/about/leadership-governance/academic-integrity/faculty-resources/ouriginal-plagiarism-detection.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.