Environmental Informatics Syllabus
Department of Earth and Environmental Sciences
ENVS 2100 Fall 2023

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.

Instructors

	Name	Email	Office Hours
Course	Dr. Caroline Franklin (she/her)	Caroline.Franklin@dal.ca	Wednesdays 12:00 - 14:00 in LSC 813 or by appointment (email to schedule)
Lab	Caitlin Cunningham (she/her)	caitlin.cunningham@dal.ca	Fridays 12:00 - 14:00 or by appointment (email to schedule)

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, ENVS 1200.03, and STAT 1060.03

Course Structure

Course Delivery
Blended (in-person laboratories and asynchronous online lectures). Laboratories and exams require on-campus attendance.

Lectures
Asynchronous online (video recordings will be posted on Brightspace)

Laboratories
B01 Wednesday at 10:05 – 11:25 in McCain Arts & SS 2019
B02 Monday at 10:05 -11:25 in McCain Arts & SS 2019

Course Materials

There is no textbook for this course. Students are required to check Brightspace regularly for announcements, grades, materials, and other information. To watch online lectures, students will need access to a computer, a stable Internet connection, and headphones.

Assessment

Component	Weight	Due date/Date	Time/Length
Assignments			
1. Data Management in Excel	15%	B01: September 26 B02: September 24	11:59 pm AT
2. Mapping Census Data with ArcGIS Pro	15%	B01: October 20 B02: October 27	11:59 pm AT
3. Intro to Remote Sensing and Coding in R	15%	B01: November 21 B02: November 19	11:59 pm AT
4. Environmental Communication	15%	B01: December 6 B02: December 4	11:59 pm AT
Midterm Exam	15%	B01: October 25 B02: October 23	In class (lab)
Participation	5%	Ongoing	-
Final Exam	20%	Exam period	3 hours

Exams: There will be one midterm exam and one final exam, both of which are in person. The final exam is cumulative (i.e., includes course materials from the entire term).

Assignments: There are four assignments that build on class topics and are based on work completed in the computer lab. Assignments will often need to be completed outside of class time depending on your progress. Please contact the instructor if you need additional assistance beyond what is provided in class. Assignments should be submitted electronically on Brightspace prior to the submission deadline.

Participation: This grade is determined by engagement in class and completion of 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

Assignments: Late assignments will be subject to a late penalty of 10% per day (including weekends). Assignments submitted seven calendar days past the due date will be assigned a zero.

Midterm exam: Students who miss the midterm will automatically have the 15% of the grade represented by the midterm applied to the final exam which will then be worth 35%.

Student Declaration of Absence: The Student Declaration of Absence 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 submitted to the instructor 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.** The Student Declaration of Absence form may not be accepted more than twice during the term.

Course Policies related to Academic Integrity

Students are encouraged to learn from each other but must complete and submit assignments independently.

Learning Objectives

- 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

Lecture schedule

Week	First day of the week	Topic	Associated Assignment
1	September 4	Course Introduction	-
2	September 11	Finding and Managing Environmental Data	1
3	September 18	Graphing and Data Visualization	1
4	September 25	Introduction to Geographic Information Systems	2
5	October 2	The Canadian Census (in-person guest lecture during B01 lab on Oct. 4)	2
6	October 9	The Power of Maps	2
7	October 16	Midterm Review	-
8	October 23	No Lecture (Midterm Week)	-
9	October 30	Introduction to Remote Sensing	3
10	November 6	Introduction to Coding in R	3
-	November 13	No Lecture (Fall Study Break)	-
11	November 20	Logical Fallacies in the Media; Science Communication and Advocacy	4
12	November 27	Course Review	-

Lab Schedules (dependent on section)

B01 Lab Schedule (Wednesdays)

Date	Topic
September 6	No Lab
September 13	MS Excel Tips and Tricks; Assignment 1 Demonstration
September 20	Assignment 1 Demonstration
September 27	ArcGIS Pro; Assignment 2 Demonstration
October 4	Guest Lecture (for B01 and B02 students)
October 11	Lab Work
October 18	Lab Work
October 25	Midterm exam
November 1	Satellite Imagery; Assignment 3 Demonstration
November 8	Coding Graphs in R; Assignment 3 Demonstration
November 15	No class (Fall Study Break)
November 22	Assignment 4 Demonstration
November 29	Course Review

B02 Lab Schedule (Mondays)

Date	Topic
September 11	MS Excel Tips and Tricks; Assignment 1 Demonstration
September 18	Assignment 1 Demonstration
September 25	ArcGIS Pro; Assignment 2 Demonstration
October 2	No class (National Day for Truth and Reconciliation)
October 4 (Wednesday)	Guest Lecture (please attend B01 lab if possible)
October 9	No class (Thanksgiving Day)
October 16	Lab Work
October 23	Midterm exam
October 30	Satellite Imagery; Assignment 3 Demonstration
November 6	Coding Graphs in R; Assignment 3 Demonstration
November 13	No class (Fall Study Break)
November 20	Assignment 4 Demonstration
November 27	Course Review
December 4	Lab Work
December 5	Lab Work (optional)
December 6	No lab

Student Resources

University Policies and Programs

Important Dates in the Academic Year (including add/drop dates):
http://www.dal.ca/academics/important_dates.html

Classroom Recording Protocol:
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

Grade Appeal Process: 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

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

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

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

Indigenous Student Centre: 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 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

International Centre: 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

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

Study Skills/Tutoring: 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

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/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.