



Faculty of Science Course Syllabus | Department of Earth and Environmental Sciences

ENVS2100 | Fall 20214

Environmental Informatics

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

Instructor:	Dr. Amy Mui (amy.mui@dal.ca), Dr. Sian Kou-Giesbrecht (sian.kougiesbrecht@dal.ca)
Teaching Support:	TA: Renée Hall (renee.hall@dal.ca) MD: Hannah Freeman (hannahfreeman@dal.ca)
Course Delivery:	In-person classes and labs.

	DAY	TIME	LOCATION
Lectures:	MON	2:35pm-3:55pm	MCCAIN2019
Labs:	WED	2:35pm-3:55pm	MCCAIN2019

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 an introduction to spatial querying in GIS. Identification of fallacies in the media and principles of effective science communication are introduced and applied to current environmental issues and challenges.

Course Prerequisites: ENVS 1100.03 or ENVS 1200.03 and STAT 1060.03

Learning Objectives / Outcomes

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 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.

Course Assessment

Component	Weight	Date	Length/Time
Quizzes			
Mid-term Quiz	15%	Wed Oct 16	In-Class
Assignments			
1. LAB: Data Management in Excel	10%	Sunday Sept 22	End of day, 11:59pm AST
2. LAB: Mapping Census Data with ArcGIS Pro	15%	Sunday Oct 13	End of day, 11:59pm AST
3. Remote Sensing Activity	5%	Sunday Oct 27	End of day, 11:59pm AST
4. LAB: Intro to Coding in R	12.5%	Sunday Nov 10	End of day, 11:59pm AST
5. LAB: Environmental Communication	12.5%	Sunday Dec 1	End of day, 11:59pm AST
Participation	10%	Ongoing	
FINAL EXAM	20%	Exam Period	3 hours

Tests: There will be one mid-term quiz and one final exam. The final exam is computer-based and covers course material from the entire term.

Assignments: There are *five 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 how quickly you work. Please reach out if you need additional assistance beyond what is provided in class. Assignments are submitted electronically through the Brightspace on the due date. See 'Important Notes' section for policy on late assignments.

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

Course Schedule

Week	Date	Class Activity	Quizzes & Due Dates
1	Sep 4	LAB Course Intro, Welcome, Group Activities	
2	9	LEC Finding and Managing Environmental Data	
	11	LAB LAB 1 Demo (Excel)	
3	16	LEC Data Visualization & Graphing	
	18	LAB LAB 1 Demo (Excel)	LAB 1 DUE: Sun Sept 22 @11 :59pm
4	23	LEC The Canadian Census and Its Relevance, Guest Julie Marcoux	
	25	LAB LAB 2 Demo (ArcPro)	
5	30	LEC **Truth & Reconciliation** NO CLASS Watch video 'Intro to Geographic Information Systems' before end of week.	
	Oct 2	LAB LAB 2 Demo (ArcPro)	
6	7	LEC The Power of Maps, Guest Jennifer Strang	
	9	LAB LAB 2 Optional Lab	LAB 2 DUE: Sun Oct 13 11:59pm
7	14	LEC **Thanksgiving** NO CLASS	

		16	LAB	MIDTERM (during lab time)	
8		21	LEC	Introduction to Remote Sensing	
		23	LAB	LAB 3 Short RS Activity	LAB 3 DUE: Sun Oct 27 @ 11:59pm
9		28	LEC	Introduction to Coding in R	
		30	LAB	LAB 3 Demo (R programming)	
10	Nov	4	LEC	Introduction to Coding in R	
		6	LAB	LAB 3 Demo (R Programming)	LAB 4 DUE: Sun Nov 10 @ 11:59pm
11	Nov	11	LEC	Fall Study Break, NO CLASS	
		13	LAB	Fall Study Break....Remember to study!	
12		18	LEC	Logical Fallacies in the Media	
		20	LAB	Lab 4 Demo (Infographics in PPT)	
13		25	LEC	Science Communication & Advocacy	
		27	LAB	Lab 4 Demo (Infographics in PPT)	LAB 5 DUE: Sun Dec 1 @ 11:59pm
14	Dec	2	LEC	Course Review – game-style	
		3	LAB	Course Review – computer-based	
		4	LEC	OPTIONAL Q&A period. Lab will be staffed.	
15	Dec	6-17		Exam Period	

IMPORTANT NOTES:

- This schedule is tentative and may change slightly depending on class interests and time available. The syllabus will be updated accordingly and posted on Brightspace.
- All course materials will be posted on Brightspace - please login to the site regularly. In order to receive timely notifications, please **sign-up to receive immediate text or email notifications** when new course announcements appear. You can do so by clicking on your name in the top right corner of Brightspace > select *Notifications* > under *Instant Notifications* check “Announcements – new announcement available”.
- The last day to drop fall session courses without a ‘W’ (for withdrawn) is October 2. View this and other important dates here: https://www.dal.ca/academics/important_dates.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)	

University Policies and Statements

This course is governed by the academic rules and regulations set forth in the University Calendar and by Senate

Missed or Late Academic Requirements due to Student Absence

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 an accommodation, please speak with an instructor in advance of the due date or at most, two days after the due date has passed.

Missed Midterm or Final Exam: Students must email an instructor prior to the quiz or exam day if they are not able to write the assessment. 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.

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. At Dalhousie University, we are guided in all of 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 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. Generative AI and large language models such as ChatGPT

Information: https://www.dal.ca/dept/university_secretariat/academic-integrity.html

Students are allowed to work together on assignments and are encouraged to do so, but the collaborative effort must be fair, balanced, and devoid of copying from peers. **All online quizzes must be written individually.**

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>

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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/original-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.

Student Resources and Support

Dalhousie COVID-19 information and updates:

<https://www.dal.ca/covid-19-information-and-updates.html>

Advising

General Advising https://www.dal.ca/campus_life/academic-support/advising.html

Science Program Advisors: <https://www.dal.ca/faculty/science/current-students/academic-advising.html>

Indigenous Student Centre: https://www.dal.ca/campus_life/communities/indigenous.html

Black Students Advising Centre: https://www.dal.ca/campus_life/communities/black-student-advising.html

International Centre: https://www.dal.ca/campus_life/international-centre/current-students.html

Academic supports

Library: <https://libraries.dal.ca/>

Writing Centre: https://www.dal.ca/campus_life/academic-support/writing-and-study-skills.html

Studying for Success: https://www.dal.ca/campus_life/academic-support/study-skills-and-tutoring.html

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

Fair Dealing Guidelines <https://libraries.dal.ca/services/copyright-office/fair-dealing.html>

Other supports and services

Student Health & Wellness Centre:

https://www.dal.ca/campus_life/health-and-wellness/services-support/student-health-and-wellness.html

Student Advocacy: <https://dsu.ca/dsas>

Ombudsperson:

https://www.dal.ca/campus_life/safety-respect/student-rights-and-responsibilities/where-to-get-help/ombudsperson.html

Safety

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

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

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

Scent-Free Program:

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