

Environment and Human Health Syllabus

Department of Earth and Environmental Sciences

ENVS/GEOG 3400 and HPRO 3422 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
Abraham Munene	Abraham.Munene@dal.ca	Thursdays, 12.00-13.00
Jessie Callum	js968609@dal.ca	Thursdays, 12.00-13.00

Course Description

This course examines the relationships between the health of populations and health determinants in the context of environmental sustainability. Weekly laboratory exercises will teach students how epidemiology and geographic information science can be used to assess the links between the health of human populations and the health of the environment, and how to use these tools for environmental health research.

Course Prerequisites

Must be a third-year student or have permission of instructor.

Course Exclusions

None

Course Structure

Course Delivery

Lectures, journal clubs, and tutorials are to be delivered in-person (unless otherwise noted). Lectures will not be recorded, except for students requiring special academic accommodation.

1. Journal Club:

The journal club session is worth 40% of your grade. A journal club is a regular gathering of people (generally in academic settings) who meet to discuss a reading or scientific paper found in a peer-reviewed research journal. A preassigned team will present a summary of a chosen paper that the whole group has read. Then, the discussion begins. Attendees ask clarifying questions, inquire about different aspects of the study design, critique the methods, and bring a healthy amount of constructive criticism and skepticism to the results. Each of you will be assigned to run journal club and as a group will assign responsibilities for summarizing the reading and developing questions to stimulate discussion. Please refer to the assignment's document on Brightspace for details.

2. Tutorials:

There are five labs worth 30% of your final course grade that will be completed in the computer lab. The labs are designed to allow you to investigate the relationships between the environment and human health. The labs are GIS-focused. While some labs can usually be completed in the class time allotted, there will be occasions when you will need to complete the work outside of class time.

Access to ArcGIS or ArcGIS Pro™ 2.5 is required. Two access methods for ArcGIS Pro™ are provided in this class: 1) available to download through the Dalhousie Software resources to run on a Windows Operating System, or 2) Students are responsible for ensuring they have either an appropriate computing resource (i.e., computer and internet)

All lab reports are to be submitted electronically through Brightspace or in person by the due date specified by the lab instructor. Late lab reports will not be accepted.

Lectures

Wednesdays and Fridays from 14.35 to 15.55, in the Studley LSC-COMMON AREA C238.

Tutorials

Tuesdays from 10.05 to 11.25, in the Studley SIR JAMES DUNN BUILDING 301A.

Course Materials

There are no textbooks for this course. Only assigned readings.

Assessment

Assignments

	ENVS / GEOG 3400	HPRO 3422
Journal Club	40%	40%
Tutorials	30%	30%
Individual Project (Term paper)	10%	10%
Final Exam	20%	20%

Individual project (Term paper)

The term paper will be 10% of your grade. For this assignment you will analyze an environmental health issue or problem that is of interest to you. You may also choose to assess the impacts of a problem in a specific locality or geographic setting if relevant. A list of possible topics will be provided. Although it is recommended you choose a topic you are passionate about, with approval from the course instructor. The term paper will follow the traditional style of a scientific article with an introduction, methods, results, discussion, and conclusions sections with a maximum word count of 1500 words (excluding references). Details on what is expected within the term paper will be made available to you during lectures or on Brightspace.

Final exam

A final exam worth 20% of your grade will be held during the final exam period. You will have two hours to write a final exam designed to evaluate your understanding and synthesis of the major topics and themes from the course. Exam questions will include materials from lectures, journal clubs and assigned readings. The final exam period is April 11 – 23, 2024. This is a closed or no book exam.

All submitted work must include your name and BOO# along with the assignment number and title

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 are due on the date specified on the course schedule. If an assignment is not submitted by the specified time, 10% of the absolute grade for that assignment will be deducted. Additional 10% deductions will be added for each calendar day that the assignment is late.

In extraordinary circumstances, missed academic requirements will be considered on an individual basis. Please consult the latest university regulations on eligible leaves.

Course Policies related to Academic Integrity

Journal clubs are to be completed in teams. Students are expected to work together and make integral contributions to the team.

Tutorial projects are to be completed individually or in small teams.

Term papers are to be completed individually.

Plagiarism and/or collusion are not tolerated. Disciplinary action will be taken in violations of academic honesty. Any assignment in which academic dishonesty is detected will be automatically given a zero. Plagiarism software may be used in the evaluation of assignments. More information about university policies and statements are provided in this document.

We will not accept assignments produced by generative AI and large language models (e.g., ChatGPT).

Learning Objectives

- Describe concepts in environmental exposure science, epidemiology, and population health
- Acquire knowledge of major environmental health issues
- Critically evaluate environmental health issues from a systems perspective
- Learn and apply methods in epidemiology and spatial analysis to investigate and assess health risks and benefits associated with environmental exposures
- Cultivate an awareness of environmental justice and the ethics of inequitable health risk
- Develop an appreciation for the complexity of environmental health challenges
- Participate in active learning, teamwork, and self-directed learning beyond the classroom

Course Content

Tentative class schedule Winter 2024

Week	Date	Topic, Readings, and Assignments
1	Wed 10 Jan	Introductory Lecture, course orientation and syllabus review
	Fri 12 Jan	NO CLASS review readings for next week's lecture and journal club Lecture reading for next week: McCally M. Environment, Health and Risk. In Life Support: The Environment and Human Health. Cambridge, Mass: MIT Press, 2002. pp. 1-14.

		<p>JC readings: Primary Prevention of Cardiovascular Disease with a Mediterranean Diet. Estruch et al., 2013 New England Journal of Medicine.</p> <p>Accruing evidence on benefits of adherence to the Mediterranean diet on health: an updated systematic review and meta-analysis. Sofi et al., 2010 American Journal of Clinical Nutrition.</p>
2	Wed 17 Jan	<p style="text-align: center;">Environmental Health</p> <p>Lecture reading for next week: The Practice of exposure assessment: A state-of-the-art review Paustenbach 2000 Journal of Toxicology and Environmental Health pages 178-189 only.</p>
	Fri 19 Jan	Journal club 1 (not graded)
	Tue 23 Jan	<p style="text-align: center;">Tutorial 0</p> <p style="text-align: center;">Accessing ArcGIS Pro and File Management (not graded)</p>
3	Wed 24 Jan	<p style="text-align: center;">Exposure Assessment</p> <p>Lecture reading for next week: Gordis reading pages 1-18.</p>
	Fri 26 Jan	Journal club 2
	Tue 30 Jan	<p style="text-align: center;">Tutorial 1</p> <p style="text-align: center;">Introduction to ArcGIS/ ArcGIS Pro</p>
4	Wed 31 Jan	<p style="text-align: center;">Epidemiology</p> <p>Lecture reading for next week: Influences on domestic well water testing behavior in a Central Maine area with frequent groundwater arsenic occurrence Flanagan et al., 2015 Science of the Total Environment pages 1274-1281.</p>
	Fri 02 Feb	NO CLASS: MUNRO DAY
5	Wed 07 Feb	<p style="text-align: center;">Water pollution</p> <p>Lecture reading for next week: Exploring pathways linking greenspace to health: Theoretical and methodological guidance Markevych et al., 2017 Environmental Research pages 301-317.</p>
	Fri 09 Feb	Journal club 3
	Tue 13 Feb	<p style="text-align: center;">Tutorial 2</p> <p style="text-align: center;">Databases in GIS: Queries and Joins (Tutorial 1 due)</p>

		Green spaces
6	Wed 14 Feb	Lecture reading for next week: Assessment of the effect of cold and hot temperatures on mortality on Ontario, Canada: a population-based study Chen et al., 2016 Canadian Medical Association Journal Open pages 49-57.
	Fri 16 Feb	Journal club 4
7	Feb 1- Feb23	NO CLASS: READING WEEK
		Tutorial 3
	Tue 27 Feb	Exploring variation in air pollution among elementary schools In Halifax (Tutorial 2 due)
		Extreme temperatures
8	Wed 28 Feb	Lecture reading for next week: How well do people understand the climate impact of individual actions? Wynes et al., 2020 Climate Change pages 1521-1534.
	Fri 01 Mar	Journal club 5
		Environmental psychology
9	Wed 06 Mar	Lecture reading for next week: Why sustainable population growth is a key to climate change and public health equity Howat & Stoneham 2011, Health Promotion Journal of Australia, pages 34-38.
	Fri 08 Mar	Journal club 6
		Tutorial 4
	Tue Mar 12	Applying GIS to Climate Change: Sea Level Rise (Tutorial 3 due)
		Drivers of Environmental and Health Challenges: The population problem
10	Wed 13 Mar	Lecture reading for next week: From “one medicine” to “one health” and systemic approaches to health and well-being Zinsstag et al., 2011, pages 148-156.
	Fri 15 Mar	Journal club 7
		One Health
11	Wed 20 Mar	Lecture reading for next week: Climate change and human health: present and future risks McMichael et al., 2006, Lancet pages 859-869
	Fri 22 Mar	Journal club 8

	Tue 26 Mar	Tutorial 5 Greenness and risk of chronic disease (Tutorial 4 due)
12	Wed 27 Mar	Climate change and Human Health Lecture reading for next week: Findings from the Series of Workshops In Whose Backyard? Exploring Toxic Legacies in Mi'kmaw and African Nova Scotian Communities Waldro, 2015, Environmental Justice pages 1-5.
	Fri 29 Mar	NO CLASS: GOOD FRIDAY
	Tue 02 Apr	NO TUTORIAL BUT (Tutorial 5 due) Finish working on term paper
13	Wed 03 Apr	Environmental Ethics and Justice No reading for next week
	Fri 05 Apr	Journal club 9
	Tue 9 Apr	ALL TERM PAPERS DUE
14	Wed 10 Apr	Course review before final exam Read lecture material for the exam

Student Resources

The following campus services are available to help students develop skills in library research, scientific writing, and effective study habits. The services are available to all Dalhousie students and, unless noted otherwise.

Service	Support Provided	Contact
General Academic Advising	Help with - understanding degree requirements and academic regulations - choosing your major - achieving your educational or career goals - dealing with academic or other difficulties	In person: Killam Library Rm G28 By appointment: - e-mail: advising@dal.ca - Phone: (902) 494-3077 Advising - Academic Support - Dalhousie University Indigenous Student Centre - Campus Life - Dalhousie University

		Black Student Advising Centre - Campus Life - Dalhousie University
Libraries - Dalhousie University	<p>Help to find books and articles for assignments</p> <p>Help with citing sources in the text of your paper and preparation of bibliography</p>	<p>In person: Service Point (Ground floor)</p> <p>By appointment:</p> <p>Identify your Subject Liaison Directory - Libraries - Dalhousie University</p>
Study Skills/Tutoring - Academic Support - Dalhousie University	<p>Help to develop essential study skills through small group workshops or one-on-one coaching sessions</p> <p>Match to a tutor for help in course-specific content (for a reasonable fee)</p>	<p>To make an appointment:</p> <ul style="list-style-type: none"> - Call (902) 494-3077 - email Coordinator at: sfs@dal.ca or - Simply drop in to see us during posted office hours
Writing Centre - Academic Support - Dalhousie University	<p>Meet with a tutor to discuss writing assignments (e.g., lab report, research paper, thesis, poster)</p> <p>Learn to integrate source material into your own work appropriately</p> <p>Learn about disciplinary writing from a peer or</p>	<p>To make an appointment:</p> <ul style="list-style-type: none"> - Visit the Centre (Rm G40C) and book an appointment - Call (902) 494-1963 - email: writingcentre@dal.ca
<p>Other supports</p> <p>Student Health & Wellness Dalhousie University</p> <p>Dalhousie Student Advocacy Service — Dalhousie Student Union (dsu.ca)</p> <p>Ombudsperson - Student Rights & Responsibilities - Dalhousie University</p>	<p>Student wellness</p> <p>Student Advocacy</p> <p>Office of the Ombudsperson</p>	

Safety

[Biosafety - Environmental Health and Safety - Dalhousie University](#)

[Chemical Safety - Environmental Health and Safety - Dalhousie University](#)

[Radiation Safety - Environmental Health and Safety - Dalhousie University](#)

[Scent Free - Environmental Health and Safety - Dalhousie University](#)

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.

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.