



**GEOG\*4110\*01: Environmental Systems Analysis**

Section F23

Department of Geography, Environment and Geomatics

Credit Weight: 1.0

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**Course Details**

Calendar Description

An integrated systems approach to solving issues of environmental evaluation, impact and development. Focus will be on the biophysical components of the environment.

**Prerequisite(s):** GEOG\*3110 or GEOG\*3610

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**Course Instructor: Dr. Faisal Moola, PhD**

**Email:** [fmoola@uoguelph.ca](mailto:fmoola@uoguelph.ca) (put GEOG4110 in subject)

**Lectures:**

Lectures: Tuesdays and Thursdays, 11:30 am - 12:50 pm

Office Hours: Tuesdays, 1:00 – 2:00 pm

Dr. Faisal Moola, PhD is an Associate Professor in the Department of Geography, Environment and Geomatics at the University of Guelph. Prior to joining the University of Guelph, he worked for the David Suzuki Foundation for over 15 years, where he was the organization's Director of Terrestrial Conservation and Science and later its Director General for Ontario and Northern Canada. Faisal has a PhD in biology from Dalhousie University and has published widely in scientific journals on topics of ecology, conservation biology, and environmental policy. Faisal is a regular contributor to the Toronto Star, Vancouver Sun, Globe and Mail, CBC and other media outlets as an opinion writer and political analyst on conservation, Indigenous Rights and other environmental and social issues. He is the director of the People Plants and Policy Lab at the University of Guelph which does research on the ecology and ethnoecology of cultural keystone

species, such as wild blueberry, and other plant biodiversity in Indigenous territories in Canada and overseas.

<https://www.uoguelph.ca/geography/Faculty/moola-faisal>

<https://conservation-reconciliation.ca/biocultural-indicators-and-outcomes>

### **Teaching Assistants:**

TBD

### **Course Description:**

Humans have long been able to affect the environment, but never before on such a scale. We are now altering the Earth's carbon cycle, which has resulted in climate change, and we have sped up, by more than 150 percent, the nitrogen cycle, which has led to acid rain, ozone depletion, and coastal dead zones, among other impacts. We have also replaced wilderness with clearcuts, mines, farms, cities and infrastructure used to pump, drill, frack, strip mine and transport fossil fuels. The loss of natural areas is leading to the precipitous loss and decline of biodiversity, including once common species, like bees and other pollinators. Human have become a new kind of biological force that is altering the physical, chemical, and biological properties of the planet on a geological scale. Indeed, Nobel Prize-winning chemist Paul Crutzen has suggested that the current geologic period should, most appropriately, be called the Anthropocene Epoch to reflect our new status as a global force in driving ecological change — “the Human Age”.

This course examines the impacts of natural and land use dynamics on ecosystems, biodiversity and ecological processes in the Age of the Anthropocene – the Human Age. We will consider the links between disturbance and biological systems and the important role spatial and temporal scale play in our understanding of these systems. Concepts and methods used in the analysis and management of biophysical systems will be reviewed and debated in class and employed as part of a major group project that students will be responsible for. Particular attention will also be given to the importance of resource policy in Canada and globally.

### **Course Objectives**

- To investigate the impacts of human activities on our planet in the Age of the Anthropocene, with a primary focus on land use and land use change.
- To examine methods and applications central to understanding the consequences of human activities, using different Environmental Systems Analysis tools, employed in environmental assessment processes, parks and protected areas planning and other policy domains.

- To recognize the broader social contexts in which environmental research is undertaken, including the significance of Indigenous Knowledge Systems and biocultural approaches to understanding landscape and our impacts on it.
  - To develop effective oral and written communication skills that will facilitate considered argument and opinion and the dissemination of research findings
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## **Course Format**

The course is scheduled for T,TH from 11:30 am – 12:50 pm. The course will use a combination of lectures, seminar-style discussions, group labs and student presentations. Students will be responsible for a major group project that must include original analysis of data. Students will present their project in class at the end of term.

Note: Faisal is on the leadership team of the Conservation through Reconciliation Partnership and is involved in research with Indigenous Nations in Newfoundland. On occasion, he may have to miss class due to travel. When this occurs, alternative materials will be provided on CourseLink, including assigned films, taped lectures or guest lectures.

Faisal will miss the following classes in F23 term:

- September 12<sup>th</sup> (No In-Person Lecture)
- October 17<sup>th</sup> (No In-Person Lecture)

## **Required Readings**

The assigned readings and online materials are required and are crucial in meeting some of the learning objectives in this class. The online materials provide “real-world” policy examples as well as the perspectives of Indigenous knowledge holders. Refer to CourseLink for more details on assigned weekly readings.

## **Evaluation**

- Anthropocene Study Critique: 10 %
- Mid-Term Exam. 20 %
- Major Group ESA Project:
  - Written Component. 20 %
  - Presentation Component. 10 %
- Final Exam. 40 %

### **Anthropocene Study Critique (10%). Due October 13<sup>th</sup>; 2023**

Students will be responsible to provide a critical analysis of a scientific study on the significance of the Anthropocene.

## **Take Home Mid-Term Exam (20 %). Due November 3; 2022**

The objective of the mid-term is to ensure that you review and critically engage with the material introduced in lectures, films, and readings. The mid-term exam will be a mix of short essay questions. It will cover material from the lectures in weeks 1-8.

## **Major Group ESA Project (30%).**

- Presentations will be scheduled in Weeks 11 – 12.
- Written component will be due on the last regular day of term, December 1st, 2023.

Students will be responsible for a major project that applies a recognized method of Environmental Systems Analysis to analyze the environmental impacts and/or performance of a 1) policy, plan, programme and/or project (e.g., British Columbia's carbon tax or proposed Kinder Morgan TMX pipeline); or 2) region or nation (e.g., the environmental footprint of the City of Toronto); 3) organization, company or industrial sector (e.g., Alberta's oil sands); 4) product or service (e.g., electric vehicles, coffee or Nike sneakers); 5) substance (e.g., neonicotinoid pesticides).

The project must include the original analysis of data. Students will present their project in class at the end of term in weeks 11 – 12.

## **Final Exam (40%). TBD.**

The final exam will cover material from the whole term. The types of question you may encounter can include:

- Multiple choice
- True or False
- Short Answers
- Long Answer (Essay)

## **Late Policy**

If you choose to submit your individual assignments to the Dropbox tool late, the full allocated mark will be reduced by 5% per day after the deadline for the submission of the assignment to a limit of five days at which time access to the Dropbox folder will be closed.

Extensions will be considered for medical reasons or other extenuating circumstances. If you require an extension, discuss this with the instructor as soon as possible and well before the due date. Barring exceptional circumstances, extensions will not be granted once the due date has passed. These rules are not designed to be arbitrary, nor are they inflexible. They are designed to

keep you organized, to ensure that all students have the same amount of time to work on assignments, and to help to return marked materials to you in the shortest possible time.

### Course Structure

The course is organized so that one unit is equal to one weeks' worth of learning and effort. Students will present their major group project in class at the end of term in weeks 11 – 12. The course is structured as follows (note: schedule of lectures may change).

WEEK	UNIT	DESCRIPTION
1		Introduction to the course and introductory lecture.
2	1	Introduction to the Anthropocene and Natural Biomes of the Planet
3	2	Introduction to Anthromes of the Planet
4	3	Indigenous Cultural Landscapes
5	4	Introduction to Environmental Systems Analyses Methods  LAB 1
6	5	ESA 1: Systems of Economic and Environmental Analysis: Natural Capital
7	6	ESA 2: Environmental Footprint Analysis  LAB 2
8	7	ESA 3: Biodiversity Analysis: B.C. Species and Ecosystem Explorer  LAB 3
9	7	ESA 3: Biodiversity Analysis Continued
10	8	ESA 4: Environmental Life Cycle Analysis

11		Student Presentation
12		Student Presentations

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## University of Guelph Policy Statements:

### **E-mail Communication**

As per university regulations, all students are required to check their <uoguelph.ca> e-mail account regularly. e-mail is the official route of communication between the university and its students.

### **When You Cannot Meet a Course Requirement**

When you find yourself unable to meet an in-course requirement because of illness or compassionate reasons, please advise the course instructor [or the teaching assistant in the case of the proposal or essay] in writing, with your name, id#, and e-mail contact. Where possible, this should be done in advance of the missed work or event, but otherwise, just as soon as possible after the due date, and certainly no longer than one week later. Note: if appropriate documentation of your inability to meet that in-course requirement is necessary, the course instructor, or delegate, will request it of you. Such documentation will rarely be required for course components representing less than 10% of the course grade. Such documentation will be required, however, for Academic Consideration for missed end-of-term work and/or missed final examinations. See the undergraduate calendar for information on regulations and procedures for Academic Consideration.

### **Drop Date**

The last date to drop one-semester Fall 2023 courses, without academic penalty is December 1, 2023. For regulations and procedures for Dropping Courses, see the Undergraduate Calendar.

<https://calendar.uoguelph.ca/undergraduate-calendar/>

### **Copies of Out-of-Class Assignments**

Keep paper and/or other reliable back-up copies of all out-of-class assignments: you may be asked to resubmit work at any time.

### **Accessibility**

The University promotes the full participation of students who experience disabilities in their academic programs. To that end, the provision of academic accommodation is a shared responsibility between the University and the student.

When accommodations are needed, the student is required to first register with Student Accessibility Services (SAS). Documentation to substantiate the existence of a disability is required, however, interim accommodations may be possible while that process is underway.

Accommodations are available for both permanent and temporary disabilities. It should be noted that common illnesses such as a cold or the flu do not constitute a disability.

Use of the SAS Exam Centre requires students to book their exams at least 7 days in advance, and not later than the 40th Class Day.

More information: [www.uoguelph.ca/sas](http://www.uoguelph.ca/sas)

## **Academic Misconduct**

The University of Guelph is committed to upholding the highest standards of academic integrity and enjoins all members of the University community – faculty, staff, and students – to be aware of what constitutes academic misconduct and to do as much as possible to prevent academic offences from occurring. The University of Guelph takes a serious view of academic misconduct, and it is your responsibility as a student to be aware of and to abide by the University's policy. Included in the definition of academic misconduct are such activities as cheating on examinations, plagiarism, misrepresentation, and submitting the same material in two different courses without written permission from the relevant instructors. To better understand your responsibilities, read the Undergraduate Calendar for a statement of Students' Academic Responsibilities; also read the full Academic Misconduct Policy.

You are also advised to make use of the resources available through the Learning Commons (<http://www.learningcommons.uoguelph.ca/>) and to discuss any questions you may have with your course instructor, TA, or academic counsellor.

Instructors have the right to use software to aid in the detection of plagiarism or copying and to examine students orally on submitted work. For students found guilty of academic misconduct, serious penalties, up to and including suspension or expulsion, can be imposed. Hurried or careless submission of work does not exonerate students of responsibility for ensuring the academic integrity of their work. Similarly, students who find themselves unable to meet course requirements by the deadlines or criteria expected because of medical, psychological or compassionate circumstances should review the university's regulations and procedures for Academic Consideration in the calendar and discuss their situation with the instructor and/or the program counsellor or other academic counsellor as appropriate.

## **University Policy on Academic Misconduct**

*Academic misconduct, such as plagiarism, is a serious offence at the University of Guelph. Please consult the Undergraduate Calendar for offences, penalties and procedures relating to academic misconduct.*

## **Recording of Materials**

Presentations which are made in relation to course work—including lectures—cannot be recorded or copied without the permission of the presenter, whether the instructor, a classmate or guest lecturer. Material recorded with permission is restricted to use for that course unless further permission is granted.



## Resources

The Academic Calendars are the source of information about the University of Guelph's procedures, policies and regulations which apply to undergraduate, graduate and diploma programs.

## Online Behaviour

Inappropriate online behaviour will not be tolerated. Examples of inappropriate online behaviour include:

- Posting inflammatory messages about your instructor or fellow students
- Using obscene or offensive language online
- Copying or presenting someone else's work as your own
- Adapting information from the Internet without using proper citations or references
- Buying or selling term papers or assignments
- Posting or selling course materials to course notes websites
- Having someone else complete your quiz or completing a quiz for/with another student
- Stating false claims about lost quiz answers or other assignment submissions
- Threatening or harassing a student or instructor online
- Discriminating against fellow students, instructors and/or TAs
- Using the course website to promote profit-driven products or services
- Attempting to compromise the security or functionality of the learning management system
- Sharing your username and password

## Illness

Medical notes will not normally be required for singular instances of academic consideration, although students may be required to provide supporting documentation for multiple missed assessments or when involving a large part of a course (e.g., final exam or major assignment).

For information on current safety protocols, follow these links: <https://news.uoguelph.ca/return-to-campus/how-u-of-g-is-preparing-for-your-safe-return/>  
<https://news.uoguelph.ca/return-to-campus/spaces/#ClassroomSpaces>

Please note, these guidelines may be updated as required in response to evolving University, Public Health or government directives

## Public Health & COVID-19

It is our shared responsibility to ensure our classroom space remains a safe and healthy environment for all of us. Strict compliance with all public health regulations set forth by the Government of Ontario, Wellington-Dufferin-Guelph Public Health, and the University of Guelph is required. Please be sure you are familiar with all the University of Guelph's COVID-19 policies.

- If you, or someone in your household, is feeling ill, please do not come to campus. I will do the same if necessary. Please follow the most up to date rules on 'self-isolation' provided by the Government of Ontario. In the event of my own self-isolation or illness, there may be significant changes to the course based on what I am able to do under these conditions.
- Students who do not comply with public health regulations, including but not limited to physical distancing and proper mask wearing (covering nose and chin), will be asked to leave the class immediately. Breaches of public health regulations will be reported to the Student Conduct Support Coordinator, the Chair of the Department of Geography, Environment & Geomatics, and the Associate Dean (Academic) of the College of Social and Applied Human Science. The Campus Police may also be involved.
- Lectures and/or labs may be cancelled or moved to the online environment if I deem there are significant or sustained breaches to public health regulations in the class. This includes proper mask wearing (covering nose and chin). As long as a mask mandate is in place, you should limit eating and drinking in class.
- At any point during the class, you may stop the lecture/lab to inform the instructor of any breaches to public health. Simply raise your hand or stand up and say 'there is a breach to public health occurring.' You do not have to identify where or who.
- If you require a short-term accommodation due to COVID-19, please contact me as soon as possible. This will be addressed as per the earlier policy. Longer or more complex accommodation should be addressed to Student Accessibility Services as soon as possible.
- You are strongly encouraged to familiarize yourself with Student Accessibility Services, your academic advising office (e.g., BACO, BSc Advising etc.) and Health Services should you require their assistance during the semester.
- If it becomes necessary to move this course completely online during the semester, all changes will be communicated via CourseLink, and will comply with University of Guelph policies.