

# GEOG 2020-A – Ecosystems of Canada: Course Outline

Department of Geography and Environmental Studies, Carleton University

**Course credit:** 0.5  
**Course outline:** Winter 2024  
**Lectures:** Wednesdays from 6:05-8:55 PM – See Carleton Central for location.

**Instructor:** Adam Kirkwood, Ph.D. Candidate, DGES  
**Contact information:** [adamkirkwood@cmail.carleton.ca](mailto:adamkirkwood@cmail.carleton.ca)  
**Office hours:** Wednesdays from 9:00-10:00 PM in A209, or by appointment.  
**Teaching Assistants:** Pia Blake, M.Sc. Candidate, [piablake@cmail.carleton.ca](mailto:piablake@cmail.carleton.ca)  
Nathalie Ouellette, M.Sc. Candidate, [nathalieaouellette@cmail.carleton.ca](mailto:nathalieaouellette@cmail.carleton.ca)

## Course description:

Canada boasts an impressive range of ecosystems, ranging from old growth forests of the Pacific Maritime to tundra of the Arctic Cordillera. This course covers the structure, function and classification of ecosystems, and the ecosystems found across Canada. We will review the various factors shaping Canadian ecosystems, including geology, hydrology, soils, and climate, and examine the processes occurring within ecosystems such as nutrient cycling and carbon storage. Throughout the course, reference to the relationship between humans and ecosystems will be made, including the impacts of climate change on Canadian ecosystems, resource extraction and management, and conservation practices. While there will be discussion about challenges faced by Canadian ecosystems, an equal amount of emphasis will be discussed regarding solutions. **Course prerequisites:** One of GEOG 1010, EARTH 1006, EARTH 1010, ISCI 1001.

## Learning objectives:

By the end of this course, students should have a strong understanding of how Canadian ecosystems function and the various processes occurring within them. Specifically, students will learn:

- 1) How ecosystems are defined and classified, including ecozones, ecoregions, and ecodistricts;
- 2) Processes shaping Canadian ecosystems, including geology, climate, hydrology, and biogeochemical cycles;
- 3) The importance of ecosystem services and the interaction of humans and ecosystems; and
- 4) How to critically engage with discussions about changes in processes occurring in Canadian ecosystems resulting from anthropogenic changes.

## Course schedule/topics

The course is divided into three modules: 1) foundations, 2) Canadian ecosystems; and 3) challenges and solutions. Module (1) will provide the background information required to fully understand the structure and function of Canadian ecosystems, including how they will/are responding to climate change. Module (2) goes into depth about dominant Canadian ecosystems and ecoregions, which will include discussion on terrestrial, aquatic, wetland, and Arctic ecosystems, including their distribution across Canada. Module (3) will discuss the interactions between humans and ecosystems, including ecosystem services, Canadian resources, and the challenges presented to Canadian ecosystems associated with anthropogenic change and potential solutions. The table below presents the weekly course materials that will be covered and associated dates/deadlines for assignments and the in-class module quizzes.





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Week	Topic	Assignment/Midterm
<b>Module 1: Foundations</b>		
1: January 10	1. Course introduction 2. Ecosystems and ecosystem classification	
2: January 17	1. Overview of Canadian Ecoregions 2. Geological setting of Canada	
3: January 24	1. Atmosphere and climate systems in Canada 2. Climate change in Canada	
4: January 31	1. Soils of Canada 2. Hydrological Cycle	<b>Friday, February 2: Assignment 1 due</b>
5: February 7	1. Biogeochemical Cycles 2. Human impacts on biogeochemical cycles 3. Module review	
<b>Module 2: Canadian Ecosystems</b>		
6: February 14	1. Module 1 quiz 2. Terrestrial Ecosystems a. Forests b. Agriculture c. Wildlife	<b>Module 1 quiz</b>
7: February 21	<b>READING WEEK - NO CLASS</b>	
8: February 28	1. Aquatic Ecosystems a. Lakes b. Rivers c. Oceans	
9: March 6	1. Wetland Ecosystems a. Types of wetlands b. Ecosystem functions of wetlands	<b>Friday, March 8: Assignment 2 due</b>
10: March 13	1. Arctic Ecosystems a. Permafrost b. Glaciers and sea-ice c. Snow 2. Module review	
<b>Module 3: Challenges, solutions, and wrap-up</b>		
11: March 20	1. Module 2 quiz 2. Resources and resource extraction in Canada a. Minerals and metals b. Forestry c. Agriculture d. Fisheries	<b>Module 2 quiz</b>
12: March 27	1. Challenges being faced by Canadian Ecosystems	<b>Thursday, March 28: Assignment 3a due</b>
13: April 3	1. Poster Session	<b>Thursday, April 4: Assignment 3b due</b>
14: April 10	1. Exam Review	





## Course evaluation

Course evaluation will consist of 3 assignments, 2 module quizzes, and a cumulative final examination. The weighting of evaluation is as follows:

Assignment 1 – Climate in Canada’s ecosystems	12.5%
Assignment 2 – Terrestrial and aquatic linkages	12.5%
Assignment 3 – Poster	20%
Module 1 quiz	10%
Module 2 quiz	10%
Final examination	35%

## Assignments

Students may work with classmates on assignments, but all submitted assignments must be **original and unique**. Any material from outside of course content must be acknowledged and cited properly. It is expected that assignments will be submitted with proper spelling and grammar and in the format requested in assignment guidelines. Specific instructions for assignments will be provided including the marks associated with each question of the assignment, and marks associated with structure/clarity.

**SUBMISSION OF ASSIGNMENTS:** Assignments should be submitted by **11:59 PM** on the date specified in the assignment instructions to the corresponding assignment submission on Brightspace.

**LATE POLICY FOR ASSIGNMENTS:** Late submission of assignments will be deducted 5% per day (including weekends) following the 11:59 PM deadline, up to a maximum of 5 days. Following 5 days, assignments will not be graded and assigned a value of 0, unless arrangements are made with the course instructor who agrees to mark the assignment.

**DEADLINE EXTENSIONS:** Deadline extensions must be requested **at least 3 days in advance of the assignment due date**. Requests for extensions must be made with the course instructor, teaching assistants are not able to grant extensions, so please do not contact them for this purpose. Deadline extensions will not be considered for longer than 3 days unless for medical or bereavement purposes.

## Module quizzes

Module quizzes will be written in-class, and will be a length of 60 minutes. Module quizzes will **only cover content associated with the module**.

- **Module 1: Foundations quiz** – Will be in class on February 14, and cover all lecture content from January 10 to February 7.
- **Module 2: Canadian ecosystems quiz** – Will be in class on March 20, and cover all lecture content from February 14 to March 13. There will be no questions specifically from content covered in Module 1, but knowledge from Module 1 may be required in relation to content from Module 2.

Format of module quizzes will include multiple choice, true or false, fill in the blanks, matching, short answer questions, and 1-2 critical thinking questions.

## Final exam

The final exam will be scheduled during the final exam period (April 13-25, 2023) and will be similar in format to the module quizzes. Content will be cumulative, and cover information from Modules 1-3.





## Recommended resources and course readings

This course **does not have a required textbook** as the topics covered in this class are beyond the scope of one single textbook. However, there are several recommended resources that have been placed on reserve at the MacOdrum Library:

- 1) Dearden, P., & Mitchell, B. (2016). *Environmental change & challenge : a Canadian perspective* (Fifth edition.). Oxford University Press.
- 2) Christopherson, R. W., Byrne, M.-L., Giles, P., & Birkeland, G. H. (2016). *Geosystems : an introduction to physical geography* (Fourth Canadian edition.). Pearson.
- 3) Strahler, A. H., & Archibold, O. W. (2011). *Physical geography : science and systems of the human environment* (Fifth Canadian edition). J. Wiley & Sons Canada.
- 4) Stanford, Q. H. (2009). *Canadian Oxford world atlas* (6th ed.) [Map]. Oxford University Press.
- 5) Freedman, Bill. (2007). *Environmental science : a Canadian perspective* (4th ed.). Pearson Prentice Hall.

Any readings that are required for class or assignments will be made available on Ares Reserves, which can be found under Tools on Brightspace, or will be uploaded to Brightspace under the weekly modules.

## Key academic dates:

- **January 19, 2024:** Last day for registration and course changes for full winter course
- **March 15, 2024:** Last day to request Formal Examination Accommodations with the Paul Mention Centre for Students with Disabilities. Last day for academic withdrawal from full winter course.
- **April 13-25:** Final examinations for full winter course.

## Online tools:

- **Brightspace:** Brightspace will be the dominant teaching tool in this course, and all course information, lecture content, assignment content, assignment submissions, and grade tracking will be completed in Brightspace.
- **Mentimeter:** Mentimeter is an online platform that allows student engagement during lecture, including the generation of word clouds, polls, multiple choice questions, etc., and will often be incorporated into lectures.
- **Kahoot:** Kahoot is an online tool that may be used for reviewing class material. Practice questions completed on Kahoot **are not graded**, but participation is strongly encouraged as it provides excellent review of lecture content.

## Personal statement on EDI in the classroom/learning environment

I recognize that my positionality influences the way I see and engage with the world, and my perception on content that may be covered in this course. Being aware of this, I strive to present course material in a way that is sensitive to the lived experiences of students, course observers, and to the people who live and steward the ecosystems which we discuss from afar. I especially note that while we discuss the ecosystems of Canada from the unceded Anishinabe Algonquin traditional territory, we are discussing traditional territories of many other Indigenous Peoples across Canada who have been stewards of the lands for generations.

Through the duration of this course, I have zero tolerance for misconduct on the basis of personal identity or expression (see below for code of conduct). I recognize the different learning ability and strengths of students, and have structured this course in attempt to accommodate different learning styles by incorporating multiple forms of evaluation, the use of text, diagrams, videos, and summaries. I wish for students of any personal identity or expression to feel comfortable





and confident in my classroom, and strive to make room for all students to have equitable learning opportunities through the duration of this course.

## Statement on academic code of conduct

Students are to complete and submit their own work, and complete module quizzes and the final exam without the assistance of others, and without reference to course material, online material, or any other source of information.

The Academic Integrity and Offences Code of Conduct outlined by Carleton University rules that discrimination or harassment based on race, sex, ancestry, place of origin, colour, ethnic origin, citizenship, creed, political affiliation or belief, sexual orientation, gender identity, marital status, family status, or disability/handicap will not be tolerated, and will result in repercussions at the University level. More about the code of conduct [here](#).

## Plagiarism

### The following is the Carleton University statement on plagiarism:

The University Academic Integrity Policy defines plagiarism as “*presenting, whether intentionally or not, the ideas, expression of ideas or work of others as one’s own.*” This includes reproducing or paraphrasing portions of someone else’s published or unpublished material, regardless of the source, and presenting these as one’s own without proper citation or reference to the original source.

Examples of plagiarism include, but are not limited to:

- Any submission prepared in whole or in part, by someone else, including the unauthorized use of generative AI tools (e.g., ChatGPT);
- Using ideas or direct, verbatim quotations, paraphrased material, algorithms, formulae, scientific or mathematical concepts, or ideas without appropriate acknowledgment in any academic assignment;
- Using another’s data or research findings without appropriate acknowledgement;
- Submitting a computer program developed in whole or in part by someone else, with or without modifications, as one’s own; and
- Failing to acknowledge sources through the use of proper citations when using another’s work and/or failing to use quotations marks.

Plagiarism is a serious offence that cannot be resolved directly by the course’s instructor. The Associate Dean of the Faculty conducts a rigorous investigation, including an interview with the student, when an instructor suspects a piece of work has been plagiarized. Penalties are not trivial. They can include a final grade of “F” for the course.

## Academic Accommodations

Students requiring academic accommodations should note the following processes:

**Pregnancy obligation:** write to me with any requests for academic accommodation during the first two weeks of class, or as soon as possible after the need for accommodation is known to exist. For accommodation regarding a formally-scheduled final exam, you must complete the Pregnancy Accommodation Form ([click here](#)).

**Religious obligation:** write to me with any requests for academic accommodation during the first two weeks of class, or as soon as possible after the need for accommodation is known to exist. For more details [click here](#).





**Academic Accommodations for Students with Disabilities:** The Paul Menton Centre for Students with Disabilities (PMC) provides services to students with Learning Disabilities (LD), psychiatric/mental health disabilities, Attention Deficit Hyperactivity Disorder (ADHD), Autism Spectrum Disorders (ASD), chronic medical conditions, and impairments in mobility, hearing, and vision. If you have a disability requiring academic accommodations in this course, please contact PMC at 613-520-6608 or [pmc@carleton.ca](mailto:pmc@carleton.ca) for a formal evaluation. If you are already registered with the PMC, please request your accommodations for this course through the [Ventus Student Portal](#) at the beginning of the term, and no later than two weeks before the first in-class scheduled test or exam requiring accommodation (*if applicable*). Requests made within two weeks will be reviewed on a case-by-case basis. For final exams, the deadlines to request accommodations are published in the [University Academic Calendars](#). After requesting accommodation from PMC, meet with me to ensure accommodation arrangements are made. Please consult the PMC website for the deadline to request accommodations for the formally-scheduled exam (if applicable).

**Survivors of Sexual Violence:** As a community, Carleton University is committed to maintaining a positive learning, working and living environment where sexual violence will not be tolerated, and where survivors are supported through academic accommodations as per Carleton's Sexual Violence Policy. For more information about the services available at the university and to obtain information about sexual violence and/or support, visit: <https://carleton.ca/equity/sexual-assault-support-services>

### **Accommodation for Student Activities**

Carleton University recognizes the substantial benefits, both to the individual student and for the university, that result from a student participating in activities beyond the classroom experience. Reasonable accommodation will be provided to students who compete or perform at the national or international level. Write to me with any requests for academic accommodation during the first two weeks of class, or as soon as possible after the need for accommodation is known to exist. <https://carleton.ca/senate/wp-content/uploads/Accommodation-for-Student-Activities-1.pdf>

### **Student mental health resources**

As a University student you may experience a range of mental health challenges that significantly impact your academic success and overall well-being. If you need help, please speak to someone. There are [numerous resources](#) available both on- and off-campus to support you.

**Emergency Resources (on and off campus):** <https://carleton.ca/health/emergencies-and-crisis/emergency-numbers/>

### **Carleton Resources:**

- Mental Health and Wellbeing: <https://carleton.ca/wellness/>
- Health & Counselling Services: <https://carleton.ca/health/>
- Paul Menton Centre: <https://carleton.ca/pmc/>
- Academic Advising Centre (AAC): <https://carleton.ca/academicadvising/>
- Centre for Student Academic Support (CSAS): <https://carleton.ca/csas/>
- Equity & Inclusivity Communities: <https://carleton.ca/equity/>

### **Off Campus Resources:**

- Distress Centre of Ottawa and Region: (613) 238-3311 or TEXT: 343-306-5550, <https://www.dcottawa.on.ca/>
- Mental Health Crisis Service: (613) 722-6914, 1-866-996-0991, <http://www.crisisline.ca/>





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- Empower Me: 1-844-741-6389, <https://students.carleton.ca/services/empower-me-counselling-services/>
- Good2Talk: 1-866-925-5454, <https://good2talk.ca/>
- The Walk-In Counselling Clinic: <https://walkincounselling.com>

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