

Global Biogeochemical Cycles GEOG 4017 [0.5 credit] Winter 2021

Seminar: 80 min twice per week, synchronous sessions over Zoom

Instructor: Elyn Humphreys, <elyn.humphreys@carleton.ca>

Office hours: Please email me to make an appointment.

1. Course description:

Processes that control the fluxes and reservoirs of biologically active chemical constituents on land, in the atmosphere, and in the oceans. Interactions between biogeochemical cycles and the Earth's climate; impact of land use and fossil fuel emissions on biogeochemical cycles and global change.

2. Prerequisites: none

3. Texts:

Assigned readings will be available via the library (online) and cuLearn

Lecture slides will be made available through cuLearn*

*Student or professor materials created for this course (including presentations and posted notes, labs, assignments and exams) remain the intellectual property of the author(s). They are intended for personal use and may not be reproduced or redistributed without prior written consent of the author(s).

4. Course Schedule:

Each week will generally consist of a formal 80 min lecture and an 80 min student-led discussion reviewing journal articles and a biogeochemistry topic “in the news”.

Tentative schedule:

- Jan 11:** Lecture 1. Introduction/ Global Biogeochemistry
Jan 13: Lecture 2. The Global C Cycle
Jan 18: Lecture 3. Carbon Cycle – The Carbon Cycle of Terrestrial Ecosystems
Jan 20: Discussion Paper and topic in the news (Instructor presentation/student participation)
Jan 25: Lecture 4. Carbon Cycle - Soil Carbon and Global Change
Jan 27: Discussion Papers
Feb 1: Lecture 5. Methane part 1
Feb 3: Discussion Papers
Feb 8: Lecture 6. Methane part 2
Feb 10: Discussion Papers - *Take-home midterm assigned Feb 10, due electronically by 4 pm Feb 24*
Feb 15/17: *Reading Break*
Feb 22: No Class
Feb 24: Lecture 7. Aquatic carbon – part 1
Mar 1: Discussion Papers
Mar 3: Lecture 8. Aquatic carbon – part 2

Mar 8:	Discussion Papers
Mar 10:	Lecture 9. Intro to N Cycling
Mar 15:	Discussion Papers
Mar 17:	Lecture 10. Nitrogen Cycling– part 1
Mar 22:	Discussion Papers
Mar 24:	Lecture 11. Nitrogen Cycling– part 2
Mar 29:	Discussion Papers
Mar 31:	Lecture 12. Biogeochemical Cycle Interactions
Apr 5:	Discussion Papers - <i>Take-home final assigned</i>
Apr 7:	No Class
Apr 12:	No Class
Apr 14:	No Class <i>Final assignment due electronically by 4 pm Apr 14</i>

5. Course Evaluation:

35%	Presentations
15%	Participation in class discussions
25%	Midterm assignment
25%	Final assignment

Paper presentations (20%): Each student will be responsible for leading a ~16-20 minute discussion of the papers they are assigned. This entails an introduction to the paper and its context, the scientific questions asked, the important findings and conclusions and the points of debate (e.g., contradictions with other results etc.). At least 3 days prior to presenting the papers in class, 2-3 discussion questions on the papers must be submitted to the instructor. These questions will be disseminated via cuLearn to the rest of the class to focus their reading of the papers.

‘Biogeochemistry in the news’ (15%): Each student will have ~8-10 minutes to present a biogeochemistry topic in the news (must be from the past 5 years) relevant to the assigned topic. The presentation will include a summary of the news article and a synthesis of the primary literature of the subject area with the goal of interpreting the news article critically.

Participation: All students are expected to read all the papers/articles reviewed each week and contribute to the discussion and participate during in-class activities.

Midterm and Final assignments: Students may discuss their work but all answers must be written by the individual acting alone. Do not edit or otherwise proofread another student’s submission.

Assignments will be submitted online. For each day late, 10% will be deducted per day. Extensions may be granted for legitimate compassionate reasons. Please arrange for an extension BEFORE the deadline. Assignments will not be accepted for grading after graded assignments are returned.

Standing in a course is determined by the course instructor subject to the approval of the Faculty Dean. This means that grades submitted by the instructor may be subject to revision. No grades are final until they have been approved by the Dean.

6. Statement on Plagiarism:

Plagiarism will not be tolerated. Students should consult the [Academic Integrity Policy](#).

Plagiarism: The University Senate defines plagiarism as “*presenting, whether intentionally or not, the ideas, expression of ideas or work of others as one’s own.*” This can include:

- 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;
- submitting a take-home examination, essay, laboratory report or other assignment written, in whole or in part, by someone else;
- using ideas or direct, verbatim quotations, or paraphrased material, concepts, or ideas without appropriate acknowledgment in any academic assignment;
- using another’s data or research findings;
- failing to acknowledge sources through the use of proper citations when using another’s works and/or failing to use quotation marks;
- handing in "substantially the same piece of work for academic credit more than once without prior written permission of the course instructor in which the submission occurs."

Plagiarism is a serious offence, which cannot be resolved directly with the course’s instructor. The Associate Deans of the Faculty conduct 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.

7. Requests for Academic Accommodations:

Carleton provides [academic accommodation to students](#) for reasons of disability, religious observance, pregnancy and/or parental leave, sexual violence, and student activities.

Providing accommodations simply means providing alternatives to students who cannot perform the essential requirements of their academic programs due to the reasons mentioned above. At no time does academic accommodation undermine or compromise the learning objectives that are established by the academic authorities of the university.

This section provides only a brief overview of the accommodations policy and process. Please contact [Equity and Inclusive Communities](#) for a full explanation.

Religious Observation: A request should be made in the first two weeks of the academic term, or as soon as possible where the scheduling of an event or activity conflicting with a religious obligation does not appear in the course outline or calendar. A list of multi-faith holy days is accessible through the [Equity Services website](#). Instructors can also contact Equity Services to confirm the eligibility of a religious event or practice.

Pregnancy and/or Parental Leave: Requests for parental leave must be made in writing to the Registrar’s Office, or in the case of graduate students, to the Office of the Dean of Graduate and Postdoctoral Affairs.

A student who is pregnant may request a temporary modification to her program (e.g., laboratory or field work). The student should meet with the instructor(s). The department chair/director and

the faculty dean can assist in the discussion. An Equity Services advisor can also be consulted if a student has questions about pregnancy and/or parental leave.

Students with Disabilities: Carleton is strongly committed to providing access and accommodation for all individuals with identified and duly assessed disabilities. The university has a [Senate-approved policy on academic accommodation](#) that forms part of its human rights policy. The policy promotes efforts to accommodate students with disabilities so that they will have the opportunity to meet learning outcomes and be fairly evaluated in their performance. In no case, however, does academic accommodation negotiate away, lower, or remove the academic standards and learning outcomes of any course or program, rule, regulation, or policy at the university.

Some students with disabilities may require special accommodations for tests and exams. In these cases, students must present you with a signed accommodation form from the Paul Menton Centre detailing their accommodation needs well in advance of the date of an exam. A copy of the [Paul Menton Centre accommodations policy can be found here](#).

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 carleton.ca/sexual-violence-support.

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 must be provided to students who compete or perform at the national or international level. Please contact your instructor 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, see [the policy](#).

Contacts

Equity Services 503 Robertson Hall 613-520-5622 equity@carleton.ca carleton.ca/equity	Paul Menton Centre 501 University Centre 613-520-6608 pmc@carleton.ca carleton.ca/pmc
--	--