DEPARTMENT OF GEOGRAPHY AND ENVIRONMENTAL STUDIES

PRELIMINARY COURSE OUTLINE
Global Biogeochemical Cycles GEOG 4017 [0.5 credit] Fall 2017

Lecture: 80 min twice per week
Room: Loeb A410
Instructor: Elyn Humphreys, B359 Loeb, <elyn.humphreys@carleton.ca>
Office hours: I keep an open-door policy but please feel free to email me to make an appointment.

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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. Preclusions: none

3. Texts:
Assigned readings will be available via the library 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 Calendar:
Each week will generally consist of a formal 80 min lecture and an 80 min student-led discussion reviewing recent journal articles and a biogeochemistry topic "in the news".

Tentative schedule:

Sept 6:	**Lecture 1. Introduction/ Global Biogeochemistry**
Sept 11:	**Lecture 2. The Global C Cycle**
Sept 13:	*No Lecture (readings/topics assigned)*
Sept 18:	**Lecture 3. Carbon Cycle – The Carbon Cycle of Terrestrial Ecosystems**
Sept 20:	Discussion Paper and topic in the news (Instructor presentation/student participation) – Global Carbon Cycle and Missing CO_2
Sept 25:	**Lecture 4. Carbon Cycle - Soil Carbon and Global Change**
Sept 27:	Discussion Papers
Oct 2:	**Lecture 5. Aquatic Carbon Fluxes**
Oct 4:	Discussion Papers
Oct 9:	*Thanksgiving Holiday*.
Oct 11:	**Lecture 6. Methane part 1**

Take-home midterm assigned Oct 13 at 4 pm, due electronically by 4 pm Oct 20

Oct 16:	**Lecture 7. Methane part 2**

Oct 18:	Optional Field Trip to Mer Bleue
Oct 26/28:	*Fall Break*
Oct 30:	**Lecture 8. Intro to NPKS Cycling**
Nov 1:	Discussion Papers
Nov 6:	**Lecture 9. Sulfur Cycling**
Nov 8:	Discussion Papers
Nov 13:	**Lecture 10. Nitrogen Cycling– part 1**
Nov 15:	Discussion Papers
Nov 20:	**Lecture 11. Nitrogen Cycling– part 2**
Nov 22:	Discussion Papers
Nov 27:	**Lecture 12. NPK Cycling/Interactions**
Nov 29:	Discussion Papers *Take-home final assigned*
Dec 4:	Discussion Papers (if needed)
Dec 6:	No class. *Final assignment due electronically by 4 pm*

5. Course Evaluation:

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

Paper presentations: Each student will be responsible for leading a ~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': Each student will have ~20 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 but you must come see or email the instructor (Elyn Humphreys) **BEFORE** the deadline. No assignments will be accepted for grading once any graded assignments have been 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 at* http://www.carleton.ca/studentaffairs/academic-integrity/.

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:
You may need special arrangements to meet your academic obligations during the term. For an accommodation request the processes are as follows:

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 more details see the Student Guide.

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 see the Student Guide.

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 for a formal evaluation. If you are already registered with the PMC, contact your PMC coordinator to send me your Letter of Accommodation 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). 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).

You can visit the Equity Services website to view the policies and to obtain more detailed information on academic accommodation at http://carleton.ca/equity/accommodation.