



Geography 474-02 **Carbon in the Biosphere**

Spring 2017

Course instructors: Maria Strack, Matthew Morison
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Calendar description: This course investigates stocks and fluxes of carbon in forests, wetlands and lakes through field investigations in the forest, wetland and lakes in southern Ontario. This field-based course will focus on measurement methods, data collection and interpretation. Topics include forest biomass inventory, soil organic matter, soil carbon dioxide and methane exchange and dissolved organic carbon.

Detailed course description:

Learning Outcomes:

1. Students will be familiar with many field and laboratory techniques for determining stocks and fluxes of carbon in the biosphere.
2. Students will understand the challenges associated with data collection, analysis and interpretation and be able to evaluate the accuracy and precision of a range of field techniques.
3. Students will apply what they have learned to develop their own research question related to biosphere carbon exchange, design a study, present a proposal, provide feedback on proposals of their peers, collect appropriate data and prepare a consulting type report of the results.

Evaluation

Pre-field trip reading seminar	15%
Field notebook	10%
Participation	15%
Labs (4 x 7.5% each)	30%
Proposal presentation	5%
Final report	25%

Course Schedule:

Date	Activity	Deliverable	Location
mid-May	Reading assignments and course overview		Ecology Lab
Friday June 23	Safety and lab orientation Reading seminars Study site tour	Presentation of assigned reading to the class	Ecology Lab UWaterloo Ecological Preserve
Saturday June 24	Forest biomass inventory	Lab report 1	Ecological Preserve
Sunday June 25	Soil organic matter and understory CO ₂ exchange Proposal pitch	Lab report 2	Ecological Preserve Ecology Lab
Monday June 26	Wetland CH ₄ flux and dissolved organic carbon	Lab report 3	Ecological Preserve
Tuesday June 27	Lake carbon exchange	Lab report 4	Ecological Preserve
Wednesday June 28	Proposal presentations and preliminary data collection	Proposal presentation	Ecology Lab Ecological Preserve
Thursday June 29	Data collection		Ecological Preserve
Friday June 30	Data collection	Field notebook	Ecological Preserve
One month later	Complete project report	Project report	

Course Readings:

There is no textbook for this course but there may be materials on reserve in the library or on the course website as needed. Readings will be assigned in mid-May and must be completed before the field portion of the course.

Attendance and In-class Discussions: The ability to communicate via discussion is an important skill to develop for academia, the private sector and other public workplaces. Students are expected to listen carefully, be objective, and contribute to in-class discussions. Such discussions may occur in the classroom or out in the field. Your involvement in these discussions will be reflected in your participation grade. Regular attendance of this course is essential as much of the learning in this course is hands-on. A portion of your participation grade will reflect your regular attendance and participation in class (particularly group discussions and proposal reviews).

Field Journals: One of the most important tools a Geographer has is the field journal. All field journals, no matter what their form, serve the same purpose: to record, describe, analyze and remember some form of data. Your journal for this class may include entries from lecture notes and readings but will largely consist of field notes. Your field journal must accompany you to each class and is *ALWAYS WITH YOU IN THE FIELD*.

PLEASE NOTE

Email Correspondence: Any email correspondence between students and instructors will only be through University of Waterloo email accounts. There will be no exceptions.

Late Assignments: A penalty of 10% will be applied for each day that an assignment is late.

Students with disabilities: Students with special needs are encouraged to contact the Office for Persons with Disabilities (OPD) (Needles Hall). Please register with the OPD at the beginning of each academic term and subsequently meet with me to discuss your needs.

Academic Integrity and Discipline: In order to maintain a culture of academic integrity, members of the University of Waterloo community are expected to promote honesty, trust, fairness, respect and responsibility. [Check www.uwaterloo.ca/academicintegrity/ for more information.]. A student is expected to know what constitutes academic integrity to avoid committing an academic offence, and to take responsibility for his/her actions. A student who is unsure whether an action constitutes an offence, or who needs help in learning how to avoid offences (e.g., plagiarism, cheating) or about “rules” for group work/collaboration should seek guidance from the course instructor, academic advisor, or the undergraduate Associate Dean. For information on categories of offences and types of penalties, students should refer to Policy 71, Student Discipline, www.adm.uwaterloo.ca/infosec/Policies/policy71.htm. For typical penalties check Guidelines for the Assessment of Penalties, www.adm.uwaterloo.ca/infosec/guidelines/penaltyguidelines.htm

Appeals and Grievance: A decision made or penalty imposed under Policy 70 (Student Petitions and Grievances) (other than a petition) or Policy 71 (Student Discipline) may be appealed if there is a ground. A student who believes he/she has a ground for an appeal should refer to Policy 72 (Student Appeals) www.adm.uwaterloo.ca/infosec/Policies/policy72.htm. A student who believes that a decision affecting some aspect of his/her university life has been unfair or unreasonable may have grounds for initiating a grievance. Read Policy 70, Student Petitions and Grievances, Section 4, www.adm.uwaterloo.ca/infosec/Policies/policy70.htm

Plagiarism detection software (*Turnitin*) will be used to screen assignments in this course. This is being done to verify that use of all materials and sources in assignments is documented. Students will be given an option if they do not want to have their assignment screened by Turnitin. In the first week of the term, details will be provided about arrangements and alternatives for the use of Turnitin in this course.