

Soil Properties GEOG 3108A

[0.5 credit]

Fall 2019

Lecture: 110 min once per week, Southam Hall 517

Labs: 3 h/week × 7 weeks in Loeb A120

Instructor: Elyn Humphreys, B359A Loeb, <elyn.humphreys@carleton.ca>

Office hours: I keep an open-door policy but please feel free to email me to make an appointment.

Teaching Assistant: TBD

1. Course Description:

This course will introduce you to the fundamentals of soil science, with emphasis on the physical and chemical properties of the solid (mineral and organic), liquid, and gas phases of soils. These soil properties & the role soil plays in our lives will be explored through five units (see course calendar below).

2. Prerequisites: none

3. Texts:

1) Required text book: any edition of *Elements of the Nature and Properties of Soils*, N.C. Brady and R.R. Weil OR any edition of the extended text, *The Nature and Properties of Soils*, N.C. Brady and R.R. Weil.

2) Lecture slides will be made available on CULearn.*

3) Laboratory assignments will be available on 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:

Tentative schedule:

Sept 4: Lecture 1. Introduction/ Degradation of Soil Physical Properties: Impacts of structural degradation on plant productivity and air and water quality.

No labs this week

Sept 11: Lecture 2. Degradation of Soil Physical Properties – part 2

No labs this week.

Sept 18: Lecture 3. Degradation of Soil Physical Properties – part 3

Sept 21: Lab 1. Saturday field trip, 10 am – 1 pm. Optional 3 h trip to view and collect soils. More details will be given in class. If unable to attend, an alternate paper assignment will be available. (Rain date is Sunday Sept 22)

Sept 25: Lecture 3. Degradation of Soil Physical Properties – part 3

Lab 2. Aggregate stability

Oct 2: Lecture 4. Degradation of Soil Physical Properties – part 4

Lab 3. Particle size analysis and Soil water relationships

Oct 9: Lecture 5. Quick Clay: Soil colloids and their properties.

No labs this week

Oct 16: Lecture 6. Quick Clay – part 2

Lab 4. Atterberg limits

Oct 23: *Reading Break*

- Oct 30:** Midterm test
No labs this week.
- Nov 6:** Lecture 7. Organic Farming: Soil fertility management challenges
Lab 5. Soil pH and cation exchange
- Nov 13:** Lecture 8. Organic Farming – part 2
No labs this week.
- Nov 20:** Lecture 9. The Arctic Carbon Bomb: Soil formation, carbon cycling and climate change
Lab 6. Soil respiration
- Nov 27:** Lecture 10. The Arctic Carbon Bomb – part 2
Lab 7. Soil classification – *marked in class, must attend to receive marks.*
- Dec 4:** Lecture 11. The Arctic Carbon Bomb – part 3/Review
No labs this week

5. Evaluation:

Laboratory assignments	40%	
In-class quizzes/activities	10%	
Mid-term exam	25%	
Final exam	25%	(held during the exam period)

Except under special circumstances, you must pass the lab section of the course in order to pass the course.

Laboratory assignments: Seven laboratory sessions will be held to further develop the concepts introduced during the lectures through hands-on activities. Each lab assignment will be given equal weight towards the final lab grade.

Collaboration is encouraged while working through the assignments, but each student must hand in his or her own, individually prepared assignment. See statement on plagiarism below.

Policy on lateness: Lab assignments generally are due at the beginning of your lab one week after distribution, unless otherwise indicated. Late assignments will be penalized unless accompanied by appropriate documentation (e.g. medical note). If handed in any time after the beginning of your lab period, your assignment will be penalized by 5% and then 5% for every additional day (5% per weekend) and will not be accepted after assignments have been graded and returned. Extensions may be granted for legitimate reasons, but you must come see or email the instructor (Elyn Humphreys) **BEFORE** the deadline.

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:

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 [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 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).

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, [click here](#).

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. 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](#).