

Soil Properties GEOG 3108A

[0.5 credit]

Fall 2016

Prerequisites: GEOG 2013 or 2014, or permission from the Department

Lecture: 110 minutes once per week, University Centre 180

Lab: 3 hours per week, for 7 weeks, Loeb A120

Instructor: Marcus Phillips, marcus.phillips@carleton.ca

Office hours: Mondays 1030 – 1130, Loeb B340, *or by appointment*

Teaching Assistants: Andrée-Anne Laforce, andreeannelaforce@email.carleton.ca;

Nicolas Pelletier, nicolaspelletier@email.carleton.ca

- I. Course Objectives:** This course will introduce fundamental concepts in soil science, including:
- what soil is and its basic functions for ecosystems and society,
 - the basic processes of soil formation and the basic factors that influence these processes,
 - some fundamental physical and chemical properties of soil components (minerals, organic matter, liquids/ice, and gases), and
 - some of the ways these processes and properties interact to influence the ability of soil to fulfill its basic functions in the context of issues that influence society including (but not limited to) compaction, erosion, landslides, soil fertility, biogeochemical cycling, and climate change.

II. Preclusions: This course does not preclude taking any other courses at Carleton University for credit.

III. Texts:

Required: *Elements of the Nature and Properties of Soils*, 3rd ed. N.C. Brady and R.R. Weil.

Note: older editions of *Elements* will be sufficient, as will any recent edition of the extended text, *The Nature and Properties of Soils*, N.C. Brady and R.R. Weil (or Weil and Brady for the most recent edition).

Partial lecture notes will be made available on cuLearn at the discretion of the instructor.*

Instructions for the completion of laboratory assignments will be available on cuLearn.

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IV. Course Schedule:

Lectures: Mondays 0835 – 1025 & Friday Dec 9 0835-1025, University Centre 180

Labs: Section A02 Tuesdays 0835 – 1125, Loeb A120, Instructor: Andrée-Anne Laforce

Section A03 Tuesdays 1135 – 1425, Loeb A120, Instructor: Nicolas Pelletier

Field Trip (Lab 01): Sept 24, approximately 3 hours in length, details will be given in class;

the field trip is optional – if you are unable to attend an alternative assignment will be provided

Instructor Office Hours: Mondays following lecture 1030 – 1130, Loeb B340

DEPARTMENT OF GEOGRAPHY AND ENVIRONMENTAL STUDIES

Date	Lecture/Lab/Exam	Topic	Readings
Sept 12	Lecture 01	Degradation of Soil Properties 1	Chapters 1 & 4
Sept 13	No Lab		
Sept 19	Lecture 02	Degradation of Soil Properties 2	Chapters 4, 5, & 7
Sept 20	No Lab		
Sept 24	Lab 01	Field Trip	
Sept 26	Lecture 03	Degradation of Soil Properties 3	Chapters 4, 5, & 7
Sept 27	Lab 02	Aggregate Stability	
Oct 3	Lecture 04 Lab 01 Due (0830) Lab 02 Due (0830)	Degradation of Soil Properties 4	Chapters 4 & 5
Oct 4	Lab 03	Particle Size and Soil Water	
Oct 10	No Lecture		
Oct 11	No Lab Lab 03 Due (1300)	Hand lab in to dropbox at Loeb B342	
Oct 17	Lecture 05	Quick Clays 1	Chs 8.1-8.7, 8.15, & 4.9
Oct 18	Lab 04	Atterberg Limits	
Oct 24	No Lecture		
Oct 25	No Lab		
Oct 31	Lecture 06 Lab 04 Due (0830)	Quick Clays 2	
Nov 1	No Lab		
Nov 7	Midterm Exam		
Nov 8	No Lab		
Nov 14	Lecture 07	Organic Farming and Soil Fertility 1	Chapter 8.6 – 8.13
Nov 15	Lab 05	Soil pH and Cation Exchange	
Nov 21	Lecture 08 Lab 05 Due (0830)	Organic Farming and Soil Fertility 2	Chapters 9 & 12
Nov 22	No Lab		
Nov 28	Lecture 09	Soil Formation, C Cycling, and Climate 1	Chapter 11
Nov 29	Lab 06	Soil Respiration	
Dec 5	Lecture 10 Lab 06 Due (0830)	Soil Formation, C Cycling, and Climate 2	Chapters 7, 10, & 11
Dec 6	Lab 07	Soil Classification	
Dec 9	Lecture 11 Lab 07 Due (0830)	Soil Formation, C Cycling, and Climate 3	Chapter 2

V. Evaluation:

Final course grades will be determined according to the following breakdown¹:

Laboratory Assignments ²	35%
Mid-Term Exam	30%
Final Exam	30%
In-Class Activities	5%

¹In accordance with the Faculty Grading Guidelines, 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.

²Except under special circumstances, you must pass the lab section of the course in order to be awarded a passing grade for the course.

Laboratory Assignments: Seven laboratory sessions will be held during which students will further develop the concepts introduced during lectures through hands-on experiments and activities. Each lab session will be associated with a written lab assignment to be submitted for grading. Collaboration is encouraged while working through assignments but **each student must hand in a unique, individually prepared assignment**. See statement on plagiarism in section VI. Each lab assignment will be given equal weight in calculating the final lab grade.

Attendance at the lab sessions is mandatory, and **students who will not be available for a particular lab session are expected to contact the course instructor or the teaching assistant leading their lab by noon on the day before the lab session**. Failure to make arrangements prior to your absence could result in the lowering or forfeiture of your grade for that assignment, at the discretion of the course instructor.

In-Class Activities: Some lectures will include brief activities meant to promote discussion and reflection about concepts introduced during the course. Students who show sufficient participation in the activity will be awarded the maximum available mark, even if their conclusions are not entirely correct. **To receive a grade for an in-class activity, the student must be present at the lecture**. No prior notice will be given regarding which lectures will include in-class activities.

Late Submissions: Lab assignments are to be handed in to the course instructor at the beginning of the lecture, unless otherwise indicated (see schedule in section IV). Any assignment received **after the lecture begins** will be considered one day late, with an additional day added with each 24-hour increment. Each student will be permitted two late days with no penalty **for the entire course**. Once these late days are used, late assignments will be penalized by one third (33.3%) for each late day. Extensions may be granted with a medical note and for legitimate compassionate reasons, but you must discuss an extension with the course instructor **BEFORE** noon on the day before the assignment is due; retroactive extensions will not normally be granted. There is no circumstance where an assignment can be accepted for grading after marked assignments have already been returned to other students.

VI. 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 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 acknowledgement 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 that **cannot be resolved directly by the course 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.

VII. Requests for Academic Accommodations:

You may need special arrangements to meet your academic obligations during the term. You can visit the Equity Services website (<http://www.carleton.ca/equity>) to obtain more detailed information on academic accommodation. For accommodation request the process is as follows:

Pregnancy and/or Religious obligation: write to the course 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 student guide.

Students with disabilities: The Paul Menton Centre for Students with Disabilities (PMC) provides services to students with Learning Disabilities, psychiatric/mental health disabilities, Attention Deficit Hyperactivity Disorder, Autism Spectrum Disorders, 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 the course instructor 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). Requests made within two weeks will be reviewed on a case-by-case basis. 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) at <http://www.carleton.ca/pmc>.