

GGR205H1-F: Introduction to Soil Science

University of Toronto

Department of Geography & Planning

Fall 2020

Course Information

<i>Lecture:</i>	Monday 2:10 - 4 pm (Toronto time/Eastern Time) LEC5101/LEC6101 (Online)
<i>Instructor:</i>	Sarah Peirce Assistant Professor, Teaching Stream s.peirce@utoronto.ca
<i>Teaching Assistant:</i>	Hannelore Yager h.yager@mail.utoronto.ca

Course Description

We will explore the fundamentals of soil science including the chemical, physical, and biological properties of soils; soil formation and development; and the classification of soils. Using lectures and assignments, this course also investigates the application of soil science to land use, environmental quality, global change, and sustainable development.

Recommended preparation: CHM138H1/CHM136H1, CHM139H1/CHM135H1;
JEG100H1/GGR100H1

Learning Outcomes

This course, and the following learning outcomes, have been designed to enhance your knowledge of soils while also strengthening your writing and communication skills. These skills are essential in the sciences and will be valuable regardless of what academic or career path you pursue in the future.

By the end of the course, you will be able to:

- Describe the main physical, chemical, and biological properties of various soils.
- Explain the main processes associated with soil formation, soil water, and soil nutrient cycling.
- Identify and describe the main soil orders from the Soil Taxonomy System and the Canadian System of Soil Classification.
- Assess the functions of soils in both natural and managed environments and ecosystems.
- Investigate the soil and management history of the Oak Ridges Moraine and Holland Marsh using relevant literature in written and visual formats.

Course Format and Expectations

Online Delivery

This course is being offered online only. Until otherwise stated, lectures for this course will be delivered live during the scheduled time (Toronto time/Eastern Time) using BB Collaborate and recorded for later (asynchronous) viewing.

You are encouraged to attend the live lectures, although this is not required to complete or succeed in the course. Any necessary changes to the mode of delivery due to technical issues, community health guidelines, or other issues will be communicated through Quercus.

To succeed in GGR205, you are expected to be an active course participant. This includes reaching out and engaging with your teaching team and peers as well as scheduling an appropriate amount of time to complete course modules regularly.

Quercus

This course will use the online teaching and learning platform, [Quercus](#), for providing you with important course materials including announcements, lecture slides, lecture webinars and recordings, assignment guidelines, and grades.

Each week of class there will be a new Quercus module released dedicated to that week's topic. These modules contain lecture slides, helpful resources, practice quizzes, and a discussion forum for sharing comments and questions as well as connecting with your peers and teaching team.

It is **your responsibility** to visit the website regularly to access important course information and materials.

Active Engagement

Active learning can improve student engagement and long-term retention of course material. This course uses activities like polls, activity sheets, practice quizzes, discussion forums, and brainstorming to enhance the learning experience of you and your peers. Some of these activities can be completed during lecture time and others will be integrated into the weekly course modules. Please always be prepared to participate and to be respectful to your peers and instructors in this course.

Course Materials

Textbook (Required)

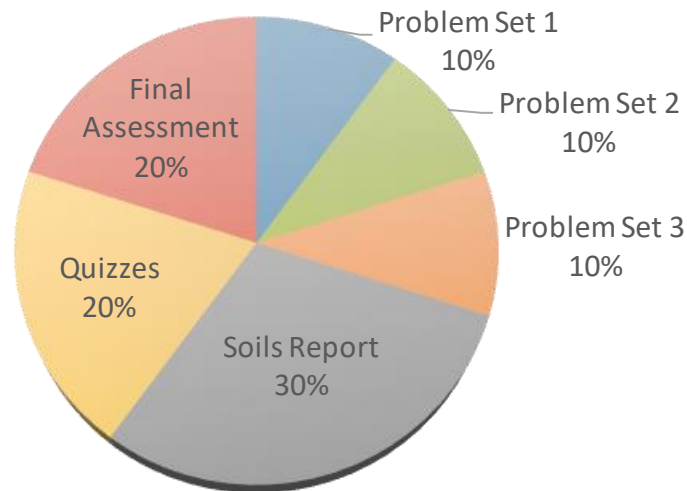
Weil, R.R., & Brady, N.C. (2019). *Elements of the Nature and Properties of Soils* (4th ed.)
Pearson.

The text will be available for purchase at the U of T bookstore and the publisher. Any additional articles and materials used for this course will be available through Quercus.

Supplementary Material

Soil Classification Working Group (1998). *The Canadian System of Soil Classification* (3rd ed.). Agriculture and Agri-Food Canada Publication 1646 (Revised).

Methods of Evaluation



**Additional details for each assignment will be provided during lecture and on Quercus. All assignments will be submitted electronically using Quercus (see schedule below). **

Problem Set Assignments

- Problem Set 1 (10%) – Due October 19, 2020
- Problem Set 2 (10%) – Due November 23, 2020
- Problem Set 3 (10%) – Due December 7, 2020

For each problem set assignment, you will apply basic data analysis techniques as well as knowledge from class and readings to address a series of practical soil science problems.

Soils Report

- Part 1 (10%) – Preliminary Report – Due October 26, 2020
- Part 2 (20%) – Final Report – Due November 30, 2020

Using reliable sources, you will write a report discussing the history and management of the Oak Ridges Moraine and Holland Marsh. There are discussion questions to help guide your research. You can work on this assignment in pairs or individually.

Quizzes

- Quiz 1 (10%) – October 5, 2020
- Quiz 2 (10%) – November 2, 2020

You will complete two online quizzes to assess your understanding of course concepts. Quizzes will have various question types, including multiple choice and short answer.

Final Assessment

- Final Assessment (20%) – Due during the Final Assessment Period - date TBA

A cumulative assessment following a similar structure to the quizzes will be scheduled during the Final Assessment Period.

Assignment Submission and Late Penalties

- All assignments and quizzes will be submitted electronically on Quercus.
- Where applicable (see assignment guidelines for full details), term work must be submitted on Quercus by 11:59 pm (Toronto time/Eastern Time) on the date they are due. Late assignments will receive a deduction of 5% per day (including Saturday and Sunday). Late assignments will not be accepted after 7 days past the due date without an approved extension.
- Quizzes will be open for a period of time on the day they are due, during which time you must complete and submit your quiz.
- Quizzes do not have late penalties and will not be accepted after the due date/time without approved extensions. Please plan your time accordingly.
- Extensions without penalty will be granted for reasons of accommodation, illness, or emergencies. Please contact your instructor as soon as possible to discuss extensions.

Turnitin.com

The following applies to written assignments being submitted through Quercus. Please contact me if you have any questions or would like to opt-out of using Turnitin.

Normally, students will be required to submit their course essays to Turnitin.com for review of textual similarity and detection of possible plagiarism. In doing so, students will allow their essays to be included as source documents in the Turnitin.com reference database, where they will be used solely for the purpose of detecting plagiarism. The terms that apply to the University's use of the Turnitin.com service are described on the Turnitin.com website.

Course Schedule

Below is the anticipated course schedule. Check Quercus regularly for any changes to readings and/or topics.

Week 1 – September 14

- Topic– Introduction to Soils
- Textbook reading– Weil & Brady (2019) Chapter 1

Week 2 – September 21

- Topic– Origin of Soils
- Textbook reading– Weil & Brady (2019) Chapter 2 (Sections 2.1 – 2.8)

Week 3 – September 28

- Topic– Physical Properties of Soils
- Textbook reading– Weil & Brady (2019) Chapter 4 (Sections 4.1 – 4.8)

Week 4 – October 5

- Topic– Soil Classification
- Textbook reading– Weil & Brady (2019) Chapter 2 (Sections 2.8 – 2.11), Chapter 3
- Due date – Quiz 1

Week 5 – October 12 – THANKSGIVING – NO CLASS

- Make-up class on December 10

Week 6 – October 19

- Topic– Soil Water
- Textbook reading– Weil & Brady (2019) Chapter 5
- Due date – Problem Set 1

Week 7 – October 26

- Topic– Soils and the Hydrologic Cycle
- Textbook reading– Weil & Brady (2019) Chapter 6 (Sections 6.1 – 6.6), Chapter 7 (Section 7.1, 7.7 – 7.8)
- Due date – Soils Report Part 1 – Preliminary Report

Week 8 – November 2

- Topic– Soil Chemistry and Soil Colloids
- Textbook reading– Weil & Brady (2019) Chapter 8, 9 (Section 9.1)
- Due date – Quiz 2

Fall Break – November 9 - 13

Week 9 – November 16

- Topic– Chemical Properties of Soils
- Textbook reading– Weil & Brady (2019) Chapter 9 (Sections 9.1 – 9.10; skim rest)

Week 10 – November 23

- Topic– Soil Organisms and Organic Matter
- Textbook reading– Weil & Brady (2019) Chapter 10, 11
- Due date – Problem Set 2

Week 11 – November 30

- Topic– Nutrient Cycling and Soil Fertility
- Textbook reading– Weil & Brady (2019) Chapter 11, 12 (Sections 12.1 – 12.5, 12.8, skim rest)
- Due date – Soils Report Part 2 – Final Report

Week 12A – December 7

- Topic – Soil Degradation
- Textbook reading – Weil & Brady (2019) Chapter 13 (Sections 13.1 – 13.3, 13.7, 13.10), Chapter 14 (14.1 – 14.3)
- Due date – Problem Set 3

Week 12B – December 10 – Make-up Day

- Topic – Soil Remediation
- Textbook reading – Weil & Brady (2019) Chapter 14 (14.6 – 14.15), Chapter 15

Final Assessment Period (December 11 – 22)

- Due – Final Assignment

Course Policies and Statements

Accessibility

Students with diverse learning styles and needs are welcome in this course. If you have a disability or health consideration that may require accommodations, please approach me and/or the Accessibility Services Office as soon as possible at +1-416-978-8060 or <http://www.accessibility.utoronto.ca/>.

Equity Statement

The University of Toronto is committed to equity, human rights, and respect for diversity. All members of the learning environment in this course should strive to create an atmosphere of mutual respect where all members of our community can express themselves, engage with each other, and respect one another's differences. U of T does not condone discrimination or harassment against any persons or communities.

Communication and Email

You are encouraged to ask course-related questions during class and office hours, on course discussion forums, and using Quercus Inbox or email. When using email, you must use your U of T account as other email addresses may be filtered as spam. Also, please include GGR205 in the subject heading, and your full name in the text.

I will typically respond to Quercus Inbox messages and emails within 24 hours, excluding weekends and holidays. Emails received after 5 pm will typically be replied to the following business day. Please follow up with your teaching team if you have not received a response within 2 business days.

Accommodations

If you are seeking accommodation for late term work, you should submit a request for special consideration to the instructor or academic unit as soon as possible and no later than one (1) week after the assignment or quiz due date.

For this semester, the University is temporarily suspending the need for a doctor's note or medical certificate for absences from academic participation. Please use the Absence Declaration tool on ACORN to declare an absence if you require consideration for missed academic work. You are responsible for contacting your instructors to request the academic consideration you are seeking. Record each day of your absence as soon as it begins, up until the day before you return to classes or other academic activities.

Please alert the instructor as soon as possible, and at least two weeks in advance, if term work due dates conflict with religious observances so that reasonable alternate arrangements can be made.

Grade Change

Re-marking requests of course work must be made to the instructor within two (2) weeks of receiving the grade, after which the mark is considered final. Please provide an email with your name, the course code, and a short explanation what you would like re-graded and why. Your material will be re-graded by the person who originally graded it (either TA or instructor). Please note that your mark can increase or decrease as a result of re-grading.

Academic integrity

**** If you have any questions about what is or is not permitted in this course, please do not hesitate to contact your teaching team. ****

The University of Toronto's [Code of Behaviour on Academic Matters](#) outlines the behaviours that constitute academic misconduct, the processes for addressing academic offences, and penalties that may be imposed. Potential offences include, but are not limited to:

- In papers and assignments:
 - Using someone else's ideas or words without appropriate acknowledgement.
 - Submitting your own work in more than one course without the permission of the instructor.
 - Making up sources or facts.
 - Obtaining or providing unauthorized assistance on any assignment (this includes working in groups on assignments that are supposed to be individual work).
- On quizzes, tests, and exams:
 - Using or possessing any unauthorized aid.
 - Looking at someone else's answers.
 - Letting someone else look at your answers.
 - Misrepresenting your identity.
 - Submitting an altered test for re-grading.
- Misrepresentation:
 - Falsifying or altering any documentation required by the University, including (but not limited to) doctor's notes.
 - Falsifying institutional documents or grades.

All suspected cases of academic dishonesty will be investigated following the procedures outlined in the *Code of Behaviour on Academic Matters*.

Copyright

Lectures and course materials prepared by the instructor are considered by the University to be an instructor's intellectual property covered by the Copyright Act, RSC 1985, c C-42. Course materials such as PowerPoint slides and lecture recordings are made available to you for *your own study purposes*. These materials **cannot** be shared outside of the class or "published" in any way. Posting recordings or slides to other websites without the express permission of the instructor will constitute copyright infringement.

Additional Resources

Below are some helpful resources for this course. Click on each the link to find out more information.

Online Learning

- [Getting Ready for Online](#)
- [Recommended Technology Requirements for Remote/Online Learning](#)

Library and Writing Support

- Library services are available online at: <https://onesearch.library.utoronto.ca/ask>
- [Writing at the University of Toronto](#)
 - [How Not to Plagiarize](#)
 - [Advice on Academic Writing](#)

Support Services

- [Office of the Faculty Registrar](#)
- [Student Services and Support](#)

Mental Health

If you or someone you know is experiencing distress, there are resources on campus and off-campus to assist you including:

- [Safety & Support](#)
- [Health & Wellness](#)