

**GEOG 2213(3)-001**  
**Introductory Soil Science**  
**Fall 2023**

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**Lectures:** Monday, Wednesday, Friday 13:30 to 14:20; 4CM13

**Office Hours:** Monday, Wednesday, Friday – 12:30 to 13:20

**Labs:** Tuesday and Wednesday 14:30 to 16:20; 5L15

**COURSE DESCRIPTION:** This course provides an introduction to pedology, the study of soils as physical entities in their own right. A review of the history of soil science is followed by a detailed introduction to soil forming factors and soil genesis. A brief review of the US Soil Taxonomy classification system then introduces a detailed review of the Canadian Soil Classification System, and the geographic distribution of soil types. This is followed by a review of the physical and chemical properties of soils, soil organisms and soil organic matter. The course concludes with an introduction to edaphology, the study of soils from the point of view of their plant cover. Laboratory sessions deal with the physical and chemical properties of soils using soil samples collected on one or more field trips, and with soil classification.

**IMPORTANT DATES:**

First Lecture	September 6, 2023
Truth and Reconciliation Day, University Closed	September 30, 2023
Soils Field Trip	October 1, 2023
Mid-Term Reading Week	October 8-14, 2023
Thanksgiving Day, University Closed	October 9, 2023
Remembrance Day, University Closed	November 11, 2023
Final date to withdraw without academic penalty	November 13, 2023
Last Lecture	December 4, 2023
Fall Term Evaluation Period	December 7-20, 2023

## COURSE ASSESSMENT:

Mid-Term Test	20 %	October 18, 2023
Labs	20 %	T.B.A.
Lab Report	20 %	Due: Dec. 1, 2023
Lab Exam	15%	Nov. 28; 29, 2023
Exam	25%	T.B.A.

Final grades will be assigned on the basis of accumulated numeric marks allocated throughout the term. Letter grades are typically determined using the following numeric groupings as guidelines:

90-100% = A+; 84-89 = A; 80-83 = A-; 75-79 = B+; 70-74 = B; 65-69 = C+; 55-64 = C; 50-54 = D; < 50 = F.

**NOTE: The numeric boundaries separating letter grades may be adjusted at the request of the Departmental Review Committee.**

**TEXTBOOK (optional):** Weil, R.R and Brady, N.C. (2016) The Nature and Properties of Soils. 15th Edition. Print ISBN: 9780133254488, 0133254488  
eText ISBN: 9780133254556, 0133254550

**TOPICS FOR DISCUSSION:** The following table outlines the topics to be discussed during the lectures. The order of presentation is subject to change as circumstances dictate and all the topics listed may not be covered (text readings assigned during class).

**Introduction to Basic Soil Properties:** Course objectives; definition of a soil; the pedological versus edaphological approach to studying soil; basic soil profile terminology; mineral and organic soils and their primary constituents; introduction to soil organic matter, soil water, essential plant nutrients, soil acidity (pH), soil salinity, and soil atmosphere; soil organisms and their basic role in soils.

**The Genesis, Classification and Distribution of Soils:** origin of the mineral and organic particles that make up soils; rock types and the weathering of rock; the classification of soil parent materials and the role of both glaciation and volcanism; soil forming factors in soil genesis; the concept of individual soils and detailed profile descriptions; soil classification in general, in the USA ("Soil Taxonomy"), and the Canadian Soil Classification System in detail; Manitoba, Canada and world soil distribution patterns.

**The Physical Properties of Soils:** soil colour, texture, textural classes, particle density, bulk density and porosity; aggregates, aggregation, structural management; tillage and no-till farming; soil moisture and plant needs for both water and oxygen;

the role of soil in the hydrologic cycle; soil energy balance.

**The Soil Colloids – Clays and Humus:** soil colloids such as the silicate clays, oxide clays and humus; colloid charges and charge alterations; cation exchange, cation exchange capacity and base saturation percentage; the geographic distribution of clay types.

**The Chemical Properties of Soils:** soil reaction-acidity and alkalinity; buffering soils -active and reserve acidity - available/reserve bases; saline and sodic soils.

**Conclusion:** soils in everyday life; a brief introduction to edaphology, the study of soils from the point of view of the plant cover, both natural and derived.

**FIELD TRIP:** The field trip will be on **Sunday October 1<sup>st</sup>** from 8:30 until approximately 17:30. Meet at the north door of Lockhart Hall (Ellice Ave. entrance) by 8:15. at the latest. The trip is designed to collect soil samples typical of the variety found in southern Manitoba. These samples are collected by soil horizon, and you will analyze them in laboratory sessions during the term. Please be aware that it will be necessary to sign up for the field trip indicating your anticipated attendance.

**LABORATORY WORK:** Students are also required to download the lab assignments from Nexus; you are also required to complete the UW WHMIS course before labs commence on September 12<sup>th</sup> or 13<sup>th</sup>. The labs are worth 20% of the course grade. The lab report assigned is worth 20% of the course grade. Late labs and reports are penalized one percent for each day or part of day that they are late.

### **Ongoing Guidelines & Regulations**

1. A permitted or necessary change in mode of delivery may require adjustments to important aspects of course outlines, like class schedule and the number, nature, and weighting of assignments and/or exams.
2. Students can find answers to frequently asked questions related to remote learning here: <https://www.uwinnipeg.ca/covid-19/remote-learning-faq.html>.
3. When it is necessary to cancel a class due to exceptional circumstances, every effort will be made to inform students via UWinnipeg email (and/or using the preferred form of communication, as designated in this outline).
4. Students have the responsibility to regularly check their UWinnipeg e-mail addresses to ensure timely receipt of correspondence from the University and/or their course instructors (m.vachon@uwinnipeg.ca).

5. Please note that withdrawing before the VW date does not necessarily result in a fee refund.
6. Students may choose not to attend classes or write examinations on holydays of their religion, but they must notify their instructors at least two weeks in advance. Instructors will then provide opportunity for students to make up work or examinations without penalty. A list of religious holidays can be found in the 2022-23 Undergraduate Academic Calendar.
7. Students with documented disabilities, temporary or chronic medical conditions, requiring academic accommodations for tests/exams or during lectures/laboratories are encouraged to contact Accessibility Services (AS) at 204-786-9771 or <https://www.uwinnipeg.ca/accessibility-services/> to discuss appropriate options. All information about a student's disability or medical condition remains confidential.
8. Reference to the appropriate items in the Regulations & Policies section of the *Course Calendar*, including Senate appeals and academic misconduct (e.g. plagiarism, cheating) <https://www.uwinnipeg.ca/academics/calendar/docs/regulationsandpolicies.pdf> Instructors should become familiar with the procedures for dealing with alleged academic misconduct at <https://www.uwinnipeg.ca/institutional-analysis/docs/policies/academic-misconduct-procedures.pdf>
9. All students, faculty and staff have the right to participate, learn, and work in an environment that is free of harassment and discrimination. The UW Respectful Working and Learning Environment Policy may be found at <https://www.uwinnipeg.ca/respect/>.
10. **Regulations, Policies, and Academic Integrity.** Students are encouraged to familiarize themselves with the Regulations and Policies found in the University Academic Calendar at <https://www.uwinnipeg.ca/academics/calendar/docs/regulationsandpolicies.pdf>. Particular attention should be given to subsections 8 (Student Discipline), 9 (Senate Appeals), and 10 (Grade Appeals). Please emphasize the importance of maintaining academic integrity and the potential consequences of engaging in plagiarism, cheating, and other forms of academic misconduct. Even unintentional plagiarism, as described in the UW Library video tutorial "Avoiding Plagiarism" (<https://www.youtube.com/watch?v=UvFdxRU9a8g>), is a form of academic misconduct. Similarly, uploading essays and other

assignments to essay vendor or trader sites (filesharing sites that are known providers of essays for use by others who submit them to instructors as their own work) is a form of misconduct, as it involves aiding and abetting plagiarism.

Important information is outlined in the Academic Misconduct Policy and Procedures: <https://www.uwinnipeg.ca/institutional-analysis/docs/policies/academic-misconduct-policy.pdf> and <https://www.uwinnipeg.ca/institutional-analysis/docs/policies/academic-misconduct-procedures.pdf>.

**11. Respectful Learning Environment.** Students are expected to conduct themselves in a respectful manner on campus and in the learning environment irrespective of platform being used. Behaviour, communication, or acts that are inconsistent with a number of UW policies could be considered non-academic misconduct. See the Respectful Working and Learning Environment Policy (<https://www.uwinnipeg.ca/respect/respect-policy.html>) and Acceptable Use of Information Technology Policy (<https://www.uwinnipeg.ca/institutional-analysis/docs/policies/acceptable-use-of-information-technology-policy.pdf>). More detailed information is outlined in the Non-Academic Misconduct Policy and Procedures (<https://www.uwinnipeg.ca/institutional-analysis/docs/student-non-academic-misconduct-policy.pdf> and <https://www.uwinnipeg.ca/institutional-analysis/docs/student-non-academic-misconduct-procedures.pdf>).

**12. Copyright and Intellectual Property.** Course materials are the property of the instructor who developed them. Examples of such materials are course outlines, assignment descriptions, lecture notes, test questions, and presentation slides—irrespective of format. Students who upload these materials to filesharing sites, or in any other way share these materials with others outside the class without prior permission of the instructor/presenter, are in violation of copyright law and University policy. Students must also seek prior permission of the instructor/presenter before, for example, photographing, recording, or taking screenshots of slides, presentations, lectures, and notes on the board. Students found to be in violation of an instructor's intellectual property rights could face serious consequences pursuant to the Academic Misconduct or Non-Academic Misconduct Policy; such consequences could possibly involve legal sanction under the Copyright Policy ([https://copyright.uwinnipeg.ca/docs/copyright\\_policy\\_2017.pdf](https://copyright.uwinnipeg.ca/docs/copyright_policy_2017.pdf)).

### **13. Academic Integrity and AI Text-generating Tools.**

Students must follow principles of academic integrity (e.g., honesty, respect, fairness, and responsibility) in their use of material obtained through AI text-generating tools (e.g., ChatGPT, Bing, Notion AI). If an instructor prohibits the use of AI tools in a course, students may face an allegation of academic misconduct if using them to do assignments. If AI tools are permitted, students must cite them. According to the MLA(<https://style.mla.org/citing-generative-ai/>), “you should

1. cite a generative AI tool whenever you paraphrase, quote, or incorporate into your own work any content (whether text, image, data, or other) that was created by it
  2. acknowledge all functional uses of the tool (like editing your prose or translating words) in a note, your text, or another suitable location
  3. take care to vet the secondary sources it cites”
- If students aren’t sure whether or not they can use AI tools, they should ask their professors.

**14. Research Ethics.** Students conducting research interviews, focus groups, surveys, or any other method of collecting data from any person, including a family member, must obtain research ethics approval before commencing data collection. Exceptions are research activities done in class as a learning exercise. For submission requirements and deadlines, see <http://www.uwinnipeg.ca/research/human-ethics.html>

**15. Privacy.** Students are reminded of their rights in relation to the collecting of personal data by the University (<https://www.uwinnipeg.ca/privacy/admissions-privacy-notice.html>), especially if Zoom is being used for remote teaching (<https://www.uwinnipeg.ca/privacy/zoom-privacy-notice.html>) and testing/proctoring (<https://www.uwinnipeg.ca/privacy/zoom-test-and-exam-proctoring.html>).

**16. Indigenous Student Services.** Indigenous students seeking additional supports, academic or other, are encouraged to contact the Aboriginal Student Services Centre (ASSC). The ASSC offers a variety of support services, and was created to maintain a safe, educational and culturally sensitive environment for all Aboriginal students (First Nation, Metis and Inuit) as they pursue their academic studies at The University of Winnipeg. More information can be found at: <http://www.uwinnipeg.ca/assc/>.