

Earth Sciences 2281b - Winter 2026 Course Outline

1. Course Information

Earth Science 2281B - Geology for Engineers

Schedule: Tuesday's – lectures 10:30 a.m. – 12:20 p.m.; labs - 1 lab 002 Tues. 12:30 – 2:20 p.m., lab 003 Tues. 3:30 – 5:20 p.m., lab 004 5:30 a.m. – 7:20 p.m., lab 005 7:30 – 9:20 p.m.

Note: Attendance will be taken at all labs to ensure students are attending the lab they are registered in.

Prerequisites: Registered in second, third, or fourth year Civil and Environmental Engineering or permission of department

- *Unless you have either the prerequisites for this course or written special permission from the Department of Earth Sciences to enroll in it, you may be removed and withdrawn from this course in accordance with university policy. This may be done after the add/drop deadline for the academic term, and the course will be marked as withdrawn (WDN) on your academic record. This decision may not be appealed.*

2. Instructor Information

Instructor: Rob Schincariol, Ph.D., P.Geo.

519-661-2111, ext. 83732, schincar@uwo.ca

Office Hours by appointment – email and a time will be arranged that meets both our schedules.

Graduate Teaching Assistants (GTA's): TBA

Note: Students must use their Western (@uwo.ca) email addresses when contacting their instructors.

3. Course Syllabus, Schedule, Delivery Mode

Description: Introduction to physical geology with emphasis on the engineering-oriented aspects of the Earth Sciences. Topics include: minerals and rocks; mass movements; interpretation of aerial photographs, topographic and geologic maps; surficial processes and their manifestations; surface and ground water; structural geology and subsurface processes; and earth resources. 2 lecture hours, 2 lab hours (0.5 course)

Learning Outcomes

Upon successful completion of this course students will be able to:

- Identify major minerals, igneous, sedimentary, and metamorphic rocks through laboratory-based assessment.
- Perform selected engineering geology evaluations and identify typical weathering products within engineering materials.
- Apply knowledge of Earth dynamics and structural geology to assess relative risks of earthquake activity and the impact on engineering structures.
- Apply knowledge of mass wasting processes and weathering to assess the mechanics of slope movements, slope stability processes and risks.
- Explain surface and ground water flow dynamics with respect to effective water resource management and subsurface characterization within fluvial plains and coastal areas.
- Identify features of glacial deposits on topographic maps, air photos, and other imagery.
- Explain how glacial cycles create complex subsurface deposits which impact ground water flow and geotechnical evaluations.
- Create links between Canada's resource rich economy, including oil, gas, and mineral deposits, and geologic processes.
- Effectively communicate the nature of dynamic earth processes and relative risks associated with various engineering works

Detailed Schedule

Note – Answers will be posted for the lab assignments on Owl. No lab assignments will be graded. All lab marks derive from the lab exams.

Jan. 06	lecture 1
Jan. 13	lecture 2; lab 1 assigned
Jan. 20	lecture 3; lab 2 assigned
Jan. 27	lecture 4; lab 3 assigned
Feb. 03	lecture test 1 (11:00 a.m. to 12:00 p.m.), Lectures 1, 2, 3 and 4; no lab
Feb. 10	lecture 5; lab 4 assigned
Feb. 24	lecture 6; lab test 1 (labs 1 to 3).
Mar. 03	lecture 7; lab 5 assigned
Mar. 10	lecture test 2 (11:00 a.m. to 12:00 p.m.), Lectures 5, 6, and 7; no lab
Mar. 17	lecture 8; lab 6 assigned
Mar. 24	lecture 9; lab 7 assigned
Mar. 31	No lecture; Lab test 2 (labs 4, 5, 6, and 7 plus relevant lecture material from lectures 8 and 9 as they relate directly to the labs. See subsection information above for your time slot.
April 07	No lecture – lab test 1 and lab test 2 makeup tests run during 1:30 p.m. lab period

Lecture slides on Owl are titled according to topic, not lecture numbers, as certain topics may bridge two lectures. So, you may view the lectures ahead of time in relevant order the lecture plan calls for addressing the various topics in the following order:

Intro → Minerals → Igneous → Metamorphic → Sedimentary → Geologic Time → Weathering → Mass Wasting → Geologic Structures → Earthquakes → Resources → Surface Water → Groundwater → Coastal → Glaciers

Contingency plan

Although the intent is for this course to be delivered in person, should any university-declared emergency require some or all of the course to be delivered online, either synchronously or asynchronously, the course will adapt accordingly. The grading scheme will **not** change. Any assessments affected will be conducted online as determined by the course instructor.

4. Course Materials

Text: Introductory Physical Geology Laboratory Manual – First Canadian Edition (v3 – Jan 2020), *McBeth, Panchuk, Prokopiuk, Hauber, Lacey*.

Available free at <https://openpress.usask.ca/geolmanual/>

This manual is a subset Canadian version of the following Open Textbook lab manual:

Laboratory Manual for Introductory Geology, 2015, *Deline, Harris, Tefend*, University System of Georgia, University Press of North Georgia, ISBN 978-1-940771-36-6. Available free at <https://ocr.galileo.usg.edu/geo-textbooks/1/>

For the map exercises, you will require a millimeter ruler, coloured pencils, protractor, and calculator, and the lab manual.

Students should check OWL <https://westernu.brightspace.com/d2l/login>

on a regular basis for news and updates. This is the primary method by which information will be disseminated to all students in the class. Students are responsible for checking OWL on a regular basis.

The main purpose of the lectures is to help you understand how Earth Sciences and Civil Engineering are linked. Case studies / consulting reports give you the real-world application demonstrating these links.

All course material will be posted to OWL <https://westernu.brightspace.com/d2l/login>

If students need assistance, they can seek support on the OWL Help page. Alternatively, they can contact the Western Technology Services Helpdesk. They can be contacted by phone at 519-661-3800 or ext. 83800.

Technical Requirements – A stable internet connection, computer with working microphone and webcam, ability to print in colour or work off of a tablet type computer, scanner or camera (cell phone is fine).

5. Methods of Evaluation*

		<i>Date</i>	<i>Makeup Date for those granted Accommodation</i>
Test 1 (60 min.)	34 %	Feb. 03	Feb. 10 at 1:30 p.m.
Test 2 (60 min.)	34 %	Mar. 10	Mar. 17 at 1:30 p.m.
Lab Test 1**	16%	Feb. 24	Apr. 07 at 1:30 p.m.
Lab Test 2**	16%	Mar. 31	Apr. 07 at 1:30 p.m.

NO FINAL EXAM

* Tests

- All tests will be ‘closed book’. All work must be done independently. Not adhering to these conditions will be considered a scholastic offence. *Scholastic offences are taken seriously and students are directed to read the appropriate policy, specifically, the definition of what constitutes a Scholastic Offence, at the following Web site:*
http://www.uwo.ca/univsec/pdf/academic_policies/appeals/scholastic_discipline_undergrad.pdf.
- Lab tests - No aids permitted other than basic non-memory calculator, pencils / pen, ruler, protractor. Cell phones must remain on ‘silent’ and in bags / backpacks. Lab tests involve calculations and are based on lab material. However, an understanding of lecture material is often required to do the labs.
- Lecture tests no aids permitted (pen or pencil only). Cell phones must remain on ‘silent’ and in bags / backpacks.
- Lecture test - You will be provided with a list of possible questions approximately 1 week ahead of the test. You should also use the washroom prior to the test as the ability to take breaks will be very limited (i.e. emergency only). As per university policy GTA’s must accompany students to the washroom which will necessitate only one student leaving the room at a time. This is one reason the tests are kept as short as possible.
- You are strongly encouraged to attend all lectures and take notes. Tests focus on material discussed in class within certain contexts. If you miss lectures you will not understand how to answer the test questions properly.
- All work must be done independently. Not adhering to these conditions will be considered a scholastic offence. Scholastic offences are taken seriously and students are directed to read the appropriate policy, specifically, the definition of what constitutes a Scholastic Offence, at the following Web site:
http://www.uwo.ca/univsec/pdf/academic_policies/appeals/scholastic_discipline_undergrad.pdf.

** Lab Test 1 – ONE normal sheet of paper (216 x 279 mm; both sides) of your own notes can help with mineral / rock identification. ALSO note that Practical Lab Test 1 is a **timed sample ID test** where rock and mineral samples are identified within the lab facilities. There will be 22 to 25 samples and you will have 2 minutes per sample. As this is a timed lab test, which requires specialized lab facilities, **no separate ‘accommodated’ exams are allowed for** (NOTE. Accessible Education / Office of the Registrar has granted this practical lab test an exemption). If you miss this test due to illness, self-reported absence, or other valid reason, there will be one re-write of this test scheduled on April 07 at 1:30 p.m. No mark redistribution will be allowed for Lab Test 1.

** For Lab Test 2 – Bring a millimeter ruler, regular & coloured pencils, protractor, and calculator (non-memory). You will have problems very similar to the ones you did in the labs plus some groundwater-related calculations and glacial features to identify which are covered during lectures 8 and 9.

*** Make up test dates will only be used if we have students who were granted accommodation to write them. Final grades will be calculated using Option 1 and Option 2, with the higher of the two grades being assigned.

COURSE GRADING

Marks are assigned to elements that were discussed in class and/or are on the Owl site (lecture slides, resources, lab material). When evaluating an answer, we do not just evaluate the correct statements, but also the incorrect statements. Often a student will state many elements we are looking for, but then will lose marks for making statements that show they do not fully understand the issue at hand.

I have no problem remarking a test. However, I will remark the entire test, all sections, and questions. Students often look at where they think additional marks are due, and not where they were given more marks than warranted. Marking errors or inconsistencies work both ways. As such if I remark a test the student should be aware that their grade may go up or down.

Generative AI Tools (ChatGPT, Copilot, Gemini) are **prohibited** in this course.

General information about missed coursework

Students must familiarize themselves with the *University Policy on Academic Consideration – Undergraduate Students in First Entry Programs* posted on the Academic Calendar:

https://www.uwo.ca/univsec/pdf/academic_policies/appeals/academic_consideration_Sep24.pdf,

This policy does not apply to requests for Academic Consideration submitted for **attempted or completed work**, whether online or in person.

The policy also does not apply to students experiencing longer-term impacts on their academic responsibilities. These students should consult [Accessible Education](#).

For procedures on how to submit Academic Consideration requests, please see the information posted on the Office of the Registrar's webpage:

https://registrar.uwo.ca/academics/academic_considerations/

All requests for Academic Consideration must be made within 48 hours after the assessment date or submission deadline.

All Academic Consideration requests must include supporting documentation; however, recognizing that formal documentation may not be available in some extenuating circumstances, the policy allows students to make one Academic Consideration request **without supporting documentation** in this course. However, the following assessments are excluded from this, and therefore always require formal supporting documentation.

- lab test 1

When a student mistakenly submits their one allowed Academic Consideration request **without supporting documentation** for the assessments listed above or those in the **Coursework with Assessment Flexibility** section below, the request cannot be recalled and reapplied. This privilege is forfeited.

Evaluation Scheme for Missed Assessments

Tests have defined make up dates (see above).

6. Additional Statements

Religious Accommodation

When conflicts with a religious holiday that requires an absence from the University or prohibits certain activities, students should request an accommodation for their absence in writing to the course instructor and/or the Academic Advising office of their Faculty of Registration. This notice should be made as early as possible but not later than two weeks prior to the writing or the examination (or one week prior to the writing of the test).

Please visit the Diversity Calendars posted on our university's EDID website for the recognized religious holidays:

<https://www.edi.uwo.ca>.

Accommodation Policies

Students with disabilities are encouraged to contact Accessible Education, which provides recommendations for accommodation based on medical documentation or psychological and cognitive testing. The policy on Academic Accommodation for Students with Disabilities can be found at:

https://www.uwo.ca/univsec/pdf/academic_policies/appeals/Academic_Accommodation_disabilities.pdf.

General Academic Policies

The website for Registrar Services is <https://www.registrar.uwo.ca/>.

Use of @uwo.ca email: In accordance with policy,

https://www.uwo.ca/univsec/pdf/policies_procedures/section1/mapp113.pdf, the centrally administered e-mail account provided to students will be considered the individual's official university email address. It is the responsibility of the account holder to ensure that emails received from the University at their official university address are attended to in a timely manner.

Requests for Relief (formally known as "appeals")

Policy on Request for Relief from Academic Decision:

https://uwo.ca/univsec/pdf/academic_policies/appeals/requests_for_relief_from_academic_decisions.pdf

Procedures on Request for Relief from Academic Decision (Undergraduate):

https://uwo.ca/univsec/pdf/academic_policies/appeals/undergrad_requests_for_relief_procedure.pdf

Scholastic Offences

Policy on Scholastic Offences:

https://uwo.ca/univsec/pdf/academic_policies/appeals/scholastic_offences.pdf

Procedures on Scholastic Offences (Undergraduate):

https://uwo.ca/univsec/pdf/academic_policies/appeals/undergrad_scholastic_offence_procedure.pdf

Use of Electronic Devices During Assessments

In courses offered by the Faculty of Science, the possession of unauthorized electronic devices during any in-person assessment (such as tests, midterms, and final examinations) is strictly prohibited. This includes, but is not limited to: mobile phones, smart watches, smart glasses, and wireless earbuds or headphones.

Unless explicitly stated otherwise in advance by the instructor, the presence of any such device at your desk, on your person, or within reach during an assessment will be treated as a *scholastic offence*, even if the device is not in use.

Only devices expressly permitted by the instructor (e.g., non-programmable calculators) may be brought into the assessment room. It is your responsibility to review and comply with these expectations.

Use of Generative AI Tools

Unless otherwise stated, the use of generative AI tools (e.g., ChatGPT, Microsoft Copilot, Google Gemini, or similar platforms) is **not permitted** in the completion of any course assessments, including but not limited to: assignments, lab reports, presentations, tests, and final examinations.

Using such tools for content generation, code writing, problem solving, translation, or summarization—when not explicitly allowed—will be treated as a **scholastic offence**.

If the use of generative AI is permitted for a particular assessment, the conditions of use will be specified by the instructor in advance. If no such permission is granted, students must assume that use is prohibited. It is your responsibility to seek clarification before using any AI tools in academic work.

Support Services

Please visit the Science & Basic Medical Sciences Academic Advising webpage for information on adding/dropping courses, academic considerations for absences, appeals, exam conflicts, and many other academic-related matters: <https://www.uwo.ca/sci/counselling/>.

Students who are in emotional/mental distress should refer to Mental Health@Western (<https://uwo.ca/health/>) for a complete list of options about how to obtain help.

Western is committed to reducing incidents of gender-based and sexual violence and providing compassionate support to anyone who has gone through these traumatic events. If you have experienced sexual or gender-based violence (either recently or in the past), you will find information about support services for survivors, including emergency contacts at https://www.uwo.ca/health/student_support/survivor_support/get-help.html.

To connect with a case manager or set up an appointment, please contact support@uwo.ca.

Please contact the course instructor if you require lecture or printed material in an alternate format or if any other arrangements can make this course more accessible to you. You may also wish to contact Accessible Education at

http://academicsupport.uwo.ca/accessible_education/index.html

if you have any questions regarding accommodations.

Learning-skills counsellors at Learning Development and Success (<https://learning.uwo.ca>) are ready to help you improve your learning skills. They offer presentations on strategies for improving time management, multiple-choice exam preparation/writing, textbook reading, and more. Individual support is offered throughout the Fall/Winter terms in the drop-in Learning Help Centre, and year-round through individual counselling.

Western University is committed to a thriving campus as we deliver our courses in the mixed model of both virtual and face-to-face formats. We encourage you to check out the Digital Student Experience website to manage your academics and well-being: <https://www.uwo.ca/se/digital/>.

Additional student-run support services are offered by the USC, <https://westernusc.ca/services/>.