

Geomorphology Syllabus

Department of Earth and Environmental Sciences

ERTH 3440 Fall 2026

Dalhousie University operates in the unceded territories of the Mi'kmaw, Wolastoqey, and Peskotomuhkati Peoples. These sovereign nations hold inherent rights as the original peoples of these lands, and we each carry collective obligations under the Peace and Friendship Treaties. Section 35 of the Constitution Act, 1982, recognizes and affirms Aboriginal and Treaty rights in Canada.

We recognize that African Nova Scotians are a distinct people whose histories, legacies, and contributions have enriched the part of Mi'kma'ki known as Nova Scotia for over 400 years.

Course Instructor(s)

Name	Email	Office Hours
Dr. Christiane Zoghbi	christiane.zoghbi@dal.ca	W 9:00 - 10:00 a.m. R 9:00 - 11:00 a.m. Or by appointment LSC, 3rd Floor, Room 3085
Intan Kardal	ikardal@dal.ca	TBA

Course Description

Geomorphology is the quantitative study of Earth's surface processes and landforms with applications in geology, civil engineering, hydrogeology, and environmental management. We investigate slope stability, weathering and soils, sediment production, wind-driven and coastal environments, tectonic landforms, and river, glacial and permafrost processes.

Course Prerequisites

ERTH 1080 (or SCIE 1506.09/SCIE 1507.09) and (ERTH 1090.03 or ERTH 1091.03); OR completion of (or concurrent enrolment in) a 1000-level mathematics class, a 1000-level physics class, a 1000-level chemistry class AND permission of instructor. CROSS-LISTING: GEOG 3440.03.

You are expected to have a working knowledge of algebra, basic trigonometry, and first-year geology. Calculus may be used for the derivation of some of the algebraic expressions that are used in assignments; although you do not need to use calculus yourself in any assignments or exams. An understanding of integration and differentiation may be helpful to understanding course materials. A background in statics and dynamics at the level of a 1st year university physics course is highly recommended.

Student Resources

The course instructor will be available during their office hours to discuss any questions regarding the lecture content and/or assignments.

Course Structure

Course Delivery

In-person. Lectures will not be recorded. Students are expected to attend all classes in person. If unable to attend, use the student declaration of absence form. For extended absences, contact the instructor and the Assistant Dean of Student Affairs.

Lectures

W & F 11:35-12:55. Studley LSC-BIOL&EARTH B8007

Laboratories

This course does not have scheduled labs or tutorials. Assignments are lab-like in content but are completed at your own time and location using materials distributed on Brightspace.

Course Materials

Course slides, assignment materials, and required readings are posted on Brightspace. You must submit your lab assignments to Brightspace as a Word document (.docx) file by 5pm on the due date. You must have access to a computer with spreadsheet and drawing software at minimum (a Dal computer lab computer is sufficient).

Main reference

- Ritter, D. F., Kochel, R. C., & Miller, J. R. (2011). *Process geomorphology* (5th ed.). Waveland Press.

Suggested textbooks:

- Anderson, R. S., Anderson, S. P. (2010). *Geomorphology: The Mechanics and Chemistry of Landscapes*. (n.p.): Cambridge University Press.
- Bierman, P. R., & Montgomery, D. R. (2020). *Key concepts in geomorphology* (2nd ed.). W. H. Freeman.

These textbooks are available through Killam (or Sexton) 3h loan. They are supplementary, not required, but some students find them useful.

Learning Objectives

Following active participation in this course you will be able to:

1. Identify, using photographic and topographic data, landforms produced by glacial, fluvial, hillslope, aeolian, coastal and periglacial processes.
2. Familiarity with a suite of geochronologic tools useful for determining the age and rates of formation of Cenozoic landforms.
3. Give descriptions, in some instances quantitative, of the processes that generate landforms.
4. Independently produce technical reports in the discipline of geomorphology, that include text, graphs, topographic and other data.

Assessment

The assignments, midterm exam, and final exam contribute to your final grade as specified below:

Component	Weight (% of final grade)	Due Date (2026)
Midterm (70 minutes)	20	Oct 16
Lab Assignments (3, individually worked, 14% each)	42	Oct 23, Nov 20, and Dec 7
In-class participation & Attendance	8	Ongoing
Final exam (2 h)	30	Final Exam Period

Assignments

The **assignments** are lab-like in content but you complete them at your own time and place. Each assignment requires hands-on work and calculations followed by a write-up which is a high-quality technical report, as though you (the student) are an employee or owner of a geoscience company that does applied geomorphology. All assignments must be submitted through Brightspace. E-mailed submissions will not be accepted.

Tests/quizzes

Examinations will include a combination of multiple-choice, short-answer, paragraph-response, calculation, graphing, and drawing questions. All drawings and diagrams must be neat, accurate, and clearly labeled. Marks may be deducted for spelling mistakes, poor grammar, and incomplete sentences unless point-form responses are explicitly permitted.

Both the Midterm and Final Exam will be administered through Brightspace. Students are required to bring a laptop to class on exam days. Additional instructions and reminders will be provided before each examination.

A practice (mock) exam will be available prior to the Midterm to help students become familiar with the exam format and ensure that the most recent version of LockDown Browser is installed and functioning properly on their device.

Final exam

The course has a final exam weighing 30% of the total grade. It will take place during the final exam period on Brightspace.

Participation

Participation will be assessed based on your regular attendance and active engagement in class activities. This may include responding to multiple-choice questions during or after class, uploading problem solutions to Brightspace, or contributing to discussion forums on Brightspace.

Conversion of numerical grades to final letter grades follows the **undergraduate***

[Dalhousie Grade Scale](#)

(*for graduate courses, be sure to include the [graduate](#) grade scale)

A+ (90-100)	B+ (77-79)	C+ (65-69)	D (50-54)
A (85-89)	B (73-76)	C (60-64)	F (0-49)
A- (80-84)	B- (70-72)	C- (55-59)	

Course Policies on Missed or Late Academic Requirements

- Assignments submitted late and without an approved extension will be deducted 10% per day.
- Extensions for assignments are granted for exceptional circumstances, using the Student Declaration of Absence Form. SDAs must be uploaded to Brightspace 24 hours before the assignment or exam due. The Student Declaration of Absence Form may be used two times this semester.
- Missed assignments: if you do not complete an assignment and do not submit a Student Declaration of Absence form, your mark on the assignment is zero.
- Missed quizzes: there will be no make-up quizzes. If you miss your quiz due to illness, family emergency, or other acceptable reason, the final exam will have a higher value **(50%)**.
- A make-up date will be scheduled for the final exam, which may take place either before or after the semester break (i.e. January). As per University regulations, you may only write the make-up exam under exceptional circumstances:
"A student requesting an alternative time for a final examination will be granted that request only in exceptional circumstances. Such circumstances include illness (with a medical certificate) or other mitigating circumstances outside the student's control, including technology failure in the case of online examinations." For the full text, refer to

the Undergraduate Academic Calendar 2026/2027: [Policy for the Scheduling of Courses/Examinations](#)

Course Policies related to Academic Integrity & Artificial Intelligence

Collaboration is an important part of learning; however, students are expected to maintain academic integrity in all course work.

Individual Assignments: Unless otherwise specified, all individual assignments must be completed independently. Students may discuss course concepts, theories, and assignment requirements with classmates, but the submitted work must be their own. Students may not share completed assignments, solutions, drafts, or substantive written work with other students.

Group Assignments and Projects: For assignments designated as group work, collaboration among group members is expected and encouraged. All group members are expected to contribute meaningfully to the final submission. Collaboration with individuals outside the assigned group is not permitted unless explicitly authorized by the instructor.

Students are responsible for understanding and adhering to Dalhousie University's Academic Integrity policies. Unauthorized collaboration, plagiarism, contract cheating, fabrication, falsification, and other forms of academic misconduct may result in disciplinary action.

Please note that Dalhousie University does not use plagiarism-detection software as a standard institutional service, and instructors do not use unsanctioned software or tools to investigate suspected academic integrity violations.

Use of Generative AI (Microsoft 365 Copilot Chat)

Generative artificial intelligence (AI) tools can support learning when used appropriately. In accordance with Dalhousie University guidance and Nova Scotia privacy requirements, students may only be required to use **Microsoft 365 Copilot Chat**, which is available through their Dalhousie account. The permitted uses of Copilot Chat in this course are as follows:

Activity	Permitted?
Brainstorming ideas and topics	Yes
Generating outlines or organizing content	Yes
Explaining concepts, terminology, or methods	Yes
Editing for grammar, spelling, clarity, or style	Yes
Producing complete assignment responses for submission	No
Writing substantial portions of papers, reports, reflections, or discussion posts that are submitted as the student's own work	No

Completing quizzes, tests, examinations, or other assessments intended to measure individual knowledge	No
Fabricating references, data, citations, or sources	No

Students remain fully responsible for the accuracy, quality, originality, and integrity of all submitted work, including any content developed with the assistance of generative AI.

Any use of generative AI beyond the permissions outlined above may be considered an academic integrity violation and may be subject to appropriate disciplinary and/or corrective measures.

Disclosure Requirements

If a student uses Microsoft 365 Copilot Chat in completing a course assessment, they must include a brief disclosure statement at the end of the submission. Required disclosure template:

I used Microsoft 365 Copilot Chat to assist with [describe purpose, e.g., brainstorming, outlining, editing for clarity, etc.]. All final content, analysis, conclusions, and submitted work are my own.

Citation Requirements

When Copilot Chat contributes substantive content, ideas, analysis, summaries, or wording that influence the final submission, students must acknowledge this use through an in-text citation and include a reference entry following the citation style required for the course (e.g., APA, MLA, Chicago).

Routine uses such as grammar correction, proofreading, or formatting assistance do not require formal citation but must still be disclosed if used during the preparation of the assignment.

Submission Requirements

For any assignment in which Copilot Chat is used, students must submit the following as an appendix or separate document:

- A copy of the prompts entered into Copilot Chat.
- A summary of how the tool was used during the assignment process.
- Any AI-generated content that directly informed or contributed to the final submission.

The instructor may request additional documentation of the student's process if needed to verify compliance with course requirements.

Students are encouraged to use generative AI thoughtfully, critically evaluate all AI-generated outputs, and apply their own judgment, analysis, and disciplinary knowledge in all submitted work.

Course Accessibility

Dalhousie University is committed to providing an accessible and inclusive learning environment. Students may be eligible for academic accommodations based on protected characteristics, including disability, religion, and other human rights grounds.

If religious, cultural, spiritual, or community-significant observances conflict with course requirements, please contact me as early as possible so we can work together to identify appropriate alternatives.

Students seeking formal academic accommodations should contact the **Student Accessibility Centre (SAC)** to begin the accommodation process. For more information, visit the SAC website: https://www.dal.ca/campus_life/academic-support/accessibility.html .

Course Content

Week	Date	Lesson Topic(s)	Assessment
1	Sep 9, 11	Course Overview and Introduction	
2	Sep 16, 18	Whole Earth Morphology & Large-Scale Topography	
3	Sep 23, 25	Orogeny, Epeirogeny, and Isostasy Tectonic Geomorphology	
4	Oct 2	Tectonic Geomorphology/Dating Methods	
5	Oct 7, 9	Dating Methods	
6	Oct 14, 16	Hillslopes	MIDTERM
7	Oct 21, 23	Hillslopes	Assignment 1
8	Oct 28, 30	Glaciers and Glacial Geology	
9	Nov 4, 6	Glaciers and Glacial Geology	
STUDY BREAK			
10	Nov 18, 20	Periglacial Processes and Forms	Assignment 2
11	Nov 25, 27	Fluvial Geomorphology	
12	Dec 2, 4	Fluvial Geomorphology	
13	Dec 9	Course Review	Assignment 3

Syllabus Appendix

(Formerly University Policies and Statements)

This course is subject to the academic policies, regulations, student support services, and university guidelines outlined in Dalhousie's **Syllabus Appendix**. Students are responsible for reviewing this resource, which includes information on academic integrity, student accommodations, equity and inclusion, student supports, and other important university policies. Because these resources are maintained centrally, the Syllabus Appendix provides the most current information available.

Link to Syllabus Appendix:

[Syllabus Appendix: Student Supports & University Statements, Policies, and Guidelines](#)