Geomorphology Syllabus

Department of Earth and Environmental Sciences

ERTH/GEOG 3440 Fall 2025

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	F 9:00 - 11:00 Or by appointment LSC, 3rd Floor, Room 3085
Eric Swistun	eric.swistun@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

I will be available during my office hours to discuss any questions regarding the lecture content and/or lab assignments. Furthermore, the designated demonstrator will assist with the lab assignments and answer any questions the students may have during their designated office hours. The latter will be shared with the class on Brightspace.

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

M W F 11:35 a.m.-12:25 p.m. Studley HENRY HICKS ACADEMIC ADMIN 212

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.

Assessment

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

Component	Weight (% of final grade)	Due Date (2025)
2 Quizzes (45 minutes each)	25	Oct 24, Nov 21
Lab Assignments (2, individually worked)	30	Nov 7, Dec 3
In-class participation & Attendance	10	Ongoing
Final exam (3 h)	35	Final Exam Period

Lab 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

Exams/Quizzes contain a mix of multiple choice, short answer, paragraph-answer, calculation, and graph-and draw questions. Drawings and diagrams must be completely labeled, legible, and precise. Points may be deducted for spelling, incomplete sentences (except where point form is specified) and other grammatical errors.

Final exam

The course has a final exam weighing 35% of the total grade. It will take place during the final exam period.

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 Dalhousie 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

1. Assignments submitted late and without an approved extension will be deducted 10% per day.
2. 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.
3. 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.
4. 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 (47.5%).
5. 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 2025/2026: Policy for the Scheduling of Courses/Examinations

Course Policies related to Academic Integrity

Feel free to use AI-driven tool to assist you in learning but remember that the objective is for you to acquire these competencies and outcomes in this course. You are responsible for all work that you produce, whether assisted by an AI-driven tool or not. You must acknowledge all tools used to assist you. If applicable, you must provide links to chat logs. If the work that you produce is suspected to misrepresent your own competencies, you may be asked to complete a supplemental assessment to evaluate your mastery of course outcomes.

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.

Course Content

Week	Date	Lesson Topic(s)	Assessment
1	Sep 22-26	Schedule and Intro	
2	Sep 29 - Oct 3	Whole Earth Morphology & Large-Scale Topography Orogeny, Epeirogeny, and Isostasy	
3	Oct 6-10	Tectonic Geomorphology	
4	Oct 13-17	Tectonic Geomorphology/Dating Methods	
5	Oct 20-24	Dating Methods	Quiz 1
6	Oct 27-31	Hillslopes	
7	Nov 3-7	Glaciers and Glacial Geology	Assignment 1
		STUDY BREAK	
8	Nov 17-21	Glaciers and Glacial Geology	Quiz 2
9	Nov 24-28	Periglacial Processes and Forms	
10	Dec 1-5	Fluvial Geomorphology	Assignment 2
11	Dec 8-10	Fluvial Geomorphology	

University Policies and Statements

Recognition of Mi'kmaq Territory

Dalhousie University would like to acknowledge that the University is on Traditional Mi'kmaq Territory. The Elders in Residence program provides students with access to First Nations elders for guidance, counsel, and support. Visit or e-mail the Indigenous Student Centre at 1321 Edward St or elders@dal.ca. Additional information regarding Mi'kmaq and Indigenous Relations (including the Elders in Residence program, Land Acknowledgements, Understanding Our Roots, and much more) can be found at: https://www.dal.ca/about/mission-vision-values/mikmaq-indigenous-relations.html

Internationalization

At Dalhousie, 'thinking and acting globally' enhances the quality and impact of education, supporting learning that is "interdisciplinary, cross-cultural, global in reach, and orientated toward solving problems that extend across national borders." Additional internationalization information can be found at: https://www.dal.ca/about/mission-vision-values/global-relations.html

Academic Integrity

At Dalhousie University, we are guided in all our work by the values of academic integrity: honesty, trust, fairness, responsibility, and respect. As a student, you are required to demonstrate these values in all the work you do. The University provides policies and procedures that every member of the university community is required to follow to ensure academic integrity. Additional academic integrity information can be found at: https://www.dal.ca/dept/university_secretariat/academic-integrity.html

Accessibility

The Student Accessibility Centre is Dalhousie's centre of expertise for matters related to student accessibility and accommodation. If there are aspects of the design, instruction, and/or experiences within this course (online or in-person) that result in barriers to your inclusion, please contact the Student Accessibility Centre (https://www.dal.ca/campus_life/academic-support/accessibility.html) for all courses offered by Dalhousie with the exception of Truro. For courses offered by the Faculty of Agriculture, please contact the Student Success Centre in Truro (https://www.dal.ca/campus_life/ssc.html).

Conduct in the Classroom – Culture of Respect

Substantial and constructive dialogue on challenging issues is an important part of academic inquiry and exchange. It requires willingness to listen and tolerance of opposing points of view. Consideration of individual differences and alternative viewpoints is required of all class members, towards each other, towards instructors, and towards guest speakers. While expressions of differing perspectives are welcome and encouraged, the words and language used should remain within acceptable bounds of civility and respect.

Diversity and Inclusion – Culture of Respect

Every person at Dalhousie has a right to be respected and safe. We believe inclusiveness is fundamental to education. We stand for equality. Dalhousie is strengthened in our diversity. We are a respectful and inclusive community. We are committed to being a place where everyone feels welcome and supported, which is why our Strategic Direction prioritizes fostering a culture of diversity and inclusiveness (Strategic Priority 5.2). Additional diversity and inclusion information can be found at: https://www.dal.ca/about/mission-vision-values/equity-diversity-inclusion-and-accessibility/about-office-equity-inclusion.html

Student Code of Conduct

Everyone at Dalhousie is expected to treat others with dignity and respect. The Code of Student Conduct allows Dalhousie to take disciplinary action if students don't follow this community expectation. When appropriate, violations of the code can be resolved in a reasonable and informal manner - perhaps through a restorative justice process. If an informal resolution can't be reached, or would be inappropriate, procedures exist for formal dispute resolution. The full Code of Student Conduct can be found at: https://www.dal.ca/content/dam/www/about/leadership-and-governance/governing-bodies/code-student-conduct.pdf

Fair Dealing Policy

The Dalhousie University Fair Dealing Policy provides guidance for the limited use of copyright protected material without the risk of infringement and without having to seek the permission of copyright owners. It is intended to provide a balance between the rights of creators and the rights of users at Dalhousie. Additional information regarding the Fair Dealing Policy can be found at: https://www.dal.ca/content/dam/www/about/leadership-and-governance/university-policies/fair-dealing-policy.pdf

Student Use of Course Materials

Course materials are designed for use as part of this course at Dalhousie University and are the property of the instructor unless otherwise stated. Third party copyrighted materials (such as books, journal articles, music, videos, etc.) have either been licensed for use in this course or fall under an exception or limitation in Canadian Copyright law. Copying this course material for distribution (e.g. uploading to a commercial third-party website) may lead to a violation of Copyright law.