

ACKNOWLEDGEMENT

UBC's Point Grey Campus is located on the traditional, ancestral, and unceded territory of the xwməθkwəyəm (Musqueam) people. The land it is situated on has always been a place of learning for the Musqueam people, who for millennia have passed on their culture, history, and traditions from one generation to the next on this site.

GEOB 308: Quaternary and Applied Geomorphology *Term 2 – Winter 2020/2021*

CONTACTS

Instructor: Michele Koppes

Email: koppes@geog.ubc.ca

Virtual Office hours: Tuesdays 10-11 am, or by appointment

TA: Alex Mitchell

TA email: alex.mitchell@geog.ubc.ca

COURSE INFO

Virtual classroom: Zoom Meeting ID: 648 2309 5166

password: 308

Class times: Thursdays 9:30-11 AM synchronous, in the course Zoom room

Labs: Online lab help hours:

Fridays 9-11 am, Fridays 2-4 pm

Prerequisite: GEOB 206 or EOSC 330

LEARNING OBJECTIVES

- 1) To examine the processes and results of landscape development during the Quaternary Era, with particular focus on the timing and impacts of glaciation in the Pacific Northwest.
- 2) To develop interpretive and analytical skills for the study of glacial environments, landforms and materials
- 3) To apply methods of assessing Quaternary materials, landforms and natural hazards for the purposes of land use and management, hazards analysis and resource development
- 4) To critically evaluate relevant, state-of-the-art geomorphological literature

Hopefully you are interested in applying the material and techniques from this course to further geoscience studies or professional work, and hence we will focus on honing our interpretive skills for 'reading' Quaternary landscapes.

COURSE FORMAT

- 1) **Lectures** topics will vary each week and will follow the course schedule on Canvas.
- 2) **Readings.** There will 8 assigned articles from the peer-reviewed geomorphic literature and news media that we will discuss during our weekly lecture time on Thursdays. A short (1-2 paragraph) written response to a question regarding each article is due on Canvas *before* the start of class on Thursdays. In addition, there are readings in the textbook that supplement the topics covered in class. You will be assessed on your contributions to both the written responses and the in-person class discussions throughout the term. The material discussed in the literature will be included in the bi-weekly quizzes.
- 3) **Facilitation of readings.** In teams of up to five, each of you is responsible for presenting a one-page summary and critique of one of the assigned readings, and of facilitating a small-group discussion of that reading (in a Zoom breakout room), including coming up with questions to stimulate discussion. Presentations and discussions will take place during Thursday lecture times, with each person taking the lead in facilitating a breakout group. You may divide up the summary presentation as you wish.

You will be asked to conduct a self-assessment on your success in facilitating an interactive discussion among the class. You will also be assessed on the clarity of the summary and leadership in facilitating the discussion.

- 4) **Labs.** Six laboratory exercises will be completed online and handed in for marking. The lab exercises are an opportunity to engage you in some of the methods and techniques used to assess Quaternary materials and landscapes. Some labs will consist of virtual field trips; others will require access to Google Earth and computational software (e.g., Microsoft Excel) to work with and to plot data.
- 5) **Quizzes.** There are five bi-weekly quizzes that will cover material discussed in the lectures and in the readings. The quizzes will be in short-answer (1-2 paragraph) format, will be timed (30 minutes), and are administered through Canvas. The deadline for completing the quizzes will be Fridays at 5 pm Pacific time. See the course schedule for due dates for each quiz.
- 6) **Final project.** The final project replaces a final exam in this course. The final project is a scientific research paper on a specific Quaternary history, process or hazard in a particular locale in British Columbia, which has attracted your special interest. The final project is a team-prepared report, in teams of up to 3, of maximum 7 pages of text in length, written in accordance with standard scientific protocol (detailed instructions are provided on the course Canvas page). Suggested topics and locales will be provided, or you may choose your own. Your team will be evaluated on the precision of your definition of the research objective, the choice and quality of the data gathered to answer the research question, the conciseness of the discussion, the way in which you reference the relevant literature, and the extent to which your conclusions depends on the data used. Your TA and I will be available to discuss your final project throughout the term. It is *strongly* suggested that you finalize your choice of research partners and topic as early as possible, so as to minimize wasted time in pursuing an impossible or outsized research question. Note that the final project is worth as much as the combined labs, and the combined quizzes. You will be asked to present your findings in a virtual session during the final week of class. You will be asked to conduct a self- and peer-assessment on the successes and challenges of the collaborative processes.
- 7) **Earth journal.** A major component of 'reading' and interpreting landscapes is learning the art of careful observation of the physical world around us. In order to gain proficiency and practice observation and inference, you are asked to keep a weekly practice of mindful, outdoor observation of a landscape, and to record your observations and reflections in an 'earth journal'. At least once a week, spend 15 minutes outside, simply looking at the natural world, without judgment or analysis, and then record and reflect on your experiences. Your earth journal can be collected in digital form or handwritten, it can take the form of written prose or visuals; feel free to be as creative as you like. Throughout term, you will be periodically called upon to share excerpts. The earth journal will be due before the last week of class.

Attendance:

You should plan on attending all Thursday classes. Let me know if you will be absent. There will be weekly in-class active learning activities, including discussions of readings, topical issues and/or problem sets. In many cases, you will be assigned to a group with which to formulate and exchange your ideas. These activities will be logged in your Participation grade.

ASSESSMENTS OF LEARNING

| | |
|-------------------------------------------------------------|-------|
| Bi-weekly quizzes (lowest score not included in total) | = 25% |
| Lab assignments (lowest score not included in total) | = 25% |
| Facilitating article discussion, incl. written summaries | = 10% |
| Participation in class discussions, incl. written responses | = 10% |
| Earth journal | = 5% |
| Final project report, incl. self- and peer- assessment | = 25% |

Please note: Late work will incur a 5% per day penalty, including weekends. See me early (i.e. *before* the deadline) if you will have trouble handing in work on time. I realize that sometimes life events may disrupt the

best laid plans, but I cannot be of help if you do not alert me as soon as you know your timelines and/or expectations cannot be met.

LEARNING MATERIALS

All lecture slides and videos, lab exercises and course readings are available via the course Canvas page.

The recommended textbooks for this course are:

Benn, D.I., and Evans, D.J.A. (2010) *Glaciers and Glaciation*. (2nd Edition, Hodder Press).

Shroder, J. (ed.) (2013) *Treatise on Geomorphology*, vol. 8.

Other references that might be helpful for background reading include:

For glacial geomorphology and Quaternary stratigraphy

Martini, Brookfield, and Sadura, 2001. *Principles of Glacial Geomorphology and Geology*. (Prentice Hall).

Bierman, P.R. and Montgomery, D.R., 2014. *Key Concept in Geomorphology* (Macmillan), 1st Ed.

For regional Quaternary history:

Clague, J.J. (compiler), 1989. Quaternary geology of the Canadian Cordillera. Ch. 1 in *Quaternary Geology of Canada and Greenland*, R. Fulton, (ed.); Geological Survey of Canada, Geology of Canada, no.1.

For methods of Quaternary geochronology:

Walker, M., 2004. *Quaternary Dating Methods* (Wiley & Sons).

For a very detailed account of the physics behind ice processes:

Cuffey, K.M. and Paterson, W.S.B., 2010. *The Physics of Glaciers*, 4th ed. (Pergamon Press).

UNIVERSITY POLICIES

UBC provides resources to support student learning and to maintain healthy lifestyles but recognizes that sometimes crises arise and so there are additional resources to access including those for survivors of sexual violence. UBC values respect for the person and ideas of all members of the academic community. Harassment and discrimination are not tolerated nor is suppression of academic freedom. UBC provides appropriate accommodation for students with disabilities and for religious observances. UBC values academic honesty and students are expected to acknowledge the ideas generated by others and to uphold the highest academic standards in all of their actions.

Details of the policies and how to access support are available on [the UBC Senate website](https://senate.ubc.ca/policies-resources-support-student-success):
<https://senate.ubc.ca/policies-resources-support-student-success>

Other considerations

Provisions will be made for students requiring learning support, including administration of quizzes. Please see me if you need additional assistance. In particular, if you find you are falling behind in the course, please notify me as soon as possible so that I can help you early in the process.

Academic integrity

Students are responsible for academic integrity and for honest and individual completion of assignments and other work. In the case of group work, each student must contribute to the ideas, research, and writing or presentation of the final product. Examples of academic misconduct and dishonesty include, but are not limited to: cheating on a test, exam, or assignment, copying the work of another person or erroneously referencing another person's work, or presenting another person's work as one's own.

For more information on expectations with respect to academic integrity, please review the Learning Commons website on Academic Integrity at: <https://learningcommons.ubc.ca/academic-integrity/>

Course Email policy

Please make every effort to ask questions in person during virtual class times or office hours. If you need to ask questions over email, please follow these instructions:

- Place GEOB 308 in the subject header and sign your message with your full name. You may use the email system within Canvas or email me directly.
- Email is a formal and public method of communication. Do not write anything that you do not want on the permanent, public record.
- I will try my best to reply within 24-48 hours during weekdays. I do not read email on weekends and holidays. Do not send emails at the last minute!

COPYRIGHT

All materials of this course (lecture slides and videos, assessments, lab exercises, course readings, etc.) are the intellectual property of the Course Instructor or licensed to be used in this course by the copyright owner. Redistribution of these materials by any means without permission of the copyright holder(s) constitutes a breach of copyright and may lead to academic discipline.