
COURSE OUTLINE

GEOG491: Reconstructing Quaternary Environmental Change



Exploring the glacial forelands of Kviárjökull Iceland (Photo- S. Norris 2016). The geomorphic imprint of the 2016 glacial surge and glacial lake outburst flood can be seen in the foreground.

In grateful acknowledgement of the L'kwungen & WSÁNEĆ Peoples upon whose territories we are able to live and learn.

Course materials and instructions will be made available on Brightspace (bright.uvic.ca). Please read this outline and further instruction carefully.

Instructor: Dr. Sophie Norris

Office Hours: Tuesday 9.30-10.30 am (my office David Turpin Building B128)

Contact: sophienorris@uvic.ca

Lectures: Thurs 2:30-5:20 pm Clearihue Building B315

COURSE DESCRIPTION AND STRUCTURE:

This course comprises an advanced research lead investigation of Quaternary geomorphic process and quantitative reconstructions of landscape change. In this course, you will work to design and propose an original research project of your choosing, likely located within western Canada. To support your project, a series of lectures and seminars will examine field and lab-based dating and correlation techniques used to quantify Quaternary geomorphic processes.

Pre-assessment (does not count towards your final grade): This is a fun interactive activity/quiz that usually takes 15-20 minutes. This exercise will provide information about the

classes' prior knowledge before teaching begins. This assessment will be returned to you at the end of the course to show you your progress towards course objectives (hopefully, you will impress yourself with how much you've learned!).

In-class presentation (15%): You will give a short (~6-minute presentation and 3-minute question period) oral presentation to the class (the same topic as your grant proposal). Your assessment is based on mastery of the material, presentation quality, and ability to answer questions.

Seminar responses (15%) and seminar participation (5%): Four activity periods will be devoted to seminars when we will-critically discuss and evaluate a focused topic from the scientific literature. Attendance is mandatory. Before each seminar, you will read 1-3 scientific papers and prepare short written responses to questions related to the readings. The answers to some of the questions will be found in the papers, while others may require that you conduct some brief additional research. You will then hold a discussion/debate about what you have read using your written responses to key questions as a loose structure.

Short popular science written assignment (15%): You will prepare a short (~1200 word) essay in the style of a "News and Views" piece for the journal *Nature*. The objective of this short paper is to place the selected journal paper into the context of existing literature and highlight outstanding scientific questions.

Project grant proposal (50%): You will propose an original research project likely within western Canada. You will be able to develop a project that suits your interests and takes advantage of your respective strengths. You will then produce a comprehensive grant proposal for submission to a governmental research funding body. You will have the last two lecture periods to schedule a consultation with your instructor to provide feedback on a draft version of your assignment (the details of which will be communicated later in the term).

LEARNING OUTCOMES

By the end of the course, students should be able to:

1. Describe and critically evaluate, orally and in writing, new and foundational Quaternary geomorphology science
2. Identify current research questions, develop a testable hypothesis, and write a grant proposal around the hypothesis
3. Apply geomorphological and associated geochronological and terrain analysis techniques to quantify and interpret Quaternary geomorphic change

EVALUATION CRITERIA SUMMARY

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|---|-----|
| Seminar responses and seminar participation | 20% |
| In-class proposal presentation | 15% |
| 'News and Views' written assignment | 15% |
| Project grant proposal | 50% |

TERM CALENDAR

| WEEK | LECTURE (Thursday 2.30-3.50 pm) | ACTIVITY PERIOD (Thursday 3.50-5.20 pm) | DATE |
|------|---|---|--------|
| 1 | Course Introduction + Pre-assessment | Fundamentals of Quaternary research | Jan 12 |
| 2 | Geomorphology, sedimentology and correlation- The last glacial maximum and ice dynamics | Proposal discussion+ key skills session | Jan 19 |
| 3 | Geochronological Methods I (Radiocarbon and COSMO) | Seminar session | Jan 26 |
| 4 | Geochronological Methods I (Varves, Dendrochronology, Tephrochronology) | Key skills session | Feb 2 |
| 5 | Glacial lakes and ice age flood | Movie time: GLOF's in 3D | Feb 9 |
| 6 | The Younger Dryas | Seminar session | Feb 16 |
| 7 | READING BREAK | READING BREAK | |
| 8 | Early Human Migration | Project work and individual meetings | Mar 2 |
| 9 | Antartica and Greenland | In class student presentations | Mar 9 |
| 10 | MPT, D-O events, Heinrich events | In class student presentations | Mar 16 |
| 11 | Reconstruction Quaternary Environments I | Seminar session | Mar 23 |
| 12 | Reconstruction Quaternary Environments II | Seminar session | Mar 30 |
| 13 | Project work and individual meetings | Project work and individual meetings | Apr 6 |

DEADLINES

Seminar questions: To be submitted digitally before class on the day of seminar discussion

"News and Views" assignment: To be submitted digitally before class on the day of seminar discussion

In-class proposal presentation: To be presented in class (date to be arranged)

Project proposal assignment: To be submitted digitally (date to be arranged)

RECOMMENDED TEXTS

Text: There is no required text to purchase. Many course themes and topics are covered in the following recent texts, all of which are available electronically through the university library:

- Encyclopedia of Quaternary Science (2nd ed., 2013), eds. Scott Elias and Cary Mock (I encourage you to thoroughly read chapters entitled **Quaternary geomorphic and sedimentary reconstructions** and **Constraining Quaternary change: Geochronology**.)

• Paleoclimatology: Reconstructing Climates of the Quaternary (3rd ed., 2015), by Raymond Bradley

• Reconstructing Quaternary Environments (3rd ed., 2014), by John Lowe and Michael Walker

As part of your grant proposal final project, you will be asked to conduct a literature review and proposed methodological summary for your research topic. For this, you are expected to use resources at the library as well as make use of texts through google scholar, web of science and Scopus etc.

GEOGRAPHY DEPARTMENT INFO

Geography Department website: <http://geog.uvic.ca>

Undergraduate Advisor: Cam Owens- geogadvising@uvic.ca

Department Chair: Dr. David Atkinson - geogchair@uvic.ca

POLICY ON LATE ASSIGNMENTS

Late work receives a 20% reduction in points for each day late (weekends count as one day). Any extensions must be approved by your course instructor. Requests will be granted for legitimate reasons with appropriate documentation as necessary.

DISCLAIMER

The above schedule, policies, procedures, and assignments in this course are subject to change in the event of extenuating circumstances

ACADEMIC INTEGRITY

It is every student's responsibility to be aware of the university's policies on academic integrity, including policies on **cheating, plagiarism, unauthorized use of an editor, multiple submission**, and **aiding others to cheat**.

Policy on Academic Integrity:

<https://www.uvic.ca/calendar/archives/202205/undergrad/index.php#/policies>.

If you have any questions, talk to me, your course instructor. For more information, see [uvic.ca/learningandteaching/cac/index.php](https://www.uvic.ca/learningandteaching/cac/index.php).

ACCESSIBILITY

Students with diverse learning styles and needs are welcome in this course. In particular, if you have a documented disability or health consideration that may require accommodations, please feel free to approach me and/or the Centre for Accessible Learning (CAL as soon as possible <https://www.uvic.ca/services/cal/>). The RCSD staff is available by appointment to assess specific needs, provide referrals, and arrange appropriate accommodations. The sooner you let us know your needs, the quicker we can assist you in achieving your learning goals in this course.

POSITIVITY AND SAFETY

The University of Victoria is committed to promoting, providing and protecting a positive and safe learning and working environment for all its members.

SEXUALIZED VIOLENCE PREVENTION AND RESPONSE AT UVIC

UVic takes sexualized violence seriously, and has raised the bar for what is considered acceptable behaviour. We encourage students to learn more about how the university defines sexualized violence and its overall approach by visiting uvic.ca/svp. If you or someone you know has been impacted by sexualized violence and needs information, advice, and/or support please contact the sexualized violence resource office in Equity and Human Rights (EQHR). Whether or not you have been directly impacted, if you want to take part in the important prevention work taking place on campus, you can also reach out:

Where: Sexualized violence resource office in EQHR; Sedgewick C119

Phone: 250.721.8021

Email: svpcoordinator@uvic.ca

Web: uvic.ca/svp

COURSE EXPERIENCE SURVEY (CES)

I value your feedback on this course. Towards the end of term, as in all other courses at UVic, you will have the opportunity to complete an anonymous survey regarding your learning experience (CES). The survey is vital to providing feedback to me regarding the course and my teaching, as well as to help the department improve the overall program for students in the future. The survey is accessed via MyPage and can be done on your laptop, tablet, or mobile device. I will remind you and provide you with more detailed information nearer the time but please be thinking about this important activity during the course.

NOTE:

A note to remind you to take care of yourself. Do your best to maintain a healthy lifestyle this semester by eating well, exercising, getting enough sleep and taking some time to relax. This will help you achieve your goals and cope with stress. All of us benefit from support during times of struggle. You are not alone.

Counselling Services - *Counselling Services can help you make the most of your university experience. They offer free professional, confidential, inclusive support to currently registered UVic students. uvic.ca/services/counselling/*

Health Services - *University Health Services (UHS) provides a full service primary health clinic for students, and coordinates healthy student and campus initiatives. uvic.ca/services/health/*

Centre for Accessible Learning - *The CAL staff are available by appointment to assess specific needs, provide referrals and arrange appropriate accommodations uvic.ca/services/cal/. The sooner you let us know your needs the quicker we can assist you in achieving your learning goals in this course.*

Elders' Voices - *The Office of Indigenous Academic and Community Engagement (IACE) has the privilege of assembling a group of Elders from local communities to guide students, staff, faculty and administration in Indigenous ways of knowing and being. uvic.ca/services/indigenous/students/programming/elders/index.php*