

BIOL 457: PALEOECOLOGY AND ENVIRONMENTAL CHANGE

Dept. of Biology, University of Victoria - Fall 2023

Instructor: Dr. Terri Lacourse
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Office hours: By appointment

Lectures: Mondays & Thursdays 11:30 AM – 12:50 PM in Cunningham 146

Course Description:

The last two million years provide the best opportunity for studying the responses of species and ecosystems to environmental change on long timescales. Climate changed frequently and sometimes abruptly during this period. In response, the abundances and distributions of species also changed dramatically, and ecological communities dissolved and reformed. This course will focus on environmental change in the recent geological past, primarily since the last glacial maximum, and ecological responses to that change. We will synthesize theory, approaches and techniques from various disciplines to understand long-term ecological change. Course topics include the use of fossil remains to infer past ecological dynamics and environmental conditions, Late Pleistocene megafaunal extinctions, and the application of paleoecological data in ecosystem management.

Learning Objectives:

At the end of this course, you will have developed an appreciation for:

- 1) Environmental change in the recent geological past and its influence on the patterns & processes of life on Earth;
- 2) Theoretical principles, methodological approaches and empirical evidence in the study of paleoecological change;
- 3) Application of paleoecology to ecosystem management; and,
- 4) The value of peer-reviewed literature through the reading and critique of primary literature.

Course Materials:

Links to required readings and recommended textbooks will be posted on the course website on Brightspace. Summary lecture material will be posted on the course website; however, because this course is an in-person, lecture-based course, this material is not a substitute for attending lectures, taking notes, and asking questions.

Assessment of Grades:

Midterm Exam	25%	Cumulative and 'closed-book' on October 19
Oral Presentation	15%	November 16, 20, 23 or 27
Written Paper Critique	20%	Due in class November 30
Final Exam	40%	Cumulative and 'closed-book' during Exam Period: Dec 7-20

Written Paper Critique & Presentation:

Students will critique a peer-reviewed paper from the primary literature and give an oral presentation on their chosen paper. A list of papers to choose from will be provided. Assignment details will be provided during lecture. The deadline for choosing a paper is **September 28**. After that deadline, papers will be assigned.

Course Policies:

- 1) Students are not permitted to record lectures in audio or video formats. Students are not permitted to share course materials including lecture slides, exams and exam answers with others or distribute them in any form e.g., post online, on social media, etc.
- 2) A lockdown browser and Zoom may be required for exams. If so, advance notice will be given. Students are responsible for having access to a reliable computer and internet connection. Refer to the **University's minimum technology requirements for students:** www.uvic.ca/systems/status/features/min-tech-requirements.php
- 3) No supplemental exams are offered in this course. If you miss the midterm exam (due to an emergency or for a medical reason), then your final exam grade will be used, without penalty, in place of the missed exam in the final grade assignment.
- 4) Assignments submitted late will receive a grade of 0. There are no late marks for assignments.
- 5) All tests and assignments must be completed in order to pass the course. As per University regulations, students who do not complete all tests and assignments will be given a final grade of 'N' and will not be permitted to write the final exam.
- 6) As per University regulations, a passing grade on the final exam is required in order to receive a passing grade in the course and therefore credit for the course.
- 7) Students are responsible for keeping track of the grades they receive on exams and assignments. Final grades will be assigned on the basis of the University's official grading scale with 'F' and 'N' as per University regulations. The last day for dropping the course without academic penalty is October 31, 2023.

Academic Integrity & Intellectual Property

The University has a strict Policy on **Academic Integrity**, which includes provisions for the "Unauthorized Use of an Editor". All students are required to familiarize themselves and abide by this policy, which is described in detail in the University Calendar: www.uvic.ca/calendar/undergrad/info/regulations/academic-integrity.html. Assignments and exams will be monitored for cheating and plagiarism; plagiarism detection software or other platforms may be used to assess the scholarly integrity of student work. Violations of academic integrity are considered serious and can result in significant penalties.

All course materials (e.g., lectures, slides, assignments, exams, etc.) are the intellectual property of the Instructor. All course material is protected under Copyright Law, even if not marked with a ©. Students are not permitted to share or distribute course materials or post them online or on social media **in any form at any time**. Failure to comply with this is a violation of Copyright Law and the University's policy on Intellectual Property. Violations may result in disciplinary action under the University's Resolution of Non-Academic Misconduct Allegations policy.

BIOL 457 Schedule* – Fall 2023

Week of...	Lecture Topics
Sep 4	<i>First class is Sep 7.</i> Introduction to BIOL 457
Sep 11	Quaternary environmental change: paleoclimate, glaciations.
Sep 18	Where are paleoecological records preserved? Dating methods. Holocene environmental change.
Sep 25	Principles of paleoecology. <i>Deadline for choosing a paper is Sep 28.</i>
Oct 2	<i>No class Oct 2 (National Day for Truth and Reconciliation)</i> Fossil pollen and spores. Paleovegetation dynamics.
Oct 9	<i>No class Oct 9 (Thanksgiving Day)</i> Paleovegetation dynamics continued.
Oct 16	Plant macrofossils. Packrat middens. <i>Midterm exam on Oct 19.</i>
Oct 23	Charcoal analysis & fire history.
Oct 30	Paleolimnology. Multi-proxy records.
Nov 6	Late Pleistocene megafaunal extinctions: humans vs climate.
Nov 13	<i>No class Nov 13 (Remembrance Day)</i> Student Presentations.
Nov 20	Student Presentations.
Nov 27	Student Presentations. Course review. <i>Written paper critique due in class Nov 30.</i> <i>Last class is Nov 30.</i>
Dec 4	<i>No class Dec 4 (National Day of Remembrance and Action on Violence Against Women)</i>

* Sequence of lecture topics is subject to revision as the course progresses.

Territorial Acknowledgement

We acknowledge and respect the ɫəkʷəŋən peoples on whose traditional territory the university stands and the Songhees, Esquimalt and WSÁNEĆ peoples whose historical relationships with the land continue to this day.