DALHOUSIE UNIVERSITY

Faculty of Science Course Syllabus
Department of *Earth and Environmental Sciences*

ERTH 3205 – Paleobiology

Winter 2026

Dalhousie University acknowledges that we are in Mi'kma'ki, the ancestral and unceded territory of the Mi'kmaq People and pays respect to the Indigenous knowledges held by the Mi'kmaq People, and to the wisdom of their Elders past and present. The Mi'kmaq People signed Peace and Friendship Treaties with the Crown, and section 35 of the Constitution Act, 1982 recognizes and affirms Aboriginal and Treaty rights. We are all Treaty people.
Dalhousie University also acknowledges the histories, contributions, and legacies of African Nova Scotians, who have been here for over 400 years.

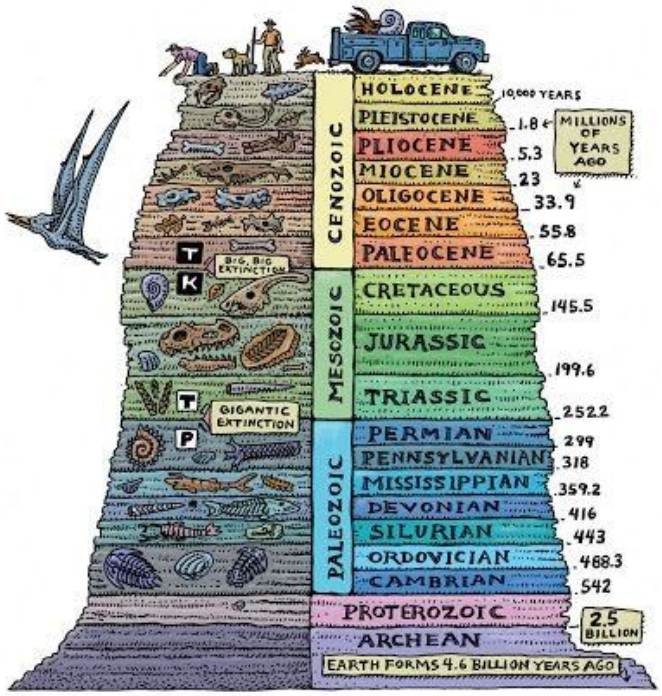
Instructor: Dr. Owen Sherwood

Contact information: Available by email (owen.sherwood@dal.ca). I will reply to emails during regular business hours (8am-5pm). I will also be available for virtual meetings by appointment on Microsoft Teams.

TA: Eva Goblot (Eva.Goblot@dal.ca)

Lectures: Tuesdays and Thursdays 10:05 – 11:25, McCain 2021

Laboratories: Tuesdays 14:35 – 17:25, LSC B2055



Credit: Ray Troll

Course Description: This course examines fossil plants and animals and their interactions with the physical world throughout Earth history. Lectures and laboratories encompass the concepts of fossil preservation, fossil morphology, fossil identification, systematics, evolution, extinction, paleoecology and biostratigraphy.

Prerequisites: ERTH2203 or permission of the instructor.

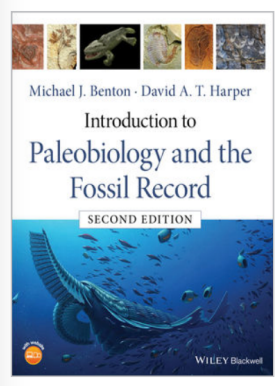
Learning Objectives: By the end of this class students should be able to:

1) Appreciate the diversity, richness and limitations of the fossil record
2) Understand how evolution, speciation and extinction work
3) Critically examine quantitative data
4) Create and test hypotheses about patterns and processes of evolution and extinction as recorded in the fossil record

5) Develop and practice skills in quantitative data analysis*

***Quantitative data analysis:** Is an important component of this course. A series of homework assignments will explore key concepts in, for example, biostratigraphy, fossil preservation, speciation, extinction, and paleoecology using real datasets. Data analysis will be carried out in the statistical programming platform "R". Familiarity with R is not a prerequisite; the necessary skills will be taught as part of this course.

Class Schedule: A weekly schedule with lecture topics and quiz and assignment due dates will be posted in the course Brightspace.



Course Materials:

Textbook (*required*):

- M.J. Benton and D.A.T Harper (2020) **Introduction to Paleobiology and the Fossil Record**. Wiley, 2nd edition. Availability:
  - Bookstore: $82 for ebook; $109 for hardcopy
  - Killam library (one hard copy): QE721.2.E85 B46 2020
  - Online sellers (e.g. https://www.wiley.com)

Websites and Software:

- The ERTH3205 **Brightspace** site will be the primary source for course announcements, online lectures, quizzes, handouts/readings, and lab assignments. Please check the site regularly and inform the instructor of access or technology issues.
- **Microsoft Excel** will be required for some lab assignments. The software is available for free here: https://software.library.dal.ca/index.php
- The **"R"** programming platform will also be required for some lab assignments. Available for free here: https://www.r-project.org
- **RStudio** is a handy GUI (Graphical User Interface) for using R. Available for free here: https://posit.co/download/rstudio-desktop/
- The **Paleobiology Database** (https://paleobiodb.org/#/) will be used as a source of data for some of the lab assignments. Please allow yourself time to explore its functionality using the "Walkthrough" tutorial, accessible here: https://www.youtube.com/watch?v=n_FkX4Vf_8I

Course Assessment:

Component (number)	Weight (% of final grade)	Due Date	Course Policy Note
Participation	5%	Every Class	1,2
Lab assignments (8)	25%	Weekly	3,4,5,6,7
Term project (1)	20%	Mar 24 or Mar 30	7,8
Midterm exam (1)	25%	Feb 10	9

Final exam (1)	25%	TBA	10

Course Policies:

1. **Attendance in lectures and labs** is very important in this course. Based on past experience teaching this and other courses, *final grades tend to correlate very tightly with class attendance*!
2. **Participation** will be graded based on in-class quizzes and exercises. If any quizzes or exercises are missed for unavoidable absence, the grade will be reweighted.
3. **Late Assignments** will be penalized 10% per day and *will not be accepted more than 5 days after the posted deadline*.
4. **Missed lab assignments** will be graded as zero ***unless for unavoidable reasons communicated to the Instructor before the due date***, in which case the lab components of the final course grade will be reweighted. Note that you are still responsible for learning the material.
5. **Collaboration with other students** on lab assignments is accepted and encouraged; however, students must submit *their own* assignments (unless otherwise stated in the assignment). Assignments with highly similar structure and answers may be submitted to the faculty Academic Integrity Officer for review.
6. **Plagiarism software** will be used for long-format questions in lab assignments. *Do not plagiarize*!
7. **Use of AI such as ChatGPT** is generally discouraged. You won't learn or retain information and skills by relying on AI.
8. **Term projects** and expectations for the projects will be announced during the first 2 weeks of class.
9. **Midterm exam** will be held during one of the lab sessions and will include all material covered up to the winter reading week.
10. **Final exam** will include all material covered during the course. Date and location will be announced by the Registrar.

Conversion of numerical grades to Final Letter Grades follows the Dalhousie Common Grade Scale

Grade	Range	Definition and Expectations
A+	90-100	Excellent: Considerable evidence of original thinking; demonstrated outstanding capacity to analyze and synthesize; outstanding grasp of subject matter; evidence of extensive knowledge base.
A	85-89	
A-	80-84	
B+	77-79	Good: Evidence of grasp of subject matter, some evidence of critical capacity and analytical ability; reasonable understanding of relevant issues; evidence of familiarity with the literature.
B	73-76	
B-	70/72	
C+	65-69	

C	60-64	Satisfactory: Evidence of some understanding of the subject matter; ability to develop solutions to simple problems; benefitting from his/her university experience.
C-	55-59	
D	50-54	Marginal Pass: Evidence of minimally acceptable familiarity with subject matter, critical and analytical skills.
F	<50	Inadequate: Insufficient evidence of understanding of the subject matter; weakness in critical and analytical skills; limited or irrelevant use of the literature.

Class Schedule:

Week of	Lecture Topics	Reading (text)	Lab
05-Jan	Introduction, Biostratigraphy	ch 1, 2	No Lab
12-Jan	Paleogeography, Paleoecology	ch 3, 4	Lab 1
19-Jan	Taphonomy, Biomineralization	ch 5	Lab 2
26-Jan	Fossil Form and Function	ch 6	Lab 3
02-Feb	Systematics	ch 7	Lab 4
09-Feb	Macroevolution	ch 7	midterm during lab
16-Feb	Reading Week		
23-Feb	Extinctions	ch 8	Lab 5
02-Mar	Life through time: Precambrian origins and expansion of life	ch 9-11	Lab 6
09-Mar	Life through time: Early Paleozoic diversification	TBA	Lab 7
16-Mar	Life through time: Terrestrialization	TBA	Lab 8
23-Mar	Life through time: Mesozoic and Cenozoic	TBA	Student presentations
30-Mar	Molecular fossils and origin of petroleum	TBA	Student presentations
06-Apr	Catch up and Review	TBA	No Lab

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 the Indigenous Student Centre can be found at: https://www.dal.ca/campus_life/communities/indigenous.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-dal/internationalization.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/about-dal/agricultural-campus/student-success-centre.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: http://www.dal.ca/cultureofrespect.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/dept/university_secretariat/policies/student-life/code-of-student-conduct.html

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/dept/university_secretariat/policies/academic/fair-dealing-policy-.html

Originality Checking Software

The course instructor may use Dalhousie's approved originality checking software and Google to check the originality of any work submitted for credit, in accordance with the Student Submission of Assignments and Use of Originality Checking Software Policy. Students are free, without penalty of grade, to choose an alternative method of attesting to the authenticity of their work and must inform the instructor no later than the last day to add/drop classes of their intent to choose an alternate method. Additional information regarding Originality Checking Software can be found at: https://www.dal.ca/about/leadership-governance/academic-integrity/faculty-resources/ouriginal-plagiarism-detection.html

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.

Student Resources and Support

University Policies and Programs

Important Dates in the Academic Year (including add/drop dates): http://www.dal.ca/academics/important_dates.html
Classroom Recording Protocol: https://www.dal.ca/dept/university_secretariat/policies/academic/classroom-recording-protocol.html
Dalhousie Grading Practices Policies: https://www.dal.ca/dept/university_secretariat/policies/academic/grading-practices-policy.html
Grade Appeal Process: https://www.dal.ca/campus_life/academic-support/grades-and-student-records/appealing-a-grade.html
Sexualized Violence Policy: https://www.dal.ca/dept/university_secretariat/policies/health-and-safety/sexualized-violence-policy.html
Scent-Free Program: https://www.dal.ca/dept/safety/programs-services/occupational-safety/scent-free.html

Learning and Support Resources

General Academic Support – Advising (Halifax): https://www.dal.ca/campus_life/academic-support/advising.html
General Academic Support – Advising (Truro): https://www.dal.ca/about-dal/agricultural-campus/ssc/academic-support/advising.html
Student Health & Wellness Centre: https://www.dal.ca/campus_life/health-and-wellness.html
On Track (helps you transition into university, and supports you through your first year at Dalhousie and beyond): https://www.dal.ca/campus_life/academic-support/On-track.html

Indigenous Student Centre: https://www.dal.ca/campus_life/communities/indigenous.html
Indigenous Connection: https://www.dal.ca/about-dal/indigenous-connection.html
Elders-in-Residence (The Elders in Residence program provides students with access to First Nations elders for guidance, counsel, and support. Visit the office in the Indigenous Student Centre or contact the program at elders@dal.ca or 902-494-6803: https://cdn.dal.ca/content/dam/dalhousie/pdf/academics/UG/indigenous-studies/Elder-Protocol-July2018.pdf
Black Student Advising Centre: https://www.dal.ca/campus_life/communities/black-student-advising.html
International Centre: https://www.dal.ca/campus_life/international-centre.html
LGBTQ2SIA+ Collaborative: https://www.dal.ca/dept/vpei/edia/education/community-specific-spaces/LGBTQ2SIA-collaborative.html
Dalhousie Libraries: http://libraries.dal.ca/
Copyright Office: https://libraries.dal.ca/services/copyright-office.html
Dalhousie Student Advocacy Services: https://www.dsu.ca/dsas?rq=student%20advocacy
Dalhousie Ombudsperson: https://www.dal.ca/campus_life/safety-respect/student-rights-and-responsibilities/where-to-get-help/ombudsperson.html
Human Rights and Equity Services: https://www.dal.ca/dept/hres.html
Writing Centre: https://www.dal.ca/campus_life/academic-support/writing-and-study-skills.html
Study Skills/Tutoring: http://www.dal.ca/campus_life/academic-support/study-skills-and-tutoring.html
Faculty of Science Advising Support: https://www.dal.ca/faculty/science/current-students/undergrad-students/degree-planning.html

Safety
Biosafety: http://www.dal.ca/dept/safety/programs-services/biosafety.html
Chemical Safety: https://www.dal.ca/dept/safety/programs-services/chemical-safety.html
Radiation Safety: http://www.dal.ca/dept/safety/programs-services/radiation-safety.html
Laser Safety: https://www.dal.ca/dept/safety/programs-services/radiation-safety/laser-safety.html