

Earth Sciences 2266G Course Outline

1. Course Information

Course name and number: Earth Sciences 2266G (Dinosaur and Other Vertebrate Evolution)

Academic term: 2023–24 winter term (January 1 – April 30, 2024)

Location and time:

(In-person, 4 hours per week. Details available at Western’s security site for courses)

Prerequisites/corequisite: Completion of first-year requirements and registration in a module in Earth Sciences, Biology, Kinesiology, or Anthropology module (or by special permission).

Unless you have either the requisites for this course or written special permission from your Dean’s Designate (Department/Program Undergraduate Chair or Science Academic Counselling) to enroll in it, you may be removed from the course and it will be deleted from your record. This decision may not be appealed. You will receive no adjustment to your fees in the event that you are dropped from a course for failing to have the necessary prerequisites.

2. Instructor Information

Instructors	Email	Office	Phone	Office Hours
Dr. Jisuo Jin				by appointment
TA: Saralyn Giselle Smith				by appointment

- Students must use their Western (@uwo.ca) email addresses when contacting course instructor and TA.
- Office hours can be arranged either in-person or by Zoom.

3. Course Syllabus, Schedule, Delivery Mode

Key dates:

Classes begin: Monday, January 8, 2024.

Spring Reading Week: Saturday, February 17 – Sunday, February 25, 2024.

Good Friday (holiday): March 29, 2024.

Classes end: Monday, April 8, 2024.

Exam period: April 11–30, 2024.

Course Description: Introduction to the fossil record that documents the major steps in vertebrate evolution, such as the origin, radiation, and mass extinction of fishes, basal tetrapods (amphibians), basal amniotes (reptiles, mammal-like reptiles, and dinosaurs), birds, and mammals.

Learning Outcomes: Upon successful completion of this course, students will be able to:

- describe in broad terms the basic morphological characteristics of major vertebrate groups in terms

of evolution, including the addition or modification of characters that would mark the transition from an ancestral to a descendant group;

- explain the hypotheses and controversies concerning the origin of some major vertebrate groups, such as the origin of chordates, vertebrates, tetrapods, birds, and mammals;
- use fossil data to explain the patterns, processes, and controlling factors of biological evolution at the species level (e.g. Darwinian evolution) and at the faunal level (e.g. mass extinctions and recoveries).

Lectures (Monday and Wednesday, 10:30–11:30AM, in-person classes)

Week 1	Introduction to biodiversity and the origin of chordates. Geological time scale, fossilization, and ancient environments. Fossil evidence of the oldest chordates. The vertebrate bauplan and vertebrate diversity in the context of overall biodiversity.
Week 2-3	Fishes: armours, jaws, and internal skeletal structures Evolutionary significance of jaws, teeth, vertebrae, bony fins, and lungs.
Week 4	Amphibians: walking limbs and lungs Walking limbs and lungs set the stage for invasion of land by vertebrates.
Week 5-7	Dinosaurs and other reptiles: conquerors of land, water, and air Internal fertilization, amniotic egg, and body scales enabled reptiles to conquer land on a grand scale. Dinosaurs' rule of land and conquering of air, and giant marine reptiles of sea. Rise and fall of mammal-like reptiles (proto-mammals). Vertebrate paleobiogeography and plate tectonics.
Week 8	Feathered dinosaurs and the origin of birds Feathered dinosaurs, pre-adaptation, and the origin and radiation of birds.
Week 9	Rise of the mammals Early diversification of monotreme, marsupial, and placental mammals. Examples of plate tectonics and parallel evolution.
Week 10-11	The great diversification of mammals Examples of adaptive radiation and environmental change: rodents and rabbits, carnivores, marine mammals, horses, and elephants.
Week 12-13	Primates and hominid evolution Stereovision and opposable thumb in arboreal mode of life; global cooling and shrinking forest; origin of hominids.

Essay (Term Paper)

An essay (~3000 words) on various aspects of vertebrate evolution (a list of suggested topics and other details will be available from the course instructor and TAs).

- Course TA will organize a series of online activities to guide you towards completion of the term paper, including pointers for writing a scientific review paper, as well as compliance with Western's plagiarism and AI screening for your paper submission.
- Upon submission, your term paper will be subject to review/screening for textual similarity (plagiarism) and AI-generated contents using the commercial plagiarism detection software — currently Turnitin.com (<http://www.turnitin.com>) under license to Western.

Day Trip (*Tentative—pending budget approval*)

A weekend day trip in mid-March to the Royal Ontario Museum (Toronto) to study vertebrate fossils on

display. Students will complete an assignment at the museum and submit it one week after the day trip.

Contingency plan

Although the intent is for this course to be delivered in person, should any university-declared emergency require some or all of the course to be delivered online, either synchronously or asynchronously, the course will adapt accordingly. The grading scheme will **not** change. Any assessments affected will be conducted online as determined by the course instructor.

4. Course Materials

Recommended textbook (electronic text)

Benton, M. J. 2015. Vertebrate Palaeontology (**4th Edition**). Blackwell Publishing, Oxford, UK.

The electronic textbook can be purchased at Western's Bookstore:

[Textbook Search | Western Bookstore \(uwo.ca\)](#)

5. Methods of Evaluation

The overall course grade will be calculated as listed below:

Mid-term test (February 16, 9:30-10:20AM)	30%
Final Exam (TBD by University schedule)	40%
Classroom pop quizzes (randomly scheduled)	15%
Essay (due last day of lectures)	15%

6. Student Absences

If you are unable to meet a course requirement due to illness or other serious circumstances, please follow the procedures below.

Assessments worth less than 10% of the overall course grade:

Missed classroom mini assignments: a make-up quiz can be arranged with the course instructor if the following two conditions are met: 1) you notify the instructor by email your absence **before** the beginning of a lecture, in which a quiz is held, and 2) you have approval from a Faculty of Science counsellor for accommodation.

Assessments worth 10% or more of the overall course grade:

For work totalling 10% or more of the final course grade, you must provide valid medical or supporting documentation to the Academic Counselling Office of your Faculty of Registration as soon as possible. For further information, please consult the University's medical illness policy at

https://www.uwo.ca/univsec/pdf/academic_policies/appeals/accommodation_medical.pdf.

The Student Medical Certificate is available at

https://www.uwo.ca/univsec/pdf/academic_policies/appeals/medicalform.pdf.

Absences from Final Examinations

If you miss the Final Exam, please contact the Academic Counselling office of your Faculty of Registration as soon as you are able to do so. They will assess your eligibility to write the Special Examination (the name given by the University to a makeup Final Exam).

You may also be eligible to write the Special Exam if you are in a “Multiple Exam Situation” (e.g., more than 2 exams in 23-hour period, more than 3 exams in a 47-hour period).

If a student fails to write a scheduled Special Examination, the date of the next Special Examination (if granted) normally will be the scheduled date for the final exam the next time this course is offered. The maximum course load for that term will be reduced by the credit of the course(s) for which the final examination has been deferred. See the Academic Calendar for details (under [Special Examinations](#)).

6. Accommodation and Accessibility

Religious Accommodation

When a course requirement conflicts with a religious holiday that requires an absence from the University or prohibits certain activities, students should request accommodation for their absence in writing at least two weeks prior to the holiday to the course instructor and/or the Academic Counselling office of their Faculty of Registration. Please consult University's list of recognized religious holidays (updated annually) at

<https://multiculturalcalendar.com/ecal/index.php?s=c-univwo>.

Accommodation Policies

Students with disabilities are encouraged to contact Accessible Education, which provides recommendations for accommodation based on medical documentation or psychological and cognitive testing. The policy on Academic Accommodation for Students with Disabilities can be found at:

[https://www.uwo.ca/univsec/pdf/academic_policies/appeals/Academic Accommodation_disabilities.pdf](https://www.uwo.ca/univsec/pdf/academic_policies/appeals/Academic_Accommodation_disabilities.pdf).

7. Academic Policies

The website for Registrarial Services is <http://www.registrar.uwo.ca>.

In accordance with policy,

https://www.uwo.ca/univsec/pdf/policies_procedures/section1/mapp113.pdf,

the centrally administered e-mail account provided to students will be considered the individual's official university e-mail address. It is the responsibility of the account holder to ensure that e-mail received from the University at their official university address is attended to in a timely manner.

For ES2266G, any electronic devices with capacity for data storage and retrieval will NOT be permitted during tests and exams.

Scholastic offences are taken seriously and students are directed to read the appropriate policy, specifically, the definition of what constitutes a Scholastic Offence, at the following Web site:

http://www.uwo.ca/univsec/pdf/academic_policies/appeals/scholastic_discipline_undergrad.pdf.

8. Support Services

Please visit the Science & Basic Medical Sciences Academic Counselling webpage for information on adding/dropping courses, academic considerations for absences, appeals, exam conflicts, and many other academic related matters: <https://www.uwo.ca/sci/counselling/>.

Students who are in emotional/mental distress should refer to Mental Health@Western (<https://uwo.ca/health/>) for a complete list of options about how to obtain help.

Western is committed to reducing incidents of gender-based and sexual violence and providing compassionate support to anyone who has gone through these traumatic events. If you have experienced sexual or gender-based violence (either recently or in the past), you will find information about support services for survivors, including emergency contacts at

https://www.uwo.ca/health/student_support/survivor_support/get-help.html.

To connect with a case manager or set up an appointment, please contact support@uwo.ca.

Please contact the course instructor if you require lecture or printed material in an alternate format or if any other arrangements can make this course more accessible to you. You may also wish to contact Accessible Education at

http://academicsupport.uwo.ca/accessible_education/index.html

if you have any questions regarding accommodations.

Learning-skills counsellors at the Student Development Centre (<https://learning.uwo.ca>) are ready to help you improve your learning skills. They offer presentations on strategies for improving time management, multiple-choice exam preparation/writing, textbook reading, and more. Individual support is offered throughout the Fall/Winter terms in the drop-in Learning Help Centre, and year-round through individual counselling.

Western University is committed to a thriving campus as we deliver our courses in the mixed model of both virtual and face-to-face formats. We encourage you to check out the Digital Student Experience website to manage your academics and well-being: <https://www.uwo.ca/se/digital/>.

Additional student-run support services are offered by the USC: <https://westernusc.ca/services/>.