

J. Northover

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Vertebrate Evolution II – Mammals, Reptiles, and Birds
ERTH 3111

Instructor: Joanna Northover (joanna.northover@carleton.ca)

Lecture: Thursdays 9:35pm – 11:25pm (Room: 1200 RB)

Lecture office hour: Thursday 11:35-12:35 (Room 2118 HB)
or virtual by appointment

Lab: Tuesdays 8:35-11:25pm (Room: 2130 HP)

TAs: Dana Korneisel (danakorneisel@cmail.carleton.ca) &
Andrew Traynor (andrewtraynor@cmail.carleton.ca)

Course description

Evolution of mammals, reptiles and birds. Emphasis on surveying amniote diversity, and the origin of key amniote transformations, as evidenced by the fossil record.

Course objectives

Learn details of the anatomy of living and extinct amniotes, and comparative anatomy between groups of amniotes. Understand currently accepted patterns of relationships between major amniote groups. Describe key evolutionary events in the origin and radiation of mammals, reptiles, and birds. Integrate evolutionary mechanisms (developmental & functional) with patterns of diversity in amniotes.

Learning outcomes

By the end of this course, you will be able to: 1) recall the anatomy of amniotes, 2) describe and evaluate patterns of relationships between major amniote groups, 3) describe key evolutionary events in the origin and radiation of amniotes 4) Integrate evolutionary mechanisms with patterns of diversity in amniotes.

Lecture schedule

Week 1: Lecture 1: Introduction & review concepts
Week 2: Lecture 2: Amniote origins & basal synapsids
Week 3: Lecture 3: Mammal origins – Dr. Miyashita
Week 4: Lecture 4: Mammals – Dr. Fraser
Week 5: Lecture 5: Early reptiles & Lepidosauria
Week 6: MIDTERM EXAM (in class) - covers lectures 1-5
Week 7: WINTER BREAK (no classes)
Week 8: Lecture 6: Marine reptiles – Dr. Wu

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- Week 9: Lecture 7: Archosauria
- Week 10: Lecture 8: Ornithodira & Dinosauria 1 (Ornithischia) – Dr. Mallon
- Week 11: Lecture 9: Dinosauria (Saurischia)
- Week 12: Lecture 10: Birds
- Week 13: Lecture 11: Paleoecology - Dr. Cullen (To be confirmed)

Textbook (recommended):

Vertebrate Palaeontology (4th edition), by M. J. Benton – the textbook covers much of the lecture material and is an excellent reference for anyone interested in paleontology.

Lab Materials:

Lab coat and safety goggles are required, as some lab activities will include dissections.

Mark breakdown:

- Lecture mid-term 15%
- Mid-term Lab Exam 15%
- Bone project 20% (see bone project syllabus)
- Final lab exam 20%
- Final lecture exam 30%

Important Dates and Deadlines:

- Midterm – Held February 16, 2023 (in class)
- Term Project – Due Friday, April 7, 2023 by 11:59pm local time
- Final Exam – Held during the final exam period, date TBD by examination services
- Lab Exams – See Lab syllabus/schedule

Policies & Procedures:

Conflict with course requirements: A Students with conflicts for ANY course requirement (lab, assignment deadlines, exam, etc.) due to illness, or otherwise, **MUST** be reported to the instructor, or Lab Teaching Assistant, **PRIOR** to the due date when possible. If this is not possible contact regarding a deferral, or accommodation, must be made within 24 hours of the deadline or event.

Missed lectures: If you are sick, or have been exposed to COVID 19, please do not come to class in person! All lecture slides will be uploaded to Brightspace weekly and any questions about the material can be answered during Instructor office hours. In case of instructor illness, inclement weather, or other unforeseen emergency circumstances, lectures will be held virtually through

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Zoom. An announcement of the change will be made through Brightspace and email as soon as possible. *Please, check Brightspace often for important announcements and course updates!*

Late Term Project: See the procedures for conflicts with course requirements above. If no notice is given to the instructor within 24hrs, late assignments will be penalized 5% per day for 5 days, after which they will receive a mark of 0. The assignment will be outlined, and materials provided, at the beginning of term, to allow plenty of time for completion.

Academic Integrity

Academic integrity is taken very seriously in the Department of Earth Sciences, and Carleton University in general. Refer to the following document for policies and explanations of activities included with academic integrity. <https://carleton.ca/registrar/academic-integrity/>

Some examples of violations that will not be tolerated include:

Plagiarism: submitting work written in part or whole by someone else, failing to acknowledge sources through proper use of citations.

Resubmission: resubmitting work from another or the same course (if repeated).

Test/exam behavior: attempting to read another student's paper, speaking/messaging another student during the exam, using material not authorized by examiner.

Improper/unauthorized dissemination: providing access or receiving access to confidential materials (e.g. exam questions), and distribution of course materials.

Violations will be taken very seriously and may involve the Department Chair, and/or the Dean. Sanctions for such violations may include grade of zero, decreased course grade, remediation, withdrawal from the course, or more.

Requests for Academic Accommodation

You may need special arrangements to meet your academic obligations during the term. For an accommodation request, the processes are as follows:

Pregnancy obligation

Please, contact your instructor with any requests for academic accommodation during the first two weeks of class, or as soon as possible after the need for accommodation is known to exist.

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For more details, visit the Equity Services website: carleton.ca/equity/wp-content/uploads/Student-Guide-to-Academic-Accommodation.pdf

Religious obligation

Please, contact your instructor with any requests for academic accommodation during the first two weeks of class, or as soon as possible after the need for accommodation is known to exist. For more details, visit the Equity Services website: carleton.ca/equity/wp-content/uploads/Student-Guide-to-Academic-Accommodation.pdf

Academic Accommodations for Students with Disabilities

If you have a documented disability requiring academic accommodations in this course, please contact the Paul Menton Centre for Students with Disabilities (PMC) at 613-520-6608 or pmc@carleton.ca for a formal evaluation or contact your PMC coordinator to send your instructor your Letter of Accommodation at the beginning of the term. You must also contact the PMC no later than two weeks before the first in-class scheduled test or exam requiring accommodation (if applicable). After requesting accommodation from PMC, meet with your instructor as soon as possible to ensure accommodation arrangements are made. carleton.ca/pmc

Survivors of Sexual Violence

As a community, Carleton University is committed to maintaining a positive learning, working and living environment where sexual violence will not be tolerated, and its survivors are supported through academic accommodations as per Carleton's Sexual Violence Policy. For more information about the services available at the university and to obtain information about sexual violence and/or support, visit: carleton.ca/sexual-violence-support

Accommodation for Student Activities

Carleton University recognizes the substantial benefits, both to the individual student and for the university, that result from a student participating in activities beyond the classroom experience. Reasonable accommodation must be provided to students who compete or perform at the national or international level. Please contact your instructor with any requests for academic accommodation during the first two weeks of class, or as soon as possible after the need for accommodation is known to exist. <https://carleton.ca/senate/wp-content/uploads/Accommodation-for-Student-Activities-1.pdf>

For more information on academic accommodation, please contact the departmental administrator or visit: students.carleton.ca/course-outline