

**ERTH 3115: Fish and amphibian evolution**  
Course Syllabus  
Fall 2024

This course seeks to understand the origin and evolution of fish and amphibians, as evidenced by the fossil record, and discover the transformations that took place, leading to the success of these groups.

**Course objectives**

**Learn** details of the anatomy of fish and amphibians and comparative anatomy between groups.

**Understand** currently accepted patterns of relationships between major fish and amphibian groups.

**Describe** key evolutionary events in the origin and radiation of fish and amphibians.

**Integrate** evolutionary mechanisms (e.g., developmental and functional) with patterns of diversity in fish and amphibians.

**Learning outcomes**

By the end of this course, students will be able to...

**Recall** the anatomy of fish and amphibians.

**Describe** and **evaluate** patterns of relationships between major fish and amphibian groups.

**Describe** key evolutionary events in the origin and radiation of fish and amphibians.

**Integrate** evolutionary mechanisms with patterns of diversity in fish and amphibians.

**Mark breakdown**

Lecture mid-term 20%

Quizzes/assignments 50%

Final lecture exam 30%

**Lecture schedule**

September 9: Lecture 1 – Introduction & Vertebrate origins

September 16: Lecture 2 – Agnatha

September 23: Lecture 3 – Gnathostomata

September 30: Lecture 4 – Actinopterygia

October 7: Lecture 5 – Sarcopterygia

October 28: **Mid-term (lectures 1-5) 15%**

November 4: Lecture 6 – Early tetrapods

November 11: Lecture 7 – Temnospondyls

November 18: Lecture 8 – Anthracosaurs & Diadectomorphs

November 25: Lecture 9 – Lepospondyls

December 2: Lecture 10 – Lissamphibians

Teaching assistant: Ashan Ayanarajan; AshanAyanarajan@cmail.carleton.ca

**Books**

Recommended text: Vertebrate Palaeontology, by M. J. Benton

Lab manual: The Dissection of Vertebrates, by De Iuliis and Pulera

### **Course policies**

Midterm: a missed midterm exam will be available for deferral if appropriate reason is provided within 5 days of the missed exam. If deemed acceptable, a re-write will be scheduled.

Quizzes and assignments: these will have clearly defined due dates. Late assignments will not be accepted; however, pending an appropriate reason obtained within 48hrs of its due date, the missed marks may be reallocated to the assignment categories total mark.

Final exam: a formally scheduled final exam will take place during the exam period. A deferred final exam is subject to the university's approval. Instructors cannot grant final exam deferrals.

### **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 to another student, 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.

### **Accommodations**

Carleton is committed to providing academic accessibility for all individuals. You may need special arrangements to meet your academic obligations during the term. The accommodation request processes, including information about the Academic Consideration Policy for Students in Medical and Other Extenuating Circumstances, are outlined on the Academic Accommodations website ([students.carleton.ca/course-outline](https://students.carleton.ca/course-outline)).

### **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:

H. C. Maddin, HP 2239  
Hillary.maddin@carleton.ca

### **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. For more details, visit the Equity Services website: [carleton.ca/equity/wp-content/uploads/Student-Guide-to-Academic-Accommodation.pdf](https://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](https://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](mailto: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](https://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](https://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](https://students.carleton.ca/course-outline)