

**ERTH 3112: Vertebrate Evolution I – fish and amphibian evolution**  
Course Syllabus

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. Prerequisites: ERTH 1009 or BIOL 2001, or permission from the department.

**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 15%

Lab mid-term 15%

Term paper and presentation 20% (see term paper syllabus)

Final lab exam 20%

Final lecture exam 30%

**Lecture schedule**

January 10: Lecture 1 – Introduction & Vertebrate origins

January 17: Lecture 2 – Agnatha

January 24: Lecture 3 – Gnathostomata

January 31: Lecture 4 – Actinopterygia

February 7: Lecture 5 – Sarcopterygia

February 14: Lecture 6 – Early tetrapods

February 28: Lecture 7 – Temnospondyls

March 6: **Mid-term (lectures 1-6) 15%**

March 13: Lecture 8 – Anthracosaurs & Diadectomorphs

March 20: Lecture 9 – Lepospondyls

March 27: Lecture 10 – Lissamphibians

April 3: Presentations

April 10: Presentations

### **Books**

Recommended text: Vertebrate Palaeontology, by M. J. Benton  
Lab manual: The Dissection of Vertebrates, by De Iuliis and Pulera

### **Policies**

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

Term paper: all term papers are due at the beginning of the first period with presentations. A penalty of 5% per day late will be deducted from the term paper total. Extensions are rarely granted due to the fact that you will have the entire semester to work on the paper and presentation. Last minute work is will not be accepted late.

Presentation: there are no make-up options for missed presentations. A missed presentation will result in a mark of zero. If appropriate documentation can be provided, the mark for the presentation will be added to the term paper weight.

Lab policies: see the Lab Syllabus.

### **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.

### **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. 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 is 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)