



ZOO*2090 Vertebrate Structure and Function

Fall 2018
Section(s): C01

Department of Integrative Biology
Credit Weight: 0.50
Version 1.00 - August 17, 2018

1 Course Details

1.1 Calendar Description

This course offers a comparative survey of the structure and functioning of the chordates with emphasis on the vertebrates and includes a laboratory study of the anatomy of selected vertebrates.

Pre-Requisite(s): 4.00 credits including BIOL*1070

1.2 Course Description

This course is designed to expose students to the diversity of chordates and particularly the vertebrates. Structural variation among the vertebrates will be examined in order to explore the functional and evolutionary themes carried within structure. The laboratory part of the course involves detailed anatomical study through dissection of selected vertebrates. By the end of this course, the student will be able to establish structure-function relationships of the body systems in different vertebrate groups.

1.3 Timetable

Lectures: 11:30–12:20h Monday/Wednesday. Room THRN 1200.

Labs: 14:30–17:20h Monday/Tuesday/Wednesday/Thursday, or
8:30–11:30h Tuesday in room SCIE 2304

**First lecture and laboratory session start Monday September 10, 2018

1.4 Final Exam

Exam time and location is subject to change. Please see WebAdvisor for the latest information.

2 Instructional Support

2.1 Instructor(s)

Dr. Jinzhong Fu
Email:

jfu@uoguelph.ca

Telephone: +1-519-824-4120 x52715
Office: SC1 1458
Office Hours: By appointment

2.2 Instructional Support Team

Course Co-ordinator: Sarah Schorno
Email: sschorno@uoguelph.ca
Telephone: +1-519-824-4120 x56557
Office: SC1 2475

Lab Co-ordinator: Dr. Leslie Rye
Email: lrye@uoguelph.ca
Telephone: +1-519-824-4120 x56129
Office: SC1 1446

3 Learning Resources

3.1 Required Resource(s)

Vertebrate Structure and Function: Lab activities (Lab Manual)

Rye, L. (Fall 2018) Vertebrate Structure and Function: Lab activities. (For price and method of distribution see Courselink)

Zoology Kit (Equipment)

Available at the bookstore but you don't need it for the first few labs.

Tree of Life website (Website)

<http://www.tolweb.org/tree/phylogeny.html>

Encyclopedia of Life (Website)

<http://www.eol.org/>

Animal Diversity Web (Website)

<http://animaldiversity.ummz.umich.edu/>

University of California Museum of Paleontology (Website)

<http://www.ucmp.berkeley.edu/>

Website devoted to The Devonian Period (Website)

<https://www.devoniantimes.org>

3.2 Recommended Resource(s)

Vertebrates: Comparative Anatomy, Function, Evolution (Textbook)

Kardong, K.V. (2015) Vertebrates: Comparative Anatomy, Function, Evolution (7th ed.). McGraw Hill, New York. (the earlier editions of this text are also acceptable, multiple copies of the book are on reserve in the library)

Lab Coat & Disposable Gloves (Equipment)

Available at the bookstore. You will **not** need these for the first lab.

4 Learning Outcomes

4.1 Course Learning Outcomes

By the end of this course, you should be able to:

1. Recognize the major groups of chordates, their origins, evolution, and morphological characteristics.
 2. Demonstrate an understanding of the principles of biological design.
 3. Demonstrate practical skills for identifying the morphological features of vertebrates.
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5 Teaching and Learning Activities

5.1 Lecture

Topic(s): See schedule

5.2 Lab

Topic(s): See schedule

5.3 Laboratory Schedule

Lab 1 - Sep 10-13: Chordates and vertebrate phylogeny

Lab 2 - Sep 17-20: Life in Water I (external morphology, integument and skeleton)

Lab 3 - Sep 24-27: Life in Water II (muscles, digestive, respiratory and circulatory systems)

Lab 4 – Oct 1-4: Life in Water III (urogenital and nervous systems, sense organs)

No lab - Oct 8-11 (Thanksgiving holiday)

Lab 5 - Oct 15-18: Amphibians – Transition to land

Lab 6 - Oct 22-25: Amniotes – Permanent life on land; adaptation for flight

Lab 7 – Oct 29-Nov 1: Life on land I (integument and skeleton)

Lab 8 - Nov 5-8: Life on land II (muscles, digestive, respiratory and circulatory systems)

Lab 9 - Nov 12-15: Life on land III (urogenital and nervous systems, sense organs)

Lab final exam – Nov 19-22 in regular lab period

5.4 Tentative Lecture Schedule

Sep 10, 12 Origin of chordates, Overview of vertebrates

Sep 17, 19 Diversity of fishes

Sep 24, 26 Fish skeleton, Fish integument

Oct 1, 3 Respiration/circulation in fish, Early tetrapods

Oct 10	Muscles
<u>Mon Oct 15</u>	<u>Lecture midterm</u>
Oct 17	Modern amphibians
Oct 22, 24	Early amniotes, Synapsid amniotes (I)
Oct 29, 31	Synapsid amniotes (II), Sauropsid amniotes (I)
Nov 5, 7	Sauropsid amniotes (II), Respiration/circulation in tetrapods
Nov 12, 14	Digestive system, Urogenital system
Nov 19, 21	Nervous system, Sense organs
Nov 26, 28	Function and biological design, Special topic (an integrative case study)
Nov. 30 (Fri)	Review

6 Assessments

6.1 Marking Schemes & Distributions

(All evaluation components address all three learning outcomes)

Lecture Midterm: 20% (Monday Oct 15)

Lecture Final: 30% (Date and time scheduled by Registrar)

Lab Assignments: 25% (Root word exercise due Oct 5; Hand-ins in Labs 3, 5, 6 & 8)

Lab Final: 25% (in regularly scheduled lab week of Nov 19-22)

NO CHANGE in the evaluation scheme will be made without the consent of ALL students enrolled in the course and the agreement of the professor and instructor. NO unofficial deferments of any scheduled evaluation will be given, i.e., NO make-up evaluations will be conducted. Students who miss the midterm and the assignments for documented medical or other legitimate reasons will have their final marks prorated on the basis of the completed evaluations.

6.2 Methods of Evaluation

Examinations will be derived from lecture material given in class and laboratory material. Students who miss lectures or labs for any reason are responsible for the material that is covered.

The midterm lecture examination will be given on Monday October 15 and the final lecture

examination will be given at a time and place to be announced by the registrar. The lecture examinations will consist of multiple-choice and short answer questions that may involve simple diagrams. There will be some lab material tested on the midterm. The final lecture examination will cover the entire course materials.

There will be a series of five lab assignments throughout the semester. Most (although not all) of them will be completed in the regular lab time.

The final laboratory examination will be held during your regularly scheduled laboratory period in the week of November 19. This laboratory examination will consist of identification of anatomical structures (from microscope slides and/or real specimens) and short answer questions. It will cover the entire semester's work. Students MUST write this examination in their regularly scheduled laboratory period.

7 Department of Integrative Biology Statements

7.1 Academic Advisors

If you are concerned about any aspect of your academic program:

- Make an appointment with a program counsellor in your degree program. [B.Sc. Academic Advising](#) or [Program Counsellors](#)

7.2 Academic Support

If you are struggling to succeed academically:

- Learning Commons: There are numerous academic resources offered by the [Learning Commons](#) including, Supported Learning Groups for a variety of courses, workshops related to time management, taking multiple choice exams, and general study skills. You can also set up individualized appointments with a learning specialist.
- Science Commons: Located in the library, the Science Commons provides support for physics, mathematic/statistics, and chemistry. Details on their hours of operations can be found at: [Chemistry & Physics Help](#) and [Math & Stats Help](#)

7.3 Wellness

If you are struggling with personal or health issues:

- [Counselling Services](#) offers individualized appointments to help students work through personal struggles that may be impacting their academic performance.
 - [Student Health Services](#) is located on campus and is available to provide medical attention.
 - For support related to stress and anxiety, besides Health Services and Counselling Services, Kathy Somers runs training workshops and one-on-one sessions related to [stress management and high performance situations](#).
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8 University Statements

8.1 Email Communication

As per university regulations, all students are required to check their e-mail account regularly: e-mail is the official route of communication between the University and its students.

8.2 When You Cannot Meet a Course Requirement

When you find yourself unable to meet an in-course requirement because of illness or compassionate reasons please advise the course instructor (or designated person, such as a teaching assistant) in writing, with your name, id#, and e-mail contact. The regulations and procedures for [Academic Consideration](#) are detailed in the Undergraduate Calendar.

8.3 Drop Date

Courses that are one semester long must be dropped by the end of the fortieth class day; two-semester courses must be dropped by the last day of the add period in the second semester. The regulations and procedures for [Dropping Courses](#) are available in the Undergraduate Calendar.

8.4 Copies of Out-of-class Assignments

Keep paper and/or other reliable back-up copies of all out-of-class assignments: you may be asked to resubmit work at any time.

8.5 Accessibility

The University promotes the full participation of students who experience disabilities in their academic programs. To that end, the provision of academic accommodation is a shared responsibility between the University and the student.

When accommodations are needed, the student is required to first register with Student Accessibility Services (SAS). Documentation to substantiate the existence of a disability is required, however, interim accommodations may be possible while that process is underway.

Accommodations are available for both permanent and temporary disabilities. It should be noted that common illnesses such as a cold or the flu do not constitute a disability.

Use of the SAS Exam Centre requires students to book their exams at least 7 days in advance, and not later than the 40th Class Day.

More information: www.uoguelph.ca/sas

8.6 Academic Misconduct

The University of Guelph is committed to upholding the highest standards of academic integrity and it is the responsibility of all members of the University community – faculty, staff, and students – to be aware of what constitutes academic misconduct and to do as much as possible to prevent academic offences from occurring. University of Guelph students have the responsibility of abiding by the University's policy on academic misconduct regardless of their location of study; faculty, staff and students have the responsibility of supporting an environment that discourages misconduct. Students need to remain aware that instructors have access to and the right to use electronic and other means of detection.

Please note: Whether or not a student intended to commit academic misconduct is not relevant for a finding of guilt. Hurried or careless submission of assignments does not excuse students from responsibility for verifying the academic integrity of their work before submitting it. Students who are in any doubt as to whether an action on their part could be construed as an academic offence should consult with a faculty member or faculty advisor.

The [Academic Misconduct Policy](#) is detailed in the Undergraduate Calendar.

8.7 Recording of Materials

Presentations which are made in relation to course work—including lectures—cannot be recorded or copied without the permission of the presenter, whether the instructor, a classmate or guest lecturer. Material recorded with permission is restricted to use for that course unless further permission is granted.

8.8 Resources

The [Academic Calendars](#) are the source of information about the University of Guelph's procedures, policies and regulations which apply to undergraduate, graduate and diploma programs.
