University of Guelph
College of Biological Sciences
Department of Integrative Biology

COURSE OUTLINE
VERTEBRATE STRUCTURE AND FUNCTION (ZOO*2090)
FALL 2017

Teaching Team

Professor — Dr. J. Fu, Office SCIE 1458, jfu@uoguelph.ca, ext. 52715
Dr. P. Wright, Office SCIE 3468, patwrigh@uoguelph.ca, ext. 52719

Office hours: by appointment

Lab Instructor — Dr. Leslie Rye, Office SCIE 2505, lrye@uoguelph.ca, ext. 56129

Course Schedule

Lectures: 11:30–12:20h Monday/Wednesday. Room Alex 200.
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 11, 2017

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.

Learning Outcomes

By the end of this course, students 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.

Resources

Textbook: (recommended): 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)
Required lab manual: Rye, L. (Fall 2016) Vertebrate Structure and Function: Lab activities. (price and method of distribution see "Lab Manual Sale 2016.doc")
Required dissecting instruments: "Zoology kit". (available at the bookstore)
Suggested lab equipment: lab coat and disposable gloves. (available at the bookstore)
Web resources:
1. Tree of Life website (http://www.tolweb.org/tree/phylogeny.html)
2. Encyclopedia of Life (http://www.eol.org/)
3. Animal Diversity Web (http://animaldiversity.ummz.umich.edu/)
4. University of California Museum of Paleontology (http://www.ucmp.berkeley.edu/)

5. Website devoted to The Devonian Period (www.devoniantimes.org).

LABORATORY SCHEDULE

Lab 1 - Sep 11-14: Chordates and vertebrate phylogeny
Lab 2 - Sep 18-21: Life in Water I (external morphology, integument and skeleton)
Lab 3 - Sep 25-28: Life in Water II (muscles, digestive, respiratory and circulatory systems)
Lab 4 – Oct 2-5: Life in Water III (urogenital and nervous systems, sense organs)
No lab - Oct 9-12 (Thanksgiving holiday)
Lab 5 - Oct 16-19: Amphibians – Transition to land
Lab 6 - Oct 23-26: Amniotes – Permanent life on land; adaptation for flight
Lab 7 – Oct 30-Nov 2: Life on land I (integument and skeleton)
Lab 8 - Nov 6-9: Life on land II (muscles, digestive, respiratory and circulatory systems)
Lab 9 - Nov 13-16: Life on land III (urogenital and nervous systems, sense organs)
Lab final exam – Nov 20-23 in regular lab period

TENTATIVE LECTURE SCHEDULE

Sep 11, 13	Origin of chordates, Overview of vertebrates
Sep 18, 20	Biological design, Development
Sep 25, 27	Diversity of fishes, Fish skeleton
Oct 2, 4	Fish skeleton, Fish integument
Oct 11	Respiration/circulation in fish
Oct 16	Early tetrapods
Wed Oct 18	Lecture midterm
Oct 23, 25	Muscles, Modern amphibians
Oct 30, Nov 1	Early amniotes, Synapsid amniotes
Nov 6, 8	Sauropsid amniotes, Primates/human evolution
Nov 13, 15	Respiration/circulation in tetrapods, Digestive/urinary/reproductive systems
Nov 20, 22	Digestive/urinary/reproductive systems, Nervous system
Nov 27, 29	Sense organs, Special topic
Dec. 1 (Fri)	Review
Final exam	TBA

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 Wednesday October 18 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 held during your regularly scheduled laboratory period in the week of November 20. 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.

Mark Allocation
(all evaluation components address all three learning outcomes)

Lecture Midterm:	20% (Wednesday Oct 18)
Lecture Final:	30% (Date and time scheduled by Registrar)
Lab Assignments:	25% (Root word exercise due Oct 7; Hand-ins in Labs 3, 5, 6 & 8)
Lab Final:	25% (in regularly scheduled lab week of Nov 20)

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.

Important Policies and Procedures

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 in writing, with your name, id#, and e-mail contact. See the undergraduate calendar for information on regulations and procedures for Academic Consideration:
http://www.uoguelph.ca/registrar/calendars/undergraduate/current/c08/c08-ac.shtml

Drop Date
The last date to drop one-semester courses, without academic penalty, is Nov 3rd.
For regulations and procedures for Dropping Courses, see the Undergraduate Calendar:
http://www.uoguelph.ca/registrar/calendars/undergraduate/current/c08/c08-drop.shtml

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.

Accessibility
The University of Guelph is committed to creating a barrier-free environment. Providing services for students is a shared responsibility among students, faculty and administrators. This relationship is based on respect of individual rights, the dignity of the individual and the University community's shared commitment to an open and supportive learning environment. Students requiring service or accommodation, whether due to an identified, ongoing disability or a short-term disability should contact the Student Accessibility Services as soon as possible. For more information, contact SAS at 519-824-4120 ext. 56208 or email csd@uoguelph.ca or see the website: http://www.csd.uoguelph.ca/csd/

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:
http://www.uoguelph.ca/registrar/calendars/undergraduate/current/c08/c08-amisconduct.shtml

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.

Academic 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: http://www.uoguelph.ca/registrar/calendars/index.cfm?index