ZOO*2090 Vertebrate Structure and Function

Fall 2019
Section(s): C01

Department of Integrative Biology
Credit Weight: 0.50
Version 3.00 - August 07, 2019

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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-Requisites: 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. 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 sessions start Monday September 9, 2019

1.4 Final Exam

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

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2 Instructional Support

2.1 Instructional Support Team

Instructor: Dr. Moira Ferguson
Email: mmfergus@uoguelph.ca
Telephone: +1-519-824-4120 x52726
Office: SC1 1457
Office Hours: By Appointment

Lab Co-ordinator: Dr. Sarah Schorno
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Telephone: +1-519-824-4120 x TBD
Office: SSC 3510
Office Hours: By Appointment

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3 Learning Resources

3.1 Required Resources

Vertebrate Structure and Function: Lab activities (Lab Manual)
Fall 2019 Vertebrate Structure and Function: Lab activities. (For price and method of distribution see Courselink)

Zoology Dissection Kit (Equipment)
Available at the bookstore. You will be using this kit in this course as well as future zoology courses.

Available in Generic ($24.99) or Premium ($37.99) kits.

Tools required:

Dissecting Scissors (straight/sharp/blunt) 15 cm

Dissecting Scissors (fine/straight) 11.5 cm

Dressing Forceps (narrow/straight) 14 cm

Splinter Forceps #5 (straight/long points) 11.5 cm

Tissue Forceps (2x3 teeth) 15 cm

Dissecting Probe (fine point, 6mm) 15 cm

Dissecting Needle (plastic handle/straight)

Scalpel Handle #3

#10 Scalpel Blades

3.2 Recommended Resources

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).

Note: All of the material to be tested on the lecture exams will be discussed in class or labs so it is not necessary to acquire the textbook in order to do well in the course.

Lab Coat & Disposable Gloves (Equipment)
Available at the bookstore. These are recommended but not necessary for the labs.

3.3 Additional Resources

Encyclopedia of Life (Website)
http://www.eol.org/

Animal Diversity Web (Website)
http://animaldiversity.ummz.umich.edu/

Website devoted to The Devonian Period (Website)
https://www.devoniantimes.org

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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

Topics:

Note: the order and content of lectures is subject to change.

1. Origin of chordates
2. Overview of vertebrates
3. Diversity of fishes
4. Fish skeleton
5. Fish integument
6. Respiration/circulation in fish
7. Early tetrapods
8. Muscles
9. Modern amphibians
10. Early amniotes
11. Sauropsid amniotes
12. Synapsid amniotes
13. Respiration/circulation in tetrapods
14. Digestive system

15. Urogenital system

16. Nervous system

17. Sense organs

18. Function and biological design

5.2 Lab

Mon, Sep 9 - Thu, Sep 12

Topics: Lab 1: Life in Water I – Early Chordates, External Morphology and Integument of Fishes

Mon, Sep 16 - Thu, Sep 19

Topics: Lab 2: Life in the Water II - Internal Body Systems

Mon, Sep 23 - Thu, Sep 26

Topics: Lab 3: Life in the Water III - Urogenital, Nervous System and Sense Organs

Mon, Sep 30 - Thu, Oct 3

Topics: Lab 4: Transition to Land – Amphibians and Reptiles

Mon, Oct 7 - Thu, Oct 10

Topics: Lab Midterm

Mon, Oct 14 - Thu, Oct 17

Topics: Thanksgiving (**NO LABS**)

Mon, Oct 21 - Thu, Oct 24

Topics: Lab 5: Establishing Permanent Life on Land - Adaptations for Flight

Mon, Oct 28 - Thu, Oct 31

Topics: Lab 6: Life on Land I - Integument (with Modifications) and Skeleton

Mon, Nov 4 - Thu, Nov 7

Topics: Lab 7: Life on Land II - Muscular, Digestive, Respiratory, Circulatory and Urogenital Systems

Mon, Nov 11 - Thu, Nov 14

Topics: Lab 8: Life on land III - Nervous System and Sense Organs

Mon, Nov 18 - Thu, Nov 21

Topics: Lab Exam

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6 Assessments

6.1 Marking Schemes & Distributions

Name	Scheme A (%)
Lab Assignments	18
Lab Midterm	12
Lab Final	20
Lecture Midterm	20
Lecture Final	30
Total	100

6.2 Assessment Details

Lab Assignments (18%)
Hand-Ins to be completed during every lab period; best 6 of 8 marked (3% each)

Lab Midterm (12%)
Date: Mon, Oct 7 - Thu, Oct 10
In regularly scheduled lab week of Oct 7-10

Lab Final (20%)
Date: Mon, Nov 18 - Thu, Nov 21
In regularly scheduled lab week of Nov 18-21

Lecture Midterm (20%)
Date: Wed, Oct 16

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

6.3 Methods of Evaluation

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 for documented medical or other legitimate reasons will have their final marks prorated on the basis of the completed evaluations.

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 16 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. The final lecture examination will cover the entire course materials.

There will be lab assignments during every lab period throughout the semester. All of them will be completed in small groups during the regular lab time. The best 6 of 8 assignments will be marked. Each assignment will be worth 3% each, for a total of 18% of the lab mark.

The midterm laboratory examination will be held during your regularly scheduled laboratory period in the week of October 7th. The final laboratory examination will held during your regularly scheduled laboratory period in the week of November 18. These examinations will consist of identification of anatomical structures (from microscope slides and/or real specimens) and short answer questions. The final laboratory examination will cover the entire semester's work, with emphasis on the second half of the course. Students MUST write these examinations in their regularly scheduled laboratory period.

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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. http://www.learningcommons.uoguelph.ca/
- 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: http://www.lib.uoguelph.ca/get-assistance/studying/chemistry-physics-help and http://www.lib.uoguelph.ca/get-assistance/studying/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. https://www.uoguelph.ca/counselling/
- Student Health Services is located on campus and is available to provide medical attention. https://www.uoguelph.ca/studenthealthservices/clinic
- 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. http://www.selfregulationskills.ca/

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 grounds for Academic Consideration are detailed in the Undergraduate and Graduate Calendars.

Undergraduate Calendar - Academic Consideration and Appeals
https://www.uoguelph.ca/registrar/calendars/undergraduate/current/c08/c08-ac.shtml

Graduate Calendar - Grounds for Academic Consideration
https://www.uoguelph.ca/registrar/calendars/graduate/current/genreg/index.shtml

8.3 Drop Date

Students will have until the last day of classes to drop courses without academic penalty. The deadline to drop two-semester courses will be the last day of classes in the second semester. This applies to all students (undergraduate, graduate and diploma) except for Doctor of Veterinary Medicine and Associate Diploma in Veterinary Technology (conventional and alternative delivery) students. The regulations and procedures for course registration are available in their respective Academic Calendars.

Undergraduate Calendar - Dropping Courses
https://www.uoguelph.ca/registrar/calendars/undergraduate/current/c08/c08-drop.shtml

Graduate Calendar - Registration Changes
https://www.uoguelph.ca/registrar/calendars/graduate/current/genreg/genreg-reg-regchg.shtml

Associate Diploma Calendar - Dropping Courses
https://www.uoguelph.ca/registrar/calendars/diploma/current/c08/c08-drop.shtml

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 can be found on the SAS website
https://www.uoguelph.ca/sas

8.6 Academic Integrity

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 encourages academic integrity. 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.

Undergraduate Calendar - Academic Misconduct
https://www.uoguelph.ca/registrar/calendars/undergraduate/current/c08/c08-amisconduct.shtml

Graduate Calendar - Academic Misconduct
https://www.uoguelph.ca/registrar/calendars/graduate/current/genreg/index.shtml

8.7 Recording of Materials

Presentations that are made in relation to course work - including lectures - cannot be recorded or copied without the permission of the presenter, whether the instructor, a student, 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 that apply to undergraduate, graduate, and diploma programs.

Academic Calendars
https://www.uoguelph.ca/academics/calendars