

**University of Guelph
College of Biological Science
Department of Integrative Biology**

Draft COURSE OUTLINE subject to change

**ZOO*4910 Integrative Vertebrate Biology
Fall 2013**

Course description

This course examines the causes and significance of diversity in morphology, physiology and behaviour among the major groups of vertebrates (fishes, amphibians, reptiles, birds, mammals). This includes topics such as vertebrate biodiversity, evolution, zoogeography, and taxonomy. The remainder of the course will be organized around specific comparative topics in vertebrate biology such as the evolution of endothermy, metabolism, locomotion and migration, trends in vertebrate reproduction, evolution of brain size and complexity in relation to cognition and communication, regeneration and immune systems, predation and defence. Each topic will be explored through analyses of taxonomic diversity, historical and phylogenetic constraints, physiological and developmental causes, and functional effects. Students are encouraged to also take at least one of the three vertebrate laboratory courses (Herpetology, Mammalogy, Ornithology) that have been designed to complement this course.

Prerequisite(s): **ZOO*2090**, (1 of **BIOL*2400**, **BIOL*3400**, **ZOO*3300**)

Co-requisite(s): **ZOO*3050**, **ZOO*3200**

Credit: 0.50

Teaching team

Dr. Rob McLaughlin, x53620, rlmclaug@uoguelph.ca

Office: 2456 Science Complex

Office hours: by appointment

Teaching Assistants: T.B.A.

Course Schedule

Lecture: 12:30-1:20 pm, Monday, Wednesday, Friday, Alexander Hall, Room 100

* there is a class scheduled on Friday, 28 November to make up for the Thanksgiving holiday

Note: There are no labs for this course.

Course Resources

Textbook: There is no required text. Vertebrate Life 9th Ed. (Pough, Janis and Heiser 2013) may be a good source for information.

Additional resources: Additional reference texts that will be valuable for your assignments and project will be placed on reserve in the library.

Course website: This course will make use of the University of Guelph's course website on D2L (via Courselink). You are responsible for all information posted on the Courselink page for ZOO*4910. Please check it regularly.

Learning Objectives and Assessment

After taking this course, you are expected to be able to:

- 1) interpret the vertebrate phylogeny and use it to generate and test hypotheses regarding vertebrate diversity;
- 2) recognize, and explain why, the phylogeny is itself a hypothesis;
- 3) identify key evolutionary events that define major taxonomic groups;
- 4) demonstrate the theoretical background needed to design and carry out more involved taxonomic studies, including advanced concepts and emerging methods;
- 5) analyze, synthesize, and integrate lecture and literature information, e.g. across major disciplines (ecology, evolution, and physiology) and across major vertebrate groups; and,
- 6) generate recommendations for resolving topic areas where our understanding of vertebrate diversity remains uncertain or controversial.

Course Content and Delivery

Week	Dates	Topics
1	Sept 4	Introduction to vertebrate diversity
2	Sept 8-12	Diversity and evolution: fishes and amphibians, Comparative Method
3	Sept 15-19	Diversity and evolution: reptiles and birds, Meta-analysis
4	Sept 22-26	Diversity and evolution: mammals, Body size evolution
5	Sept 29-Oct 3	Taxonomy and measurement of diversity
6	Oct 6-8	Locomotion
	Oct 10	Midterm
	Oct 13	** Thanksgiving
	Oct 14	** Fall Study Break
7	Oct 15-17	Locomotion
8	Oct 20-24	Evolution of endothermy
9	Oct 27-31	Development
10	Nov 3-7	Reproduction
11	Nov 10-14	Physical and chemical weapons and defenses
12	Nov 17-21	Brain size and cognition

Methods of Assessment

Form of assessment	Weight	Date	Learning outcomes addressed	Course activity
Assignment 1	7.5%	Sept 22	4,5,6	Lectures + outside class time
Assignment 2	7.5%	Sept 30	4,5,6	Lectures + outside class time
Midterm exam	20%	Oct 10	1-6	Lectures + readings
Group project	30%		1-6	Lectures + outside class time
Group setup	(--)	Sept 19		
1 st draft	(9%)	Nov 2		
Paper review	(6%)	Nov 11		
Final paper	(15%)	Nov 26		
Group evaluation	(--) [†]	Nov 28		
Final exam	35%	TBD	1-6	Lectures + readings

[†] Your project grade will be adjusted based on how your group members assess your contributions to the project.

The midterm and final examinations will consist of short answer, essay, and problem solving questions that evaluate your ability to analyze and synthesize course material, as well as to recall basic information. The midterm will consider material covered from the beginning of class up to and including the lecture on 8 October. The final examination will consider all material covered throughout the course with an emphasis on material covered from 15 October until the end of the course. Theories and concepts covered early in the course will be relevant to topics covered later in the course.

The two small assignments will introduce you to analytical techniques that are useful for conducting comparative studies and research syntheses. This introduction will help prepare you for your group project and will foster a deeper appreciation of some key methods used to address research questions about vertebrate diversity.

The group project will provide you with a research experience where you can examine some aspect of vertebrate diversity in an integrated way. Ideally, this will involve (i) identifying or developing a hypothesis and predictions, (ii) acquiring information from the literature or scientific databases, (iii) analyzing those data, and (iv) interpreting, synthesizing, and communicating your results in writing within the broader context of the discipline. These hands-on opportunities can

provide rich learning experiences, especially when the group develops a sense of ownership for the project and works to make it come out beautifully. The project will also provide you with experience critiquing the work of another group's project and critiquing the contributions of your group members. More detailed information will be provided throughout the term.

Course & University Policies

Grading

Grading of your coursework will be conducted in a manner consistent with the definitions of grades provided in the university calendar. You should familiarize yourself with these definitions:

<http://www.uoguelph.ca/registrar/calendars/undergraduate/current/c08/c08-grds-proc.shtml>

Due dates

Assignments and project components are to be submitted via the CourseLink website on the due date specified above. A penalty of 10% per day will be applied to late submissions. The project component will entail an evaluation of group members. This evaluation will be used to adjust your grade up or down based on your contribution to the group component of the project. Students who fail to complete this evaluation by 28 November will be assigned a grade of 0 for the 1st draft and the final paper. Further details will be provided in lecture.

Feedback

Feedback is always welcome. You can provide it in person, via email, or, for those of you would prefer to remain anonymous, I will provide a link to an on-line survey site.

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, and be prepared to provide supporting documentation. 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>

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 Centre for Students with Disabilities as soon as possible. For more information, contact CSD 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>

E-mail Communication

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

Drop Date

The last date to drop one-semester courses, without academic penalty, is the 40th class day (**Oct 30**, 2014 for Fall 2014 semester). To confirm the actual date, please see the schedule of dates in the Undergraduate Calendar. For regulations and procedures for Dropping Courses, see:

<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.

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.

Campus Resources

The Academic Calendar is 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>

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

- Make an appointment with a program counsellor in your degree program. <http://www.bsc.uoguelph.ca/index.shtml> or <https://www.uoguelph.ca/uaic/programcounsellors>

If you are struggling to succeed academically:

- 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/>

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.uoguelph.ca/~ksomers/>

If you have a documented disability or think you may have a disability:

- The Centre for Students with Disabilities (CSD) can provide services and support for students with a documented learning or physical disability. They can also provide information about how to be tested for a learning disability. For more information, including how to register with the centre please see: <https://www.uoguelph.ca/csd/>