ZOO*4910 Integrative Vertebrate Biology

Fall 2018
Section(s): C01

Department of Integrative Biology
Credit Weight: 0.50
Version 1.00 - September 04, 2018

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1 Course Details

1.1 Calendar Description

This course examines the proximate and historical causes of diversity in morphology, physiology and behaviour among major groups of vertebrates (fishes, amphibians, reptiles, birds, mammals). First, topics such as vertebrate origins, zoogeography, taxonomy and comparative methods will be developed as a foundation for inquiry. The remainder of the course will be organized around specific contemporary problems in vertebrate biology such as the evolution of endothermy; feeding strategies and metabolism; locomotion and migration; trends in vertebrate reproduction; evolution of brain size and complexity in relation to cognition and communication. Each problem will be explored through analyses of taxonomic diversity, historical and phylogenetic constraints, physiological and developmental causes, and functional effects.

Pre-Requisite(s): BIOL*2400, ZOO*2090
Co-Requisite(s): ZOO*3200 or ZOO*3600

1.2 Course Description

This course examines the wide diversity of vertebrate biology and delves into interesting issues and case studies in morphology, physiology and behaviour among the major groups of vertebrates (fishes, amphibians, reptiles, birds, mammals). The majority of this course will be organized around specific comparative topics in vertebrate biology such as the evolution of endothermy, how animals sense the world, locomotion, trends in vertebrate reproduction, environmental impacts on physiology and ecology, and curious topics of interest to the student body, such as toxins and chemical defenses, and the impact of climate change on wildlife. Each topic will be explored through analyses of diversity, physiological and developmental roots and causes, and functional effects. This course, rather than a traditional well-marked straight road with a textbook as a map is an exploration and thus we shall be ‘migrating’ among topics and taxa, stopping down for a punctuated visit before lifting off again. The overall goal of this course is to stimulate curiosity and inquiry into vertebrate biology, and to develop an understanding and appreciation for the incredible diversity of form, function and ecology. Another important goal of this course is to provide students with the opportunity to explore and develop transferable skills in idea synthesis, oral communication, and graphic design. 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, not only will they give you hands-on experience with specimens and the techniques we discuss, but they are a refreshing bit of fun.

1.3 Timetable

Lecture: 12:30-1:20 pm, Monday, Wednesday, Friday, ANNU Rm: 156

Note: There are no labs for this course, although students are encouraged to participate in one of the vertebrate laboratory courses.

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 Instructor(s)

Amy Newman
Email: newman01@uoguelph.ca
Telephone: +1-519-824-4120 x56595
Office: SC1 1467
Office Hours: Wednesdays 2:45-3:45, or by appt (email 3+ possible times that work with your schedule and I'll let you know which fits with mine

2.2 Teaching Assistant(s)

Teaching Assistant: Nikole Freeman
Email: nfreeman@uoguelph.ca
Office Hours: By appt, send Koley an email with a few possible times that fit your schedule and she'll let you know which works for her schedule.

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3 Learning Resources

There is no required textbook.

Some primary literature will be supplied online and reading of the literature is expected.

3.1 Required Resource(s)

Courselink (Website)
https://courselink.uoguelph.ca
This course will make use of the University of Guelph's course website on D2L (via Courselink). Consequently, you are responsible for all information posted on the Courselink page for ZOO*4910. Please check it regularly as news items, skeletal lecture notes, and instructions for class and projects will be posted and updated frequently.

3.2 Additional Resource(s)

Vertebrate Life (Textbook)
Vertebrate Life 9th Ed. (Pough, Janis and Heiser 2013) may be a good source for information.

Undergraduate Calendar (Website)

https://www.uoguelph.ca/registrar/calendars/undergraduate/current/
The Undergraduate Calendar is the source of information about the University of Guelph's procedures, policies and regulations, which apply to undergraduate programs.

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4 Learning Outcomes

4.1 Course Learning Outcomes

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

1. Integrate the fields of physiology, ecology and evolution in understanding vertebrate diversity.
2. Understand the applicability for integrative vertebrate biology in primary research.
3. Analyze, synthesize, and integrate lecture and literature information, e.g. across major disciplines (ecology, evolution, and physiology) and across major vertebrate groups.
4. Engage in opinionated discussion/debate around topics related to vertebrate biology and support ideas and opinions with information from the primary and secondary literature, while appreciating the labile nature of scientific debate and discovery.
5. Appreciate and analyze the primary adaptations that facilitate vertebrate success across a variety of environments
6. Synthesize information from the primary literature into the written account of a species.
7. Generate recommendations for resolving topic areas where our understanding of vertebrate biology remains uncertain or controversial.

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5 Teaching and Learning Activities

5.1 Course Content

Overview of Topics/Themes (subject to change)

General vertebrate diversity, fish, amphibians, snakes, End of Term Project

Applications to research Part 1, Debate Prep, Avian Diversity

Debate 1, Evolution of birds, flight, and avian innovations

Class time for projects, Applications to research Part II

Thanksgiving, Endothermy, seasonality, hormones and behaviour

Debate 2, Review, Midterm

Locomotion on Land, Applications to research Part II, Evolution of body size

Debate/Paper prep, adaptations for obtaining and maintaining resources

Debate 3, Sensing the environment (colour, mechanical, electro-)

Adaptations to high elevations, Debate/Paper prep, Arctic wildlife

Debate 4, Toxins, chemical defences, climate change

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6 Assessments

6.1 Methods of Assessment

Form of assessment	**Weight**	**Date**	**Learning outcomes addressed**	**Course activity**
Midterm exam	25%	Wednesday Oct 17	1-5	Lectures + readings + Debates
Final Team Paper	30%			
Teams formed before		Sept 21		
1st draft Due		Oct 31	1-7	Lectures + outside class time
Peer Reviews Due	*7.5%*	Nov 12		
Quality of Peer Reviews	*5%*	Nov 23		

	17.5%			
Final paper Due		Nov 28		
Group Assessment	**	Nov 30th (if there are no comments received by Nov 30th, each team member receive the same final paper grade)		
Debate Presentation In Front of Class (~2-3 people per group)	(bonus)	Debate Day: Sign up before Fri Sept 14th on courselink (Debates: Oct 1, Oct 24, Nov 5, Nov 19)	1, 2, 4, 7	Lectures + readings + outside class time
Debate/Discussion & General Participation	10%	Assessed by group members for contributions to development of debate, background research, and fielding of questions.		
Final exam	35%	Wednesday December 5th (subject to change, check webadvisor) 830-1030	1-6	Lectures + readings + Debates + species accounts

<u>Your project grade could be adjusted based on how your group members assess your contributions to the project:</u>** You have the opportunity to submit feedback about your group members directly to the instructors. If there are issues around equality of effort (e.g. 1+ person doing more or less than their fair share), please send a notice to the instructors with brief details. We will then arrange a group meeting to discuss the final outcome and if a grade adjustment is fair, to either increase the grade of a member(s) or decrease the grade of a member(s) based on effort and participation.

6.2 Debates

For Debates, spokesperson volunteers (up to 2 people per side, per debate) are eligible for up to 2.5% bonus for presenting in front of the class the background material and framework of your team's position. You must agree within your group and let me know via email who your spokespeople will be, slides for presentations will be submitted via CourseLink dropbox. Top marks are awarded for stellar powerpoint design, clear argument presentation, freedom from notes during the presentation, loud clear presentation voice with elegant presentation style, with

well articulated support and demonstration of position.

6.3 Examinations

The midterm and final examinations will consist of multiple choice, 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 material on Friday October 12th. The final examination will consider all material covered throughout the course with an emphasis on material covered from October 19th until the end of the course. **Guest lectures and debate materials will also be included on the exams.**

6.4 Team Project

The team paper will provide you with a research experience where you can examine vertebrate diversity in an integrated way. Ideally, this will involve (i) acquiring information from the literature or scientific databases, (ii) analyzing those data, and (iii) 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. There is opportunity to get creative with how you present your final product. 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.

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7 Course Statements

7.1 Late Policy

No extensions on assignments. Assignments and project components are to be submitted via the Courselink website and/or PEAR on the due date specified above. A penalty of 25% per day will be applied to late submissions. The final 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. Further details will be provided in lecture.

7.2 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

7.3 Absence & Illness

If you are absent from classes during the semester, you will be expected to make up missed lecture material on your own.

When an assignment is missed, you must notify the instructor in writing, with your name, id#, and e-mail contact as soon as possible. If requesting academic consideration on medical or compassionate grounds, be prepared to provide supporting documentation. Dates of incapacitation stated on the note must, of course, cover the date of the missed assignment. The original paper copy of the note must be delivered to the course instructor

See the undergraduate calendar for information on regulations and procedures for Academic Consideration: Undergraduate Calendar - Academic Consideration

7.4 Course Evaluation Information

CCS now provides the U of G Online Course Evaluation System in a secure, online environment. End of semester course and instructor evaluations provide students the opportunity to have their comments and opinions form part of the information used by Promotion and Tenure Committees in evaluating the faculty member's contributions in the area of teaching. Course evaluations are now conducted through this web site. Login with your central email account login ID and password: Course Evaluation

Please Note: Instructors do **NOT** receive evaluations until the end of exam period. Furthermore, evaluations are anonymous, unless you specifically indicate you want to acknowledge your comments.

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8 Department of Integrative Biology Statements

8.1 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

8.2 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

8.3 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.

9 University Statements

9.1 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.

9.2 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.

9.3 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.

9.4 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.

9.5 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

9.6 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.

9.7 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.

9.8 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.
