

Animal Behaviour

BIOL 3143 FA01

Instructor: Dr. Laura Ferguson (she/her)

Lecture: M/W/F 8:30-9:30

Office: BIO 335

Location: Huggins 202

Office hours: Mon 9:30-11:30 or by appt

Lab: BIO 240

E-mail: laura.ferguson@acadiau.ca



Evaluation	Percentage	Date
Plan for Observational Research Project	5	Friday, Sept 20 th
Midterm	15	Wednesday, Oct. 23 rd
Final submission of Observational Research Project	25	Friday, Nov 22 nd
Final Exam	20	TBD
Labs	30	Hand-ins due at end of lab or one week following the lab (5% each + 5% total lab participation)
Friday Fiver	5	Throughout term (sign-up sheet)

Part 1: Course Information

Course Description

Why do animals travel, eat, mate, play, fight, and flee in the ways that they do? What are the physiological and neural mechanisms driving these behaviours and the selective pressures that shape them? What are the ecological consequences of behaviour? This course will explore the ecological and evolutionary context of animal behaviours. As we move through our topics, we will also focus on themes and context such as the value of understanding animal behaviour, climate change, methodologies in animal behaviour studies, the history and development of the field, and the respect and ethical treatment of animals. Our labs focus on both field observations and in-lab, live-animal manipulations where we work together to collect and analyze data to help us understand patterns of behaviour.

Prerequisite(s): BIOL 1113/1123, BIOL 2073, 2013

Course Materials & Requirements

Our recommended text is *Observing Animal Behaviour: Design and Analysis of Quantitative Control* which is available at the bookstore.

If you are really keen on texts and this discipline, we also draw from *Principles of Animal Behaviour 4th Edition Dugatkin* and *Animal Behavior 11th Edition Rubenstein and Alcock* as well as primary literature [though these are not available at the bookstore! Often you can access online copies for cheaper, or just come and borrow a text from my office or the library]

This may go without saying, but you will also require a **laptop or a device for note-taking** in classes. I encourage hand-written notes if they work for you, but we may use laptops in class from time-to-time for additional activities so please bring to class and labs. I will sometimes use chalkboard or whiteboard to draw – at

these times it will be particularly helpful to have a **pencil and paper** available if you wish to draw along! We will work with R software in labs; it helps if you have R and RStudio already on your computer before labs.

Course Structure

50 min slots M/W/F 8:30-9:30 that we use for lectures and class discussions. I will post Powerpoint slides to ACORN prior to lecture that you can use for note-taking; however, the slides do not contain (nearly) all of the information we cover in class so I strongly suggest attending in person. We will also discuss studies relevant to the concepts we have covered recently, which allows us to explore *how* we study animal behaviour and become increasingly comfortable with reading and interpreting primary literature.

Student Learning Outcomes

1. Understand the proximate and ultimate mechanisms underlying animal behaviour
2. Explain *why* certain behaviours occur and predict changes in behaviour
3. Become more comfortable reading and interpreting primary literature
4. Develop skills in designing behavioural studies

How to Meet the Learning Outcomes

1. Attend lectures and labs.
2. Participate in class discussions. It is okay if you are not comfortable speaking in front of your peers; you also have the opportunity to post questions to me or in an ACORN forum prior to class and in preparation for journal discussions. However, I highly encourage you to offer your questions and insights in discussions, and listen to your peers!
3. Use a calendar to organize yourself around due dates and plan ahead
4. Put effort into your research project!
5. Check your email and ACORN regularly. I use these to communicate with you about deadlines, updates to classes and labs, etc.
6. Communicate with me in advance or as close to a missed deadline as possible. I am flexible, but meet me halfway!

Part 2: Course Plan

The instructor reserves the right to amend the course plan with reasonable notice, and in consultation with the class. The pace of lectures and materials covered is also subject to change based on level of class participation.

Lecture: note that timing is approximate. Depending on pace and needs of the class, we may move subjects or introduce additional topics.

Topic	Timing
Welcome/Foundations	Week 1/2
Natural selection and evolution of behavior	Week 2
Neural and physiological bases of behaviour	Week 2/3
Development and learning	Week 3
Sexual selection	Week 4
Mating systems	Week 5
Parental care	Week 5/6
Antipredator behaviour	Week 6
Foraging	Week 7

Habitat selection and territoriality	Week 8
Aggression/antagonism	Week 8/9
Ecology of fear	Week 9
Kinship, cooperation, & social behaviour	Week 10
Play	Week 11
Urbanisation	Week 11
Behaviour in the context of extreme weather and climate change	Week 12
Parasite manipulation and sickness behaviours	Week 12/13

Labs:

Labs are on Wednesdays every 2nd week (i.e. there are 2 lab sections, so you can expect to generally have a formal lab every other week) However, on your “off” week you may want to use the time to conduct your observational study of animal behaviour in the field or complete any unfinished work from the previous lab. We will also have regular, verbal check-ins for observational projects during lab times as well (e.g. sharing progress and pitfalls).

Lab 1: Observations of wild bird behaviour (Sept 11 for FA01; Sept 18 for FA02)

Lab 2: Jumping spider feeding and/or mating behaviour (Oct 2 FA01; Oct 9 FA02) **not to worry if you're not a big fan of spiders! You do not need to handle them (though they are quite cute and fuzzy).

Lab 3: Data organization and analysis of field observations (Oct 23 FA01; Oct 30 FA02)

Lab 4: Hermit crab aggression and/or antipredator and/or shell choice behaviour (Nov 6 FA01; Nov 13 FA02)

Lab 5: Woolly bear pre-winter diet choice and activity (Nov 20 FA01; Nov 27 FA02)

Part 3: Assessment and Grading

You are required to pass the lab to pass the course. (For Biology courses with labs)

You can refer to the table above for a quick breakdown of the grading scheme. More details here:

Observation research project

: The beauty of this course is the opportunity to get outside and observe wildlife in their habitats, doing the things that we talk about in lecture. You will complete a paired or solo research project where you will spend 6-8 weeks of the semester observing animal behaviour in the ‘field.’ I will provide a list of possible projects, or you can propose your own. You will submit a proposal for your project (5%) and a final research paper, modeled after a scientific paper (25%). Look for rubrics and guidelines on Moodle!

Friday fiver: on Fridays, in pairs, you will present a 5 min breakdown of a scientific paper related to animal behaviour – whatever interests you the most! You can use slides, draw on the chalkboard, even record a video interpretation or whatever creative feeling strikes you! But beware – when the timer goes, you're off the stage. (5%)

Midterm (15%) and final (20%): This course is theory-heavy instead of a lot of fact memorization, so testing in the classroom relies less on strategies like multiple choice. Here we use tests as a) brain exercise, b) a way of assessing your individual comprehension (harder to assess with take-home work!). We'll use a combination of short and long answer questions and you'll have access to some questions or specific resources in advance of the midterm and final so that you have an opportunity to think. Tests may involve some recall of specific terms, simply because knowing the language of a discipline is important, but more weight is placed on comprehension related to concepts that we cover in class. I highly recommend attending class because we will spend time on exercises that will be directly relevant to testing.

Labs (30%): Labs are mandatory and you must pass to pass the course. Each lab will have a handout or submission worth 5% and your attendance is also 1% for each lab (5 total).

Part 4: Course Policies

While your primary objective is to be in class and learning, we certainly all recognize that life happens outside of school, and you may encounter a variety of challenges throughout the term. We can work together to accommodate illness, etc. You are not obligated to share any personal details, but certainly do contact me if you are experiencing challenges that are affecting your ability to attend class or complete the work! We'll figure out solutions to help you through. Generally, our class policy is to be respectful of everyone in our class and put effort into your participation and projects!

Students are expected to submit work that reflects their own ideas and engagement with the readings as well as their writing ability. Engaging with the work of others is an important part of academic writing. All ideas and quotations borrowed from other sources must be carefully cited and we use the citation style from the journal *Animal Behaviour* or another approved citation style. Students may not use generative AI, such as Chat GPT, or paraphrasing software, such as QuillBot, to help them complete assignments. In this course, the use of generative AI or paraphrasing software, even with citation, constitutes cheating.

Use of artificial intelligence tools by students to assist with their learning is allowed only if:

- prior permission has been given by the course professor/instructor, and
- the student properly credits/cites how the AI technology was used in their work.

AI must be used in an ethical and responsible manner as a positive learning tool. AI may not be used in ways that violate Acadia's Academic Integrity Policy. Students are reminded that plagiarism, or other forms of cheating, are both types of academic dishonesty.

Part 5: University Policies

University policies are available in the Acadia University Academic Calendar or through the Registrar's website: <https://registrar.acadiau.ca/welcometotheregistrarsoffice.html>

Human rights and equity

In this course, we are committed to fostering an inclusive and equitable learning environment where the principles of human rights and social justice are paramount. We recognize and respect the diverse backgrounds, identities, and experiences of all students. Our collective goal is to create a space where every individual feels valued, heard, and supported.

All students are encouraged to contribute to and uphold an atmosphere of mutual respect and empathy. Discrimination, harassment, or any form of intolerance will not be tolerated. If you have any concerns or require accommodations to ensure your full participation in this course, please do not hesitate to reach out. Together, let's work towards understanding and advancing human rights and equity, both within and beyond the classroom.

Acadia's Human Rights and Equity Office is responsible for the management and implementation of [Acadia's Policy Against Harassment and Discrimination](#). This Policy is underpinned by a commitment to deconstructing the problematic structures of systemic racism and discrimination within the University Community. Acadia upholds a commitment to fostering a culture within the University Community that is welcoming and reflective of the diverse individuals that comprise this community and to fostering cultural safety, anti-oppression and anti-racism within the University Community, making it our goal to achieve a culture where our diversity is our strength.

For more information, please contact the Human Rights and Equity Office at equity@acadiau.ca

Last Drop Day

Last day to drop a course and receive a “W”. Please check the Acadia University calendar dates, which are available here: <https://registrar.acadiau.ca/AcademicCalendars.html>

Inform Your Instructor of Accommodations

Acadia University is dedicated to improving access to campus life for all students with disabilities. While we attempt to ensure that all courses are accessible, we recognize that there are barriers that need to be addressed on an individual basis. Students who require accommodations to complete coursework or otherwise fully participate in class should contact Accessible Learning Services directly as soon as possible.
<https://www2.acadiau.ca/student-life/accessiblelearning.html>

The Use of Animals in Teaching and Research

The use of animals in teaching and research at Acadia University is done in accordance with guidelines on the care and use of animals published by the Canadian Council on Animal Care (CCAC). For more information on the CCAC, please visit their website at <http://www.ccac.ca>

Commitment to Integrity

It is standard practice in Biology to check exams and assignments for cheating and plagiarism. Cheating in the class and/or lab, including plagiarism, will not be tolerated. Please read the appropriate sections of the current Acadia University Academic Calendar: <https://registrar.acadiau.ca/AcademicCalendars.html>

Information on copy-write and course content from Acadia University is available through the Vaughan Memorial Library: <http://libguides.acadiau.ca/c.php?g=433650&p=5027078>

The spoken and written course content (including the syllabus, handouts, lectures, presentations, labs, assignments, quizzes, tests, and exams) are the intellectual property of the instructor and may only be copied for personal use. Sharing these materials or uploading them where they may be accessed by others is a violation of copyright. If you wish to make audio, video, or photographic recordings in class, you must first obtain the consent of the instructor and of any other persons (e.g., guest speakers, other students) who may be captured in such recordings. In the case of personal use by students with disabilities, the instructor's consent shall not be unreasonably withheld.

Part 6: Program Learning Outcomes

Foundations of knowledge		Course specific examples	Proficiency 1-Introduction 2-Reinforcement 3-Proficient
Scientific method, inquiry and hypothesis testing	Find, understand and apply information from the literature; understand how to use the scientific method to examine problems from different perspectives	Class discussions about literature and experimental design; designing own experiments	3
Historical concepts and contributions by important figures	Explain foundational concepts in biology, Two-eyed Seeing, and ethical implications of scientific discoveries	lecture material includes historical figures for key discoveries with a focus on how knowledge in the field expands as a diversity of voices are included. Also focus on multiple sources of knowledge about animal behaviour (e.g. indigenous knowledge; close connection to wild animals; examples where western science is 'catching up')	2

Biodiversity and ecology	Understand the genetic, taxonomic and ecosystem levels of biodiversity; focus on SW Nova including the Acadian Forest and Bay of Fundy ecosystems	Bird-watching lab and hermit crab lab focus on local species; course focuses on how individual behaviours scale to ecological impacts	3
Genetics and evolution	Understand the chemical basis of heredity, genetics and genomics; integrate concepts across disciplines to understand evolution	Focus on ultimate mechanisms of behaviour; evolutionary stable strategies	3
Human and environmental health	Understand form and function in health and disease within a One Health framework, integrating human and environmental health	Specific lectures on climate change and urbanisation with examples of increased human-animal contact, potential for disease transmission;	2
Lab and field skills			
Experimental design	Gain experience in applying the scientific method	Labs build from observational to experimental to cover importance of each and power of scientific method; research projects require direct application of experimental design	3
Safety	Work safely and productively in lab and field settings	Basic lab safety skills	2
Lab skills	Gain experience with basic and advanced lab techniques and understand their application in research, health science and industry	Observation and handling of live invertebrates	2
Field skills	Gain experience in basic and advanced field skills and understand their application in ecology, conservation biology and environmental change	Basic skills in observing wild birds, mammals, and terrestrial invertebrates	1
Data acquisition, analysis and interpretations	Collect data, present results both qualitatively and quantitatively, and interpret outcomes in light of the literature	Building ethograms, calculating activity budgets, building basic plots to visualize data	2
Statistical analysis	Use R and or other programs to analyze biological data	Using R for basic stats in lab (e.g. ANOVA)	2
Professional skills			
Ethical practices	Demonstrate ethical conduct, apply principles of academic integrity and understand the principles of EDI in science	Highlight contributions of women in ethology (e.g. shift in the understanding of sexual selection and female choice) and indigenous knowledge (e.g. fire hawks); incorporate animal welfare and respectful treatment of animals (incl. in zoo lab).	3
Collaboration and group work	Work effectively in groups within and across disciplines	Working in groups for labs and research project	2
Critical thinking	Analyze and evaluate information to make science-based decisions	Relevant to research project, class discussions, midterm & exam	3
Computer proficiency	Use common and discipline- specific software	Powerpoint, Excel, Word, R	2
Scientific communication	Communicate science effectively to both scientific and general audiences	Focus on writing, oral communication.	3