



# ZOO\*4070 Animal Behaviour

Fall 2022

Section(s): 01

Department of Integrative Biology

Credit Weight: 0.50

Version 1.00 - September 07, 2022

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## 1 Course Details

### 1.1 Calendar Description

This course provides an introduction to the theories and principles of the behaviour of animals. It includes comparative studies of learning, socialization, social interaction, and other components of animal behaviour.

**Pre-Requisites:** BIOL\*2400, (STAT\*2040 or STAT\*2230)

### 1.2 Course Description

This course will explore the scientific theories and methods used to understand how and why animals behave the way they do. Using a variety of case studies and in-class discussions, we will examine ecological and evolutionary perspectives for the diversity of behaviour in wild animals, as well as the genetic and sensory-motor mechanisms behind the development and maintenance of these behaviours. Class will consist of a mixture of lectures, discussions, demonstrations and audio-visual presentations. Students will be required to take an active role in class and will be responsible for reading scientific literature that accompanies the lecture material. A major component of the course will be an independent small-group project that will involve creating a study, developing hypotheses and predictions, collecting data in the field or lab, and presenting results in a conference-style poster format among peers.

**"Please note that course delivery format is subject to change depending on requirements placed on the University and its employees by public health bodies, and local, provincial and federal governments. Any changes to course format prior to the first class will be posted on WebAdvisor/Student Planning/Courselink as they become available."**

### 1.3 Timetable

Lectures: Monday, Wednesday, Friday

11:30AM - 12:20PM

Lectures will be held in Alexander Hall (ALEX), Room 100 LEC

## 1.4 Final Exam

There will be a midterm and final exam on lecture material.

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## 2 Instructional Support

### 2.1 Instructional Support Team

**Instructor:** Matthew Furst PhD  
**Email:** mfirst@uoguelph.ca  
**Office:** SSC 3469

**Office Hours:** **office hours:** Mon, Wed 12:30-2:30 PM **or** by appointment

### 2.2 Teaching Assistants

**Teaching Assistant (GTA):** Kyle Parkinson  
**Email:** kparki03@uoguelph.ca  
**Office:** SSC 2442

**Office Hours:** **office hours:** Tues, Thurs 1-3 PM **or** by appointment

**Teaching Assistant (GTA):** Sarah Mueller  
**Email:** smuell02@uoguelph.ca  
**Office:** SSC 2442

**Office Hours:** **office hours:** Tues, Thurs 1-3 PM **or** by appointment

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## 3 Learning Resources

### 3.1 Required Resources

#### Courselink (Website)

*Course website:* This course will 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\*4070. Please check it regularly for important announcements, dates, and course

materials.

## 3.2 Recommended Resources

### Textbooks (Textbook)

*Textbook:* Lectures will not follow a specific textbook. However, there are several *required readings* from **Sherman, P.W., and J. Alcock. 2013. *Exploring Animal Behavior: Readings from American Scientist (6<sup>th</sup> edition)* Sinauer Associates, Sunderland, MA.** The reader can be purchased at the bookstore OR individual articles (see list below) can be accessed on-line through the UG library. American Scientist is a popular magazine so the articles are written in an accessible manner. The content of the readings will not be covered in detail during the lectures but each reading is connected to a specific lecture topic. In preparation for tests, students are required to identify connections between the content of the readings and material covered in class, particularly how the theories discussed in lectures apply to the articles.

*Optional study guides:* The following textbooks could be consulted as study guides: 1. Alcock, J. 2013. ***Animal Behavior, An Evolutionary Approach.*** Sinauer Associates, Sunderland, MA. (9<sup>th</sup> or 10<sup>th</sup> edition). 2. Dugatkin, L.A. 2009. ***Principals of Animal Behavior.*** W.W. Norton & Company. (2<sup>nd</sup> or 3<sup>rd</sup> edition). Many of the general concepts and theories covered in class are in these textbooks so you may find them helpful if you need clarification. However, you will find that some specifics covered in the lectures (e.g. examples from different species, mathematical equations) may be missing from one or both of these sources so it is best to not rely on these solely to prepare for tests. Two copies of each textbook will be on reserve in the library.

### *For Experimental Design and the Measurement of Animal Behaviour*

1. Dawkins, M. S. 2007. *Observing Animal Behaviour: Design and Analysis of Quantitative Data.* Oxford University Press. (electronic access via University of Guelph library)
2. Martin, P. and P. Bateson. 2007. *Measuring Behaviour: An Introductory Guide.* Cambridge University Press.

These texts cover many of the methodological challenges associated with researching and measuring animal behaviour.

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## 4 Learning Outcomes

## 4.1 Course Learning Outcomes

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

1. *evaluate* major theories and concepts used to explain why and how animal's behave the way they do
  2. *discriminate* and *integrate* proximate and ultimate perspectives of animal behaviour
  3. *apply* the scientific method to study behaviour
  4. *create* and *design* an independent project researching a type of behaviour
  5. *collect, analyze, and evaluate* behavioural data
  6. *communicate* science to your peers and to the public
  7. *listen* to what classmates say effectively enough to express their ideas and opinions in your own words
  8. *assist* classmates in heterogeneous teams to learn the assigned knowledge and skills
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## 5 Teaching and Learning Activities

### 5.1 Lecture

Fri, Sep 10

**Topics:** Course introduction & overview

Week 1

**Topics:** Animal behaviour and approaches to studying it

Initiation of team formation and project planning  
(in class)

**REQUIRED readings from "Exploring Animal Behavior: Readings from The American Scientist":** Why male ground squirrels disperse (pp 38-45)

Week 2

**Topics:** Evolution & behaviour

Measuring behaviour

Developing your team charter (in class)

**REQUIRED readings from "Exploring Animal Behavior: Readings from The American Scientist":** Evolution for the good of the group (pp 79- 89)

### Week 3

**Topics:**

Altruism & inclusive fitness

Developing a 5-slide pitch (in class)

Submission of Team Charter

**REQUIRED readings from "Exploring Animal Behavior: Readings from The American Scientist":** Physiology of helping in scrub... (pp 275- 282)

### Week 4

**Topics:**

Eusociality

**REQUIRED readings from "Exploring Animal Behavior: Readings from The American Scientist":** Naked mole-rats (pp 107-117)

### Week 5

**Topics:**

No class Monday - Thanksgiving holiday

No class Wednesday - First exam will be released

Cooperation

**REQUIRED readings from "Exploring Animal Behavior: Readings from The American Scientist":** Why ravens share (pp 99-106)

**Week 6**

**Topics:** Cooperation

**REQUIRED readings from "Exploring Animal Behavior: Readings from The American Scientist":** None

**Week 7**

**Topics:** Parental care

**REQUIRED readings from "Exploring Animal Behavior: Readings from The American Scientist":** Avian siblicide (pp 184-195)

**Week 8**

**Topics:** Habitat use

Submission of systematic review bibliography

**REQUIRED readings from "Exploring Animal Behavior: Readings from The American Scientist":** None

**Week 9**

**Topics:** Territoriality & Foraging

**REQUIRED readings from "Exploring Animal Behavior: Readings from The American Scientist":** None

**Week 10**

**Topics:** Caching & Memory

Anisogamy & sexual selection

**REQUIRED readings from "Exploring Animal Week Date  
Topic Behavior: Readings from The American Scientist":**  
The strategies of human mating (pp 196-208)

### Week 11

**Topics:** Alternative reproductive tactics

Sperm Competition

Female Choice

**REQUIRED readings from "Exploring Animal Week Date  
Topic Behavior: Readings from The American Scientist":**  
Shaping brain sexuality (pp 283-294), Why do  
bowerbirds build bowers? (pp 233-238)

### Week 12

**Topics:** Project completion

### Week 13

**Topics:** Completion of assessment of team members (~20 min  
task to be completed by the posted deadline)

## 6 Assessments

### 6.1 Assessment Details

#### First Exam (20%)

**Date:** Thu, Oct 21, 11:30 AM - 12:20 PM, In-class

**Course Content/Activity:** Lectures and readings

**Learning Outcome(s) Addressed:** 1, 2, 3, 4

The mid-term will be primarily short and long answer with a few multiple-choice questions. It will be designed to test critical thinking skills rather than simply recall basic information, so students will be required to develop a deep understanding of concepts rather than memorize specific types of behaviours. ***The mid-term will cover material presented from the start of class to the end of Oct 17***

### **Term Project (55%)**

**Date:** In-person

**Course Content/Activity:** Lectures, class discussions, and time outside of class

**Learning Outcome(s) Addressed:** 1, 2, 3, 4, 5, 6, 7, 8

Proposal (10%) – 30 September

Project product (30%) – November 28, November 30, December 2

Evaluation of peers' products (10%, based on the quality of your evaluation) - December 2

Evaluation of another poster (5%) - November 28, November 30, December 2

Students are expected to follow the university's policy on academic integrity. Team contributions are expected here. Team projects should be independent of projects required in any other courses. Recycling of past projects is also unacceptable. The instructional team has access to past poster presentations from the course.

### **Second Exam (25%)**

**Date:** Wed, Dec 15, 8:30 AM - 10:30 AM, In-class

**Course Content/Activity:** Lectures and readings

**Learning Outcome(s) Addressed:** 1, 2, 3, 4



The final will be primarily short and long answer with a few multiple-choice questions. It will be designed to test critical thinking skills rather than simply recall basic information, so students will be required to develop a deep understanding of concepts rather than memorize specific types of behaviours. **The final will cover material presented from Oct 24 to Nov 25** (although students will be required to know major concepts presented in the first part of the course).

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## 7 Course Statements

### 7.1 Course Content

Lectures will be composed of case studies, group discussions, and interactive demonstrations designed to engage and familiarize students with the major theories in animal behaviour and the diversity of behaviours found in wild animals. Both the mid-term and final will be primarily short and long answer with a few multiple-choice questions. Both tests will be designed to test your critical thinking skills rather than simply recall basic information, so students will be required to develop a deep understanding of concepts rather than memorize specific types of behaviours. **The mid-term will cover material presented from the start of class to the end of Oct 17** and **the final will cover material presented from Oct 24 to Nov 25** (although students will be required to know major concepts presented in the first part of the course).

In addition to a mid-term and a final, students will undertake a term-long project in groups of 4 people. The project provides an authentic, hands-on experience in the scientific study of animal behaviour by requiring students to conduct independent research from start to finish. Students will conceive of and design a study, collect data in the field, analyze and interpret the data, and then present their results to their peers and the public in the form of a poster. This project is designed to evaluate your critical thinking skills, ability to formulate hypotheses and predictions, collect and analyze data, and present results in a professional manner. Full details about the project will be provided in the **Sept 9 lecture (and possibly carry over to the following lecture)** and a complete marking rubric and additional information will be posted on the Blackboard course site. Students will also be provided weekly in-class opportunities for consultation with instructors and TAs and a chance to do focused group work. Later in the term, we will discuss details of poster design and presentation.

### 7.2 Full list of readings

All readings are from *“Exploring Animal Behavior: Readings from American Scientist (6<sup>th</sup>*

*edition*). This is a small textbook and some copies may be available at the bookstore but the articles required for you to read are available **for free** via the UG library website. Just type the title of each article into the UG library search engine and you will find it (confirm it is the correct article via author names and the fact that it was published in the magazine "American Scientist").

| <b><u>Lecture date</u></b> | <b><u>Title of article</u></b>                     | <b><u>Author(s)</u></b>       |
|----------------------------|--|-------------------------------|
| Sept 16<br>Sherman         | <i>Why male ground squirrels disperse</i>          | <i>KE Holekamp, PW</i>        |
| Sept 19                    | <i>Evolution for the good of the group</i>         | <i>D Wilson, EO Wilson</i>    |
| Sept 26                    | <i>Physiology of helping in Florida scrub Jays</i> | <i>S Schoech</i>              |
| Oct 7                      | <i>Naked mole rats</i>                             | <i>RL Honeycutt</i>           |
| Oct 17                     | <i>Why ravens share</i>                            | <i>B Heinrich, J Marzluff</i> |
| Oct 28                     | <i>Avian siblicide</i>                             | <i>DW Mock et al.</i>         |
| Nov 18`                    | <i>The strategies of human mating</i>              | <i>DM Buss</i>                |
| Nov 21                     | <i>Shaping brain sexuality</i>                     | <i>AH Bass</i>                |

Nov 25

*Why do bowerbirds build bowers?*

G Borgia

## 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. <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>

### 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. <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/>

## 8.4 Personal information

Personal information is collected under the authority of the University of Guelph Act (1964), and in accordance with Ontario's Freedom of Information and Protection of Privacy Act (FIPPA) <http://www.e-laws.gov.on.ca/index.html>. This information is used by University officials in order to carry out their authorized academic and administrative responsibilities and also to establish a relationship for alumni and development purposes.

For more information regarding the Collection, Use and Disclosure of Personal Information policies please see the Undergraduate Calendar. (<https://www.uoguelph.ca/registrar/calendars/undergraduate/current/intro/index.shtml>)

## 8.5 Course Offering Information Disclaimer

Please note that course delivery format (face-to-face vs online) is subject to change up to the first-class day depending on requirements placed on the University and its employees by public health bodies, and local, provincial and federal governments. Any changes to course format prior to the first class will be posted on WebAdvisor/Student Planning as they become available.

# 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 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>

Associate Diploma Calendar - Academic Consideration, Appeals and Petitions

<https://www.uoguelph.ca/registrar/calendars/diploma/current/index.shtml>

## 9.3 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>

## 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 make a booking at least 14 days in advance, and no later than November 1 (fall), March 1 (winter) or July 1 (summer). Similarly, new or changed accommodations for online quizzes, tests and exams must be approved at least a week ahead of time.

For Guelph students, information can be found on the SAS website

<https://www.uoguelph.ca/sas>

For Ridgetown students, information can be found on the Ridgetown SAS website

<https://www.ridgetownc.com/services/accessibilityservices.cfm>

## 9.6 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>

## 9.7 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.

## 9.8 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>

## 9.9 Disclaimer

Please note that the ongoing COVID-19 pandemic may necessitate a revision of the format of course offerings, changes in classroom protocols, and academic schedules. Any such changes will be announced via CourseLink and/or class email.

This includes on-campus scheduling during the semester, mid-terms and final examination schedules. All University-wide decisions will be posted on the COVID-19 website (<https://news.uoguelph.ca/2019-novel-coronavirus-information/>) and circulated by email.

## 9.10 Illness

Medical notes will not normally be required for singular instances of academic consideration, although students may be required to provide supporting documentation for multiple missed assessments or when involving a large part of a course (e.g.. final exam or major assignment).

## **9.11 Covid-19 Safety Protocols**

For information on current safety protocols, follow these links:

- <https://news.uoguelph.ca/return-to-campus/how-u-of-g-is-preparing-for-your-safe-return/>
- <https://news.uoguelph.ca/return-to-campus/spaces/#ClassroomSpaces>

Please note, these guidelines may be updated as required in response to evolving University, Public Health or government directives.

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