



# ANSC\*3090 Vertebrate Ethology

Fall 2019

Section(s): C01

Department of Animal Biosciences

Credit Weight: 0.50

Version 1.00 - September 04, 2019

---

## 1 Course Details

### 1.1 Calendar Description

This course deals with why vertebrates behave as they do (with particular emphasis on mammals and birds), covering the causation of behaviour (including learning, motivation, affective states, hormones, sensory processing, and neurobiological mechanisms); function (both immediate/proximate and adaptive/ultimate); ontogeny (including socialization and sensitive periods); and phylogeny (especially the influences of taxonomic group and domestication). This framework is then applied to the following aspects of animal behaviour: foraging, anti-predator responses, sleep, sociality, mating, parental behaviour, play, dispersal and territoriality, animal intelligence, and behavioural pathologies.

**Pre-Requisites:**

ANSC\*1210

**Restrictions:**

ANSC\*4090, Restricted to students in BSCH.ABIO and BSAG.ANSC.

### 1.2 Timetable

See 'Activities' section for the lecture schedule.

### 1.3 Final Exam

There is no final exam for this course.

---

## 2 Instructional Support

### 2.1 Instructional Support Team

**Instructor:**

Georgia Mason

**Email:**

gmason@uoguelph.ca

**Telephone:**

+1-519-824-4120 x56804

**Office:**

ANNU 138

**Office Hours:** Office location and office hours: 138 ANNU; office hours /skype meetings by appointment

**Office Hours:** Note that I have no answer phone, so email is the best way to contact me (and please put 3090 in the subject line).

**Office Hours:** Office location and office hours: 138 ANNU; office hours /skype meetings by appointment

**Office Hours:** Note that I have no answer phone, so email is the best way to contact me (and please put 3090 in the subject line).

## 2.2 Teaching Assistants

**Teaching Assistant:** Andrea Polanco  
**Email:** apolanco@uoguelph.ca

**Teaching Assistant:** Ana Rentsch  
**Email:** arentsch@uoguelph.ca

**Teaching Assistant:** Pria Mahabir  
**Email:** pmahabir@uoguelph.ca

---

## 3 Learning Resources

### 3.1 Required Resources

#### Other Resources: (Website)

CourseLink will be used to disseminate all course information including: lecture slides and notes prior to class, supplementary readings, grades, and any additional information regarding course content and proceedings (e.g. lecture schedules, due dates, course syllabus, etc.).

In addition, message boards may be set up for students to ask questions to their peers and/or course instructor.

## 3.2 Recommended Resources

### Recommended Texts: (Textbook)

For the fundamentals of ethology, we recommend the following:

Manning, A. & Dawkins, M.S., 1992. (3rd ed or more recent) An Introduction to Animal Behaviour. (Cambridge University Press).

McFarland, D. 1993. Animal Behaviour– Psychobiology, Ethology & Evolution. (Longman)

Alcock, J., 2005. Animal Behaviour: an Evolutionary Approach. (Sinauer)

For applied ethology, we recommend the following:

Jensen, P. 2013 or 2017. The Ethology of Domesticated Animals (CABI).

Broom, D.M. and Fraser, A.F. 2015 Domestic Animal Behaviour and Welfare (CABI).

**We also recommend avoiding lay books and websites (i.e. anything written for the general public by people without research experience in the study of animal behaviour).**

## 4 Learning Outcomes

### 4.1 Course Learning Outcomes

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

1.
    1. Explain how animal behaviour and putative mental states can be rigorously studied using scientific methods (and so be able to discriminate between scientifically accurate descriptions of animals' capacities and mere anthropomorphism).
    2. Understand and distinguish between the concepts of motivation, learning, intelligence and affective state.
    3. Understand and apply ethological methods to create ethograms and collect behavioural data.
    4. Distinguish between causal, developmental, functional and phylogenetic explanations of behaviour, and understand how these inter-relate and complement each other; describe how selection pressures shape the evolution of animal behaviour.
    5. Understand and explain how sensory information is integrated by the sensory organs and brain, the influences of hormones and neurotransmitters on behaviour, and how the brain generates behavioural sequences; also at a basic level, understand how these mechanisms can malfunction.
    6. Utilize new ethological vocabulary appropriately in written assignments, and correctly interpret and understand ethological data from tables and figures.
    7. Synthesise and critique primary research articles.
- 

## 5 Teaching and Learning Activities

### 5.1 Lecture

**Topics:**

**Lecture Content:**

Lect.	Date	Topic
1	Thurs. Sept. 5th	<p><b><u>THE BASES OF ETHOLOGY</u></b></p> <p><b><u>Introduction, overview, &amp; methods:</u></b></p> <p><b>a) Why study behaviour?</b></p> <p>Introduction to the course: the fascination of animals and their behaviour; and outline of practical applications of knowledge of behaviour; the history of ethology; ethology on campus</p> <p><b>b) Levels of explanation: Why do animals behave as they do?</b></p> <p>The causation, function, ontogeny and phylogeny of behaviour: what they are, and how they complement each other</p>
2	Tues. Sept. 10th	<p><b>How animal behaviour is studied</b></p> <p>Ethological methods: how scientists turn the complexity and flow of behaviour into objective data suitable for objective, quantitative analysis.</p>
3	Thurs. Sept. 12th	<p><b><u>Key concepts:</u></b></p> <p><b>I. Motivation</b></p> <p>What determines whether an animal will do any given behaviour, how long it is performed for, and at what rate? Appetitive versus consummatory aspects of motivation.</p>

Lect.	Date	Topic
4	Tues. Sept. 17th	<p><b>II: Learning and memory</b></p> <p><b>a) Types of learning</b></p> <p>How does experience affect behavior via learning? Different types of learning, including 'insight'. How learning and motivation inter-relate to determine behaviour.</p>
5	Thurs. Sept. 19th	<p><b>b) Associative learning</b></p> <p>Classical and operant learning explained; causal factors that accelerate/impede associative learning; reinforcement and affective states</p>
6	Tues. Sept. 24th	<p><b>c) Learning in context</b></p> <p>The effects of development and phylogeny on learning abilities; the costs and benefits of learning; learning versus 'instinct'</p>
7	Thurs. Sept. 26th	<p><b>III. Animal intelligence</b></p> <p>Theory of mind and perspective-taking; insight learning and tool use; episodic memory; concept formation and numeracy. Distinguishing true intelligence from mere associative learning.</p>
8	Tues.	<p><b>IV. Affective states and sentience</b></p>

Lect.	Date	Topic
	Oct. 1st	Do animals have emotions and moods? Are they consciously aware? If they do, what roles do these have in the control of behaviour?
9	Thurs. Oct. 3rd	<p><b><u>The machinery of behaviour:</u></b></p> <p><b>I. The brain: the master controller of behaviour</b></p> <p>a) The brain: basics</p> <p>b) Neurological bases of motivation, learning, memory and affective states; how these systems can malfunction</p>
10	Tues. Oct. 8th	<p><b>II. The neurological control of behaviour</b></p> <p>How the brain makes the decisions that underlie behaviour, and produces the outputs needed to elicit and control muscle action; how these systems can malfunction</p>
11	Thurs. Oct. 10th	<p><b>III. Animal senses</b></p> <p>Sensory and perceptual capacities (vision, hearing, olfaction, magnetoception, touch, taste and the vomeronasal organ and other senses); sensory processing by the mid- and forebrains; multi-modal recognition</p>

Lect.	Date	Topic
12	Thurs. Oct. 18th	(No Tuesday class this week)  <b>IV. Hormones and neurotransmitters</b>  Chemical influences on behaviour, both within and external to the blood-brain barrier; introduction to hormones and feeding, hibernation, sexual behaviour and maternal care.
13	Tues. Oct. 22nd	<b><u>The evolution of behaviour:</u></b>  The concepts of adaptation and (inclusive) fitness; how behaviour has evolved (both in the wild and in captive conditions); why animals never behave 'for the good of the species'.
14	Thurs. Oct. 25th	<b><u>Behavioural development:</u></b>  How early experience and lifestage affect behaviour
15	Tues. Oct. 29th	<b><u>SPECIFIC BEHAVIOURAL SYSTEMS</u></b>  <b><u>I. Play</u></b>  How and why young mammals play

<b>Lect.</b>	<b>Date</b>	<b>Topic</b>
<b>16</b>	Thurs. Oct. 31st	<b><u>II. Where is home?</u></b> Dispersal (versus philopatry), habitat use, territorial defence and ranging/migration
<b>17</b>	Tues. Nov. 5th	<b><u>III. Behaviour and the regulation of homeostasis:</u></b> a) The ethology of foraging: herbivory versus omnivory versus carnivory/carrion-eating; food-storage; optimal foraging models
<b>18</b>	Thurs. Nov. 7th	b) Water intake and thermo-regulation; sleep & hibernation
<b>19</b>	Tues. Nov. 12th	<b><u>IV. Avoiding parasite and predators</u></b> a) Vigilance and anti-predator responses; personality differences
<b>20</b>	Thurs. Nov. 14th	b) Strategies for avoiding pathogens and parasites (and what happens when they fail); sickness behaviour
<b>21</b>	Tues. Nov.	<b><u>V. Sexual and reproductive behaviour</u></b>

<b>Lect.</b>	<b>Date</b>	<b>Topic</b>
	19th	How animals choose and court their mates; post-copulatory mate choice and other reproductive decisions (sex allocation, resorption, abortion)
<b>22</b>	Thurs. Nov. 21st	<p><b><u>VI. Parental care</u></b></p> <p>Maternal and parental investment; weaning strategies; allo-parental care by siblings and other relatives.</p>
<b>22</b>	Tues. Nov. 26th	<p><b><u>VII. Social behaviour</u></b></p> <p>Living in groups, individual recognition, dominance and altruism; personality differences</p>
<b>24</b>	Thurs. Nov. 28th	<p><b><u>Maladaptive and pathological behaviours</u></b></p> <p>Ecological mismatch (e.g. effects of global warming); ecological and evolutionary traps (e.g. responses to novel anthropogenic stimuli); maladaptive responses to captivity (e.g. excessive fear of humans); pathological responses to captivity (e.g. self-mutilation).</p>

Lect.	Date	Topic

Labs:

None

Seminars:

None

## 6 Assessments

### 6.1 Marking Schemes & Distributions

#### Course Assignments and Tests:

See Learning Outcomes section for numbered learning outcomes.

Assignment or Test	Due Date	Contribution to Final Mark (%)	Course Learning Outcomes Assessed
20 multiple choice questions, approximately one per week	To be set each week, starting Week 2	20	All
Assignment 1: coding behavioural data from videos	Thurs. Sept. 26 <sup>th</sup>	10	1,3

Assignment or Test	Due Date	Contribution to Final Mark (%)	Course Learning Outcomes Assessed
	(time TBA)		
First Take-home Exam	Thurs. Oct. 31 <sup>st</sup>  (time TBA)	25	2, 4, 5, 6
Assignment 2: Annotated Bibliography	Tues. Nov. 26th  (time TBA)	20	6,7
Second Take-home Exam	Thurs. Dec. 5 <sup>th</sup>  (time TBA)	25	2, 4, 5, 6

Your assignments:

In **Assignment 1** you will be asked to analyse videos. You will be asked to select an ethogram; extract quantitative data from them on variables such as latencies, rates, bout lengths and bout numbers; and answer questions about associative learning and the consummatory and appetitive phases of motivated behaviour.

In **Assignment 2**, you will be asked to pick two from a pre-selected group of papers on one of the topics covered in Lectures 15-21, categorise it as offering a primarily developmental, causal, functional or phylogenetic account of the behaviour in question, and answer questions about its aims/design/results.

To develop your literature searching skills, for **one** of these two papers you will find one related publication from the paper's reference list, and one relevant publication that has cited this paper since. You will then summarise each of these two papers, saying how their findings resemble/differ from the original paper. (A rubric will be posted before this assignment).

**Take-home Exam I** will be a short answer exam that focuses on your understanding of the concepts and biological mechanisms you have learned about in Lecture 1-14; it will also extend your understanding of experimental design and hypothesis-testing.

**Take-home Exam II** will be a short answer exam that focuses on your understanding of the behavioural systems you have learned about in Lecture 15-24 (assuming an understanding of the concepts and terminologies introduced in Lectures 1-14), and tests your ability to accurately interpret data from tables and figures.

---

## 7 Course Statements

### 7.1 Grading Policies for ANSC\*3090:

All assignments are take-home. In every case we will give you at least a week between posting the assignment details and hand in.

Late assignment will be penalized by 10% of the assignment grade each and every day they are late.

## 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>

Associate Diploma Calendar - Academic Consideration, Appeals and Petitions

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

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>

## 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>

---