UNIVERSITY OF CALGARY
FACULTY OF SCIENCE
DEPARTMENT OF BIOLOGICAL SCIENCES
COURSE OUTLINE

Course: ZOOLOGY 567, Animal Behaviour – Fall 2019

COURSE OVERVIEW

Lecture: MWF 11:00-11:50 AD142

Instructor: Dr. Mindi Summers mindi.summers@ucalgary.ca 220-8761 BI 041

Course Site: D2L: ZOOL 567 L01-(Fall 2019) – Animal Behaviour

Note: Students must use their U of C account for all course correspondence.
Department of Biological Sciences BI 186 220-3140 biosci@ucalgary.ca

Requisites:

See section 3.5.c in the Faculty of Science section of the online Calendar.

Prerequisite(s): Biology 313 and one of Biology 371, Ecology 429, Zoology 375, 377, 401 or 477.

Course description:
This course explores the diversity of animal behaviour and introduces the scientific study of animal behaviour. We will use an integrative approach that considers how different animals perceive their environment and proximate and ultimate influences on their behavioural responses. In other words, we will attempt to "*study animals using their own language*" and think about each observed behaviour in terms of *"what happened seconds, minutes, years, and millions of years before."* We will also develop and test hypotheses, discuss ethical considerations to studying animals, read and review scientific literature, collect data, analyze results, and develop research study designs. Understanding animal behaviour and how it is studied is important for a range of careers in biology and psychology. Research in this field has applications to conservation biology, ecology, zoology, veterinary science, and human behaviour.

Learning outcomes:
By the end of this course, you will be able to:

1) **Describe and discuss foundational concepts in animal behaviour:**
   - Compare and contrast variation in sensory modalities and how this variation impacts perception and behavioural responses for different species.
   - Identify and discuss methods to explore proximate and ultimate explanations for behaviour.
   - Describe how genetic differences among individuals and species and in the environments in which they develop could interact to produce differences in behaviour.
   - Develop and evaluate adaptationist arguments for the evolution of behaviours.
   - Use evolutionary trees and comparative phylogenetic techniques to propose hypotheses for the evolution of behaviour.
   - Discuss the role of hormones and the nervous system in recognizing, responding to, and modulating behaviour.
   - Describe the variation in behaviour observed for different animals, including communication, learning and memory, foraging, predator defense, migration and dispersal, habitat selection and territoriality, mating and reproduction, parental care, and social systems.

2) **Develop and critically review research study designs for exploring animal behaviour:**
   - Collect, critique, and develop methods for observing animal behaviour in the field.
   - Identify, discuss, and develop hypotheses and predictions to explore proximate and ultimate explanations for behaviour.
   - Discuss and develop methods to explore a behaviour using proximate and ultimate frameworks.
   - Identify ethical considerations and prepare an ethics application.
   - Prepare a research proposal and provide constructive review of research proposals.

3) **Conduct a literature review on a scientific topic of interest:**
   - Find, organize, and select relevant literature to explore a topic in animal behaviour.
   - Critically read and summarize scientific literature.
   - Reflect on effective practices for continual improvement and growth (e.g., time management, self-directed learning and inquiry, seeking professional support and feedback, identifying strengths and weaknesses, incorporating feedback, setting goals and planning for the future).
   - Synthesizing and summarizing information from different sources to understand and explain a topic.
   - Share knowledge on a topic through writing, visualizations, video, or auditory podcast format.

LEARNING OUTCOMES & ACTIVITIES

Learning activities and assessment are designed around the learning targets: 1) Foundational Concepts and Methodologies; 2) Research Design & Techniques; and 3) Literature Review.

Foundational Concepts and Methodologies

1) *Online modules.* At the end of each week, a D2L quiz will be posted that reviews and expands upon the material presented in lecture and in the textbook. You will have 45 minutes to answer each quiz and you will be given two attempts to answer the quiz questions. You are welcome to use your lecture notes, textbook, and information you individually look-up when answering the quiz questions. You are encouraged to review and study with classmates, but you are to answer the questions and submit your quiz individually. Online modules can be completed any time during the course up until the deadline of **8 am on Monday, November 25**.

2) *In-class questions*. In the lecture component of the course, we will complete worksheets, submit answers in writing, and use the TopHat classroom performance system, where you will be asked to use a cell phone or other device to text answers to questions during class. You will be assessed for your participation and completion of these exercises, not for correct or incorrect responses.

The use of the TopHat system is optional, but highly recommended to enhance learning in the classroom. It is your responsibility to ensure that your participation is being properly recorded by the TopHat system. In the event of any discrepancy, you must contact the administrators of the TopHat system to have them corrected. Correction of any discrepancies must be done **prior to 5pm on December 6, 2019**. If you are unable to use the TopHat system, please contact Dr. Summers within the first week of class to make alternate arrangements.

Research Design & Techniques

1) *Case studies*. We will explore how scientists study animal communication, migration, and parental care through three case study exercises. Case studies will occur during lecture and you must attend to complete assignments and exercises associated with each. The first day of each case study will focus on how to collect observational data for the studied behaviours and consider the sensory modalities of each species. The second day will explore and synthesize research findings for each topic. You will complete and hand-in an assignment during each class session to earn completion for each case study.

2) *Team research proposal*. During the last two weeks of the course, you will work with your team to develop a research proposal to collect observational data and study proximate or ultimate explanations for the behaviour. Your team will prepare an animal ethics application and a written or oral research outline (one-page or three slides). You will then present your research question and study design to other teams for their feedback and provide feedback on other teams' study design. All work on your research proposal will occur during lecture. Contribution will be determined based on self- and peer-evaluations **due before 5pm on Friday, December 6**.

Independent Literature Review

You will choose and explore a topic in animal behaviour throughout the term. This assignment is divided into components to provide you with regular feedback, opportunities for revision, and flexibility in the level that you would like to explore your topic.

1) Topic selection, literature summary, and Mendeley organization. You will be guided through selection of your topic and how to search and organize literature during lecture on Friday, September 13. Your topic, literature selection, and Mendeley folder is **due before 8am on Friday, September 20 on D2L**.

2) Article Mark-Ups. You will choose up to five articles to critically read and annotate following guidelines posted on D2L. These article annotations are **due before 8am on Friday, September 27, October 11, and October 25 on D2L.**

3) *Annotated Bibliography Entries.* You will choose up to ten articles to write annotated bibliography entries for following guidelines posted on D2L. Annotated bibliography entries **due before 8am on Friday, September 27, October 11, October 25, November 8, and November 22 on D2L**. You are encouraged to use the same articles for both article annotations and annotated bibliography entries.

4) *Topic Summary.* You can write a topic summary, complete reflective exercises, and/or share what you learned on your topic following guidelines posted on D2L. All of these components are **due before 8am on November 22 on D2L**.

Behaviour book club

There are many non-fiction books that focus on animal behaviour! You have the option of choosing a book that explores a topic (>200 pages), writing a one-page review, AND participating in a discussion held outside of class during week 10. The one-page review article should be written following the format of a book review to the journal *Nature* or *Science*. This one-page review article is **due Monday, November 18 at 8am on D2L**; late reviews will not be accepted. Following submission of your one-page review, you will be sent an invitation to join a book club discussion session. Participating in the behaviour book club is optional, but highly recommended to expand your thinking. If you participate (by reading a book, completing a review, AND joining a discussion), you will earn the '+' designation for the letter grade that you receive.

Surveys

There will be surveys announced throughout the course that will be available on D2L. These surveys are designed to improve instruction in this course and your effort on these surveys is important. You are asked to not use outside resources when completing these surveys.

ASSESSMENT & MARKING

In this course, you will earn grades based on **the requirements you choose to complete,** and you do not have to complete all requirements. All assessments in this course are designed to meet each of the course learning outcomes, and completion of more requirements shows higher levels of proficiency towards this learning outcome. The level of work required for a particular assignment to be considered complete are described in marking schemes available in D2L. There are no examinations in this course.

This type of grading is called **specifications grading** and was chosen to allow student choice and flexibility in how you would like to showcase your learning and mastery of course learning outcomes.

To earn a given letter grade, you must complete **all** the requirements listed in the column for that letter grade.

Learning Outcome	Assessment	Requirements for each letter grade**			
		D	C	B	A
Foundational Concepts and Methodologies	**Online concept modules**	Completion of 8/10 modules with a score of 80% or higher	Completion of 9/10 modules with a score of 80% or higher	Completion of 10/10 modules with a score of 80% or higher	Completion of 10/10 modules with a score of 90% or higher
	In-class concept and skill practice questions	55% response rate	65% response rate	75% response rate	85% response rate
Research Design & Techniques	**Case studies (in lecture)**	Successful completion of 1/3 case studies	Successful completion of 1/3 case studies	Successful completion of 2/3 case studies	Successful completion of 3/3 case studies
	Team research proposal (in lecture)	X	Successful research proposal completion with 65% peer evaluation score	Successful research proposal completion with 75% peer evaluation score	Research proposal completion with 90% peer evaluation score
Literature Review	**Topic selection, literature search summary, and Mendeley**	✓	✓	✓	✓
	Article mark-ups	Successful completion of 1/5	Successful completion of 2/5	Successful completion of 3/5	Successful completion of 4/5
	Annotated bibliography entries	Successful completion of 5/10	Successful completion of 6/10	Successful completion of 7/10	Successful completion of 8/10
	Topic summary	X	X	✓	✓
	Reflection and self-directed learning	X	X	Successful completion of reflective exercise	Successful completion of reflective exercise with networking/outside consultation
	Topic synthesis and dissemination	X	X	X	✓

** A grade of F will result if you do not successfully meet **all** of the requirements for a D grade.

** To achieve a "+" letter designation for B, C, or D grades, you must exceed **all** of the requirements for the letter grade when possible **OR** you may participate in and complete the assignments associated with our course's "Animal Behaviour Book Club." To achieve an A+, you must exceed all requirements for an A when possible **AND** participate in and complete the assignments associated with our course's "Animal Behaviour Book Club."

** You will earn a "-" letter designation if you do not successfully complete **one (and only one)** of the specifications required for a given letter grade (excluding the Literature Review topic synthesis/dissemination) **AND** meet all of the specifications for the lower letter grade.

** You will be given ***four 'free passes'*** that can be used to re-submit any component or assignment of the Literature Review in order to get the work to an "acceptable" standard. The free pass and re-submitted assignment must be submitted **within one week (7 days) of the graded assignment being returned or mark being posted**. There is only one re-submission per free pass and the free pass must be completed and attached to the re-submitted assignment. Re-submitted material must also be accompanied by the original graded assignment and a brief statement (approximately one paragraph) describing how you have revised your assignment in response to that feedback. Free passes can also be used to hand-in an assignment associated with the Literature Review learning outcome **up to 1 week AFTER the due date**, without penalty. Free passes are **not** transferable.

INSTRUCTIONAL TEAM

Instructor & course coordinator

Dr. Mindi Summers Office: BI 041 Phone: 403-220-8761 Email: mindi.summers@ucalgary.ca

Office hours: TBD and by request. Office hours will be posted on D2L.

I look forward to discussing and learning about the scientific study of animal behaviour with you this term! As the instructor and coordinator for the course, I have designed and co-designed with students all of the lectures, assignments, and other components in this course. I look forward to working with you to better understand the course material and explore your behaviour topic of interest during my office hours. Please also introduce yourself and ask any questions after lecture.

Graduate teaching assistant: Kevin Duclos Email: kevin.duclos@ucalgary.ca

Office hours: TBD - office hours will be posted on D2L.

Course email policy

If possible, please bring forward questions and ideas in person during office hours or after class. Being able to ask you follow-up questions in real time helps us to make sure that we are answering your questions and providing helpful support.

We will send class emails and respond to individual emails between 8:30am-4:30pm Monday-Friday. We will do our best to read and respond to emails within 24 hours Monday-Friday, and emails received during the weekend by the following Tuesday. To ensure targeted and timely response of your emails, please include the following components in all emails: a) subject with "ZOOL567" included; b) appropriate salutation (e.g., "Dear Dr. Summers"); c) description of the problem/question; d) description of the steps you have taken to solve the problem/answer the question; and e) specific feedback that you are requesting. If you do not receive a response within the time-frame, please follow-up in email or person (sometimes emails are lost in spam filters or mistakenly overlooked!).

Class representatives

Please volunteer to be a class representative! Class reps are currently enrolled students in Zoology 567 who volunteer to collect and share student feedback on the course – you can attend any meetings at any time (no commitment is required). Class reps meet with me on Wednesdays after class for approximately 30 minutes (I always bring snacks!). During our weekly meeting, class reps first share out ideas and comments from students and then we discuss ways to improve the course. Class reps will also lead collection and analysis of mid-semester feedback on the course. You will hear updates from the class reps weekly – please take the time to talk with them so that your experiences and ideas are heard!

COURSE INFORMATION & RESOURCES

Course D2L site: ZOOL 567 L01 - (Fall 2019) – Animal behaviour.
D2L will have the most updated schedule, lecture slides, assignments, readings, and other support materials. You will also use D2L to complete the online concept modules and turn-in assignments.

Important items to locate on D2L:

Lecture outline slides. I recommend that you download and bring a copy of the lecture slides to class with you to annotate. Lecture slides are incomplete so that you can practice note-taking, drawing, and writing in class in real-time, and also so that you can add relevant information. Some images shown in class may not appear in the lecture outline slides due to copyright restrictions. When this occurs, a link to the image or video will be provided.

Online concept modules. At the end of each week, a D2L quiz will be posted that reviews and expands upon the material presented in lecture.

Assignments and marking schemes. Instructions and marking schemes are posted with all course assignments. Please be sure to read the instructions AND review how your assignments will be marked to ensure that you are meeting expectations and targeting your work.

Required text

Required course textbook (on reserve in TFDL): Animal Behavior, An Evolutionary Approach; Rubenstine/Alcock, Oxford University Press, 11th edition. ISBN: 1605355488.

UNIVERSITY POLICIES

Missed Components Of Term Work: In the event that a student misses the midterm or any course work due to illness, supporting documentation, such as a medical note or a statutory declaration will be required (see Section M.1; for more information regarding the use of statuary declaration/medical notes, see FAQ). Absences must be reported within 48 hours.

The regulations of the Faculty of Science pertaining to this matter are found in the Faculty of Science area of the Calendar in Section 3.6. It is the student's responsibility to familiarize themselves with these regulations. See also Section E.3 of the University Calendar.

Scheduled Out-of-Class Activities: There are no scheduled out of class activities for this course.

Examination Policy: Personal notes, the textbook, and independent research are allowed for online quizzes. Consultation with others is not permitted. Students should also read the Calendar, Section G, on Examinations.

Approved Mandatory And Optional Course Supplemental Fees: There are no mandatory or optional course supplemental fees for this course.

Writing Across the Curriculum Statement: For all components of the course, in any written work, the quality of the student's writing (language, spelling, grammar, presentation etc.) can be a factor in the evaluation of the work. See also Section E.2 of the University Calendar.

Human & Living Organism Studies Statements: If you agree, your course work may be used for research purposes. Your responses will be anonymized and remain confidential. Grouped data (no individual responses) may be used in academic presentations and publications. Participation in such research is voluntary and will not influence grades in this course. Students' signed consent forms will be withheld from instructors until after final grades are submitted. More information will be provided at the time student participation is requested.

See also Section E.5 of the University Calendar.

STUDIES IN THE BIOLOGICAL SCIENCES INVOLVE THE USE OF LIVING AND DEAD ORGANISMS. Students taking laboratory and field-based courses in these disciplines can expect involvement with the experimentation on such materials. Students perform dissections on dead or preserved organisms in some courses. In particular courses, students experiment on living organisms, their tissues, cells or molecules. Sometimes field work requires students to collect a variety of living materials by many methods, including humane trapping.

All work on humans and other animals conforms to the Helsinki Declaration and to the regulations of the Canadian Council on Animal Care. The Department strives for the highest ethical standards consistent with stewardship of the environment for organisms whose use is not governed by statutory authority. Individuals contemplating taking courses or majoring in one of the fields of study offered by the Department of Biological Sciences should ensure that they have fully considered these issues before enrolling. Students are advised to discuss any concerns they might have with the Undergraduate Program Director of the Department.

Students are expected to be familiar with Section SC.4.1 of the University Calendar.

Reappraisal Of Grades: A student wishing a reappraisal, should first attempt to review the graded work with the Course Coordinator/ Instructor or department offering the course. Students with sufficient academic grounds may request a reappraisal. Non-academic grounds are not relevant for grade reappraisals. Students should be aware that the grade being reappraised may be raised, lowered or remain the same. See Section I.3 of the University Calendar.

a. **Term Work:** The student should present their rationale as effectively and as fully as possible to the Course coordinator/instructor within 15 days of either being notified about the mark, or of the item's return to the

class. If the student is not satisfied with the outcome, the student shall immediately submit the Reappraisal of Graded Term work form to the department in which the course is offered. The department will arrange for a re-assessment of the work if, and only if, the student has sufficient academic grounds. See sections I.1 and I.2 of the University Calendar.

b. **Final Exams:** The student shall submit the request to Enrolment Services. See Section I.3 of the University Calendar.

OTHER IMPORTANT INFORMATION FOR STUDENTS

Mental Health: The University of Calgary recognizes the pivotal role that student mental health plays in physical health, social connectedness and academic success, and aspires to create a caring and supportive campus community where individuals can freely talk about mental health resources available throughout the university community, such as counselling, self-help resources, peer support or skills-building available through the SU Wellness Centre (Room 30, MacEwan Student Centre, Mental Health Services Website) and the Campus Mental Health Strategy website (Mental Health).

SU Wellness Center: The Students Union Wellness Centre provides health and wellness support for students including information and counselling on physical health, mental health and nutrition. For more information, see www.ucalgary.ca/wellnesscentre or call 403-210-9355.

Sexual Violence: The University of Calgary is committed to fostering a safe, productive learning environment. The Sexual Violence Policy ttps://www.ucalgary.ca/policies/files/policies/sexual-violence- policy.pdf) is a fundamental element in creating and sustaining a safer campus environment for all community members. We understand that sexual violence can undermine students' academic success and we encourage students who have experienced some form of sexual misconduct to talk to someone about their experience, so they can get the support they need. The Sexual Violence Support Advocate, Carla Bertsch, can provide confidential support and information regarding sexual violence to all members of the university community. Carla can be reached by email (svsa@ucalgary.ca) or phone at 403-220-2208 .

Misconduct: Academic misconduct (cheating, plagiarism, or any other form) is a very serious offence that will be dealt with rigorously in all cases. A single offence may lead to disciplinary probation or suspension or expulsion. The Faculty of Science follows a zero-tolerance policy regarding dishonesty. Please read the sections of the University Calendar under Section K. Student Misconduct to inform yourself of definitions, processes and penalties. Examples of academic misconduct may include: submitting or presenting work as if it were the student's own work when it is not; submitting or presenting work in one course which has also been submitted in another course without the instructor's permission; collaborating in whole or in part without prior agreement of the instructor; borrowing experimental values from others without the instructor's approval; falsification/ fabrication of experimental values in a report. **These are only examples**.

Assembly Points: In case of emergency during class time, be sure to FAMILIARIZE YOURSELF with the information on assembly points.

Academic Accommodation Policy: Students needing an accommodation because of a disability or medical condition should contact Student Accessibility Services in accordance with the procedure for accommodations for students with disabilities available at procedure-for-accommodations-for-students-with- disabilities.pdf.

Students needing an accommodation in relation to their coursework or to fulfill requirements for a graduate degree, based on a protected ground other than disability, should communicate this need, preferably in writing, to the Associate Head, Undergraduate of the Department of Biological Sciences, Heather Addy by email addy@ucalgary.ca or phone 403 220-6979. Religious accommodation requests relating to class, test or exam scheduling or absences must be submitted no later than **14 days** prior to the date in question. See Section E.4 of the University Calendar.

Safewalk: Campus Security will escort individuals day or night (See the Campus Safewalk website). Call 403-220-5333 for assistance. Use any campus phone, emergency phone or the yellow phones located at most parking lot pay booths.

Freedom of Information and Privacy: This course is conducted in accordance with the Freedom of Information and Protection of Privacy Act (FOIPP). Students should identify themselves on all written work by placing their

name on the front page and their ID number on each subsequent page. For more information, see Legal Services website.

Student Union Information: VP Academic Phone: 403 220-3911 Email: suvpaca@ucalgary.ca; SU Faculty Rep. Phone: 403 220-3913 Email: science1@su.ucalgary.ca, science2@su.ucalgary.ca and science3@su.ucalgary.ca; Student Ombuds Office: 403 220-6420 Email: ombuds@ucalgary.ca; http://ucalgary.ca/provost/students/ombuds

Internet and Electronic Device Information: Unless instructed otherwise, cell phones should be turned off during class. All communication with other individuals via laptop, tablet, smart phone or other device is prohibited during class unless specifically permitted by the instructor. Students that violate this policy may be asked to leave the classroom. Repeated violations may result in a charge of misconduct.

Surveys: At the University of Calgary, feedback through the Universal Student Ratings of Instruction (USRI) survey and the Faculty of Science Teaching Feedback form provides valuable information to help with evaluating instruction, enhancing learning and teaching, and selecting courses. Your responses make a difference - please participate in these surveys.

Copyright of Course Materials: All course materials (including those posted on the course D2L site, a course website, or used in any teaching activity such as (but not limited to) examinations, quizzes, assignments, laboratory manuals, lecture slides or lecture materials and other course notes) are protected by law. These materials are for the sole use of students registered in this course and must not be redistributed. Sharing these materials with anyone else would be a breach of the terms and conditions governing student access to D2L, as well as a violation of the copyright in these materials, and may be pursued as a case of student academic or non-academic misconduct, in addition to any other remedies available at law.

Department Approval ORIGINAL SIGNED Date _____

Department Approval for NO FINAL EXAM ORIGINAL SIGNED Date _____

Tentative Schedule for Zoology 567

The most up-to-date class topics, readings, and assignment information can be found on D2L.

WEEK	DAY	TOPIC	TEXTBOOK READINGS	DUE
1	F	The science of animal behaviour		
(Sept 6-13)	M	Observing and studying behaviours	Chapter 1 & 2	M – Survey 1
	W	Evolutionary framework		
	F	***Finding, organizing, and reading literature***		
2	M	Genetics & development	Chapter 3	
(Sept 16-20)	W	Nervous systems	Chapter 4	
	F	Endocrine systems	Chapter 5	F – Lit Review: Topic Selection & Mendeley
3	M	Communication	Chapter 8	
(Sept 23-27)	W	***Case study 1***		
	F	***Case study 1***		F – Lit Review: Article Mark-Up 1; Bibliography Entry 1
4	M	Learning and memory		
(Sept 30-Oct 4)	W	Cultural transmission		
	F	Cognition		
5	M	Feeding and foraging	Chapter 6	
(Oct 7-11)	W	Avoiding predators and self-defence		
	F	Dispersal and migration	Chapter 7	F – Lit Review: Article Mark-Ups 2&3; Bibliography Entries 2&3
	M	**University closed Monday, Oct 14*		
6	W	***Case study 2***		
(Oct 14-18)	F	***Case study 2***		
7	M	Habitat selection & territoriality	Chapter 7	
(Oct 21-25)	W	Aggression		
	F	Mating systems	Chapter 10	F – Lit Review: Article Mark-Ups 4&5; Bibliography Entries 4&5
8	M	Reproduction 1	Chapter 9	
(Oct 28-Nov 1)	W	Reproduction 2		
	F	Parental care 1	Chapter 11	
9	M	Parental care 2		
(Nov 4-8)	W	***Case study 3***		
	F	***Case study 3***		F – Lit Review: Bibliography Entries 6&7
Reading Break – November 11-15				
10	M	Sociality and group living	Chapter 13	M – Behaviour Book Club
(Nov 18-22)	W	Social evolution		
	F	Personalities, emotions, and play		F – Lit Review: Bibliography Entries 8-10; Topic Summary; Reflection; Dissemination
11	M	***Research proposal***		M – Online modules
(Nov 25-29)	W	***Research proposal***		
	F	***Research proposal***		
12	M	***Research proposal***		
(Dec 2-6)	W	***Research proposal***		
	F	***Research proposal***		F – Survey 2