

## BIOLOGY 472 Course Syllabus

**Course Title: Animal Behaviour**

**Course Code: Biology 472**

**Course Credits: 3**

**Class Section: 1**

**Class Location: Biology 125**

**Class Time: 8:30-9:50 am T/Th**

**Term: 1**

**Delivery: Lecture and lab**

**Start Date: September 6, 2016**

**Lab location: Biology 307**

**Lab Time: Monday 1:30 -5:30 pm**

### **Course Description:**

Fundamental concepts in animal behaviour. An introduction to the form, control and adaptive significance of animal behaviour.

### **Learning Outcomes:**

By the completion of this course, students will be expected to gain a comprehensive understanding of the behavior of animals. They will understand the proximate controls of behavior including the role of hormones, the animal's genotype and the animal's environment in the development of behavior. Much of our work will take an evolutionary approach, consequently, students will have a comprehensive understanding of the adaptive significance of behaviour, emphasizing animal communication, social behavior, territoriality, sexual selection and mating systems.

### **University of Saskatchewan Grading System (for undergraduate courses)**

Exceptional (90-100) A superior performance with consistent evidence of

- a comprehensive, incisive grasp of the subject matter;
- an ability to make insightful critical evaluation of the material given;
- an exceptional capacity for original, creative and/or logical thinking;
- an excellent ability to organize, to analyze, to synthesize, to integrate ideas, and to express thoughts fluently.

Excellent (80-90) An excellent performance with strong evidence of

- a comprehensive grasp of the subject matter;
- an ability to make sound critical evaluation of the material given;
- a very good capacity for original, creative and/or logical thinking;
- an excellent ability to organize, to analyze, to synthesize, to integrate ideas, and to express thoughts fluently.

Good (70-79) A good performance with evidence of

- a substantial knowledge of the subject matter;
- a good understanding of the relevant issues and a good familiarity with the relevant literature and techniques;
- some capacity for original, creative and/or logical thinking;
- a good ability to organize, to analyze and to examine the subject material in a critical and constructive manner.

Satisfactory (60-69) A generally satisfactory and intellectually adequate performance with evidence of

- an acceptable basic grasp of the subject material;
- a fair understanding of the relevant issues;
- a general familiarity with the relevant literature and techniques;
- an ability to develop solutions to moderately difficult problems related to the subject material;
- a moderate ability to examine the material in a critical and analytical manner.

Minimal Pass (50-59) A barely acceptable performance with evidence of

- a familiarity with the subject material;
- some evidence that analytical skills have been developed;
- some understanding of relevant issues;
- some familiarity with the relevant literature and techniques;
- attempts to solve moderately difficult problems related to the subject material and to examine the material in a critical and analytical manner which are only partially successful.

Failure <50 An unacceptable performance

**Class Schedule/Lecture Topics:**

What is Animal Behaviour?  
 The Proximate/Ulimate Dichotomy  
 Approaches to the Study of Behaviour (Ethology, Comparative Psychology, Neurobiology)  
 Hypothesis Testing in Behavioural Research  
 Classification and Description of Behaviours  
 Behaviour and Evolution  
 The Genetics of Behaviour  
 Learning and Ontogeny of Behaviour  
 Behavioural Endocrinology  
 Animal Senses  
 Biological Rhythms, migration  
 Foraging Behaviour  
 Communication  
 Social Behaviour  
 Dominance and Territoriality  
 Sexual Selection and Mating Systems  
 Parental Care

**Instructor Information:**

Dr. Doug Chivers  
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 966-4419  
[Doug.Chivers@usask.ca](mailto:Doug.Chivers@usask.ca)  
 Office Hours: by appointment

Dr. Karen Wiebe  
 Rm. 121, Biology  
 966-4406  
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 Office Hours: by appointment

**Lab Demonstrator:**

Kevin Bairos-Novak  
 Rm. 2202 WCVM  
[Kevin.Bairos-Novak@usask.ca](mailto:Kevin.Bairos-Novak@usask.ca)  
 Office Hours: by appointment

**Required Readings:** Altmann, J. 1974. Observational study of behavior: sampling methods. *Behaviour* 49:227-266.

**Reference Texts:** Dugatkin, L.A. 2013. *Principles of Animal Behavior*. 3rd Edition. WW Norton and Co.

R. Dukas & J.M. Ratcliffe. 2009. *Cognitive ecology II*. University of Chicago Press, 2009

Kappeler, P.M. 2010. *Animal Behaviour: Evolution and Mechanisms* (electronic resource). Berlin, Heidelberg : Springer-Verlag Berlin Heidelberg.

Grier, J.W. and T. Burk. 1992. *Biology of Animal Behaviour*. 2<sup>nd</sup> Edition, Mosby.

Alcock, J. 2009. *Animal Behavior: An Evolutionary Approach*. 9<sup>th</sup> Edition, Sinauer.

Drickamer, L.C., Vessey, S.H. and Meikle, D. 2002. *Animal Behavior: Mechanisms, Ecology and Evolution*. WMC Brown Publishers.

Goodenough, J., McGuire, B., and Jakob, E. 2010. *Perspectives on Animal Behavior*. 3<sup>rd</sup> Edition. John Wiley and Sons.

Martin, P. and Bateson, P. 1986. *Measuring Behaviour: An Introductory Guide*. Cambridge University Press.

**Journals:** Animal Behaviour  
Ethology  
Behavioural Ecology and Sociobiology  
Behavioural Ecology  
Journal of Comparative Psychology  
Behavior

**Grading Scheme:**

|                                                      |      |
|------------------------------------------------------|------|
| Mid-term Exam                                        | 30%  |
| Final Exam                                           | 30%  |
| Crayfish Lab report                                  | 7.5% |
| Human Sexual Selection report                        | 7.5% |
| Statement of Intent (see attached sheet – Due Oct 8) | 5%   |
| Project                                              | 20%  |

**Evaluation components:****Midterm Exam 1**

Value: 30% of final grade

Date: Oct 18, 2016

Length: 2 hours

Description: Closed book written exam

**Final Exam:**

Value: 30% of final grade

Date: yet to be scheduled

Length: 3 hours

Description: Closed book written exam. The final exam is required coursework.

**Crayfish lab report:**

Value: 7.5% of final grade

Date: due on Oct 3<sup>th</sup>, 7 days after completion of the lab

Description: Preparation of a comprehensive ethogram (a descriptive inventory of the behaviors of crayfish). Late assignments will be penalized by 10% per day

**Human Sexual Selection lab report:**

Value: 7.5% of final grade

Date: due on Nov 21, 7 days after completion of the lab

Description: Preparation of lab report. Late assignments will be penalized by 10% per day

**Statement of Intent:**

Value: 5% of final grade

Date: due on Oct 6<sup>th</sup>

Description: Preparation of a Research plan for the individual project (see attached for additional details). Late assignments will be penalized by 10% per day.

**Project:**

Value: 20% of final grade

Date: due on Dec 5<sup>th</sup>

Description: Preparation of a poster for the individual project (see attached for additional details). **You may not start your project until given permission from the lab instructor.** Late assignments will not be accepted. Late posters will not be accepted. You will receive a zero for the poster if it is not presented on Dec 5<sup>th</sup>.

**Integrity Defined (from the Office of the University Secretary)**

The University of Saskatchewan is committed to the highest standards of academic integrity and honesty. Students are expected to be familiar with these standards regarding academic honesty and to uphold the policies of the University in this respect. Students are particularly urged to familiarize themselves with the provisions of the Student Conduct & Appeals section of the University Secretary Website and avoid any behavior that could potentially result in suspicions of cheating, plagiarism, misrepresentation of facts and/or participation in an offence. Academic dishonesty is a serious offence and can result in suspension or expulsion from the University.

All students should read and be familiar with the Regulations on Academic Student Misconduct ([http://www.usask.ca/university\\_secretary/honesty/StudentAcademicMisconduct.pdf](http://www.usask.ca/university_secretary/honesty/StudentAcademicMisconduct.pdf)) as well as the Standard of Student Conduct in Non-Academic Matters and Procedures for Resolution of Complaints and Appeals ([http://www.usask.ca/university\\_secretary/honesty/StudentNon-AcademicMisconduct2012.pdf](http://www.usask.ca/university_secretary/honesty/StudentNon-AcademicMisconduct2012.pdf))

For more information on what academic integrity means for students see the Student Conduct & Appeals section of the University Secretary Website at: [http://www.usask.ca/university\\_secretary/pdf/dishonesty\\_info\\_sheet.pdf](http://www.usask.ca/university_secretary/pdf/dishonesty_info_sheet.pdf)

## PROJECT OBSERVING ANIMAL BEHAVIOUR

### General Remarks:

1. All projects are individual efforts, i.e., no group projects.
2. You should begin planning your project immediately. There are lab periods at the end of the course that are available for field work.
3. A statement of intent for your project is to be handed in by **Oct 6. You may not start your project until given permission from the lab instructor. You must complete the online Animal Care Course prior to conducting your project.**
4. The poster report is to be displayed, and relevant written material handed in, on **Dec 5th**. You will be given suggestions in class for how to prepare the poster.
5. The evaluation will be based primarily on how well your research is designed, not on the number of hours you spend watching the animal, or how attractive your poster may be. Although you may not be able to answer your question, your project should be designed so that it would be possible to answer it. Show that you understand how a research project should be conducted.
6. An exhaustive literature review is not necessary, but you should be aware of at least some major **primary** source references (i.e., journal articles not textbooks, reviews or websites) on the subject.
7. The lab demonstrator is available for counselling.

### Suggested Procedure:

1. Choose an area of behaviour that interests you.
2. Formulate a question (the simpler the better).
3. Choose a study animal that is well suited for investigating the question you are attempting to answer.
4. Find, or create, a population of your study animal.
5. Familiarize yourself with the behaviours of your study subjects.
6. Design a method of sampling the behaviours (it must be quantitative).
7. Make the observations.
8. Write the report and prepare the poster (see Biology hallways for examples).

### The Poster (20%):

The poster should include the following sections:

#### Introduction:

State your objectives. What question (hypothesis) are you investigating? Tell the reader what is known about your study subject and the subject area.

#### Study Site:

Where is it? What features of the environment are relevant to your study?

#### Methods:

How and when did you conduct the observations? List any equipment used. What sampling method did you use?

**Results:**

Present an ethogram of the behaviours you quantified. Present your data (summarized, not in raw form) in tables and/or figures.

**Discussion:**

Interpret your results. What is the relevance of your study to the biology of the animal and/or the science of ethology? Discuss potential biases and problems with how you collected the data or how you interpreted your findings. Do your results agree with what is known in the literature?

**Literature Cited:**

List all the literature that you cite in your poster. Make sure that the complete reference is given (e.g., volume number and page numbers of each article).

Note: Marks will be taken off if you do not follow these instructions for preparation of the poster. Your lab demonstrator is the person to whom you should go to ask questions about your project.

**Statement of Intent (5%):**

Prepare a one to three page (double spaced) "Statement of Intent" about the project you are planning to carry out to be handed in no later than **Oct 6**. We encourage you to hand it in even earlier so you can get a head start on the project. This requirement will allow us to check that projects are suitable and have a reasonable chance of success. The statements will be worth 5% of your final mark, and **must be approved** before you continue with your project. Statements of intent that are totally unsuitable will be returned, ungraded, for revision. The revised version can then be given a maximum of only 3 marks (instead of 5).

The statement of Intent should include the following information:

1. The biological question (hypothesis) you are asking, stated as clearly as possible.
2. The organism you are planning to study.
3. The general methods you intend to use.
4. A list of some key references on the subject of your question.

LAB OUTLINE  
 Biology 472.3 2016  
 Mondays 1:30-5:30, Room 307

| <u>Date</u> | <u>Subject</u>                          | <u>Preparation</u>                                                                                        | <u>Requirements</u> |
|-------------|-----------------------------------------|-----------------------------------------------------------------------------------------------------------|---------------------|
| Sept 5      | no lab                                  |                                                                                                           |                     |
| Sept 12     | Training videos and research discussion | read Altmann (1974)                                                                                       | none                |
| Sept 19     | walking tour of Campus for the project  | Make sure you are outdoors for a few hrs. (i.e., warm clothes & boots); bring binoculars if you have them | none                |
| Sept 26     | Ethogram of the on the crayfish         | read handout                                                                                              | lab report          |
| Oct 3       | no lab                                  |                                                                                                           |                     |
| Oct 10      | Thanksgiving                            |                                                                                                           |                     |
| Oct 17      | Cricket lab                             |                                                                                                           |                     |
| Oct 24      | no lab                                  |                                                                                                           |                     |
| Oct 31      | no lab                                  |                                                                                                           |                     |
| Nov 7       | Fall Break                              |                                                                                                           |                     |
| Nov 14      | Human Sexual Selection                  | read handout                                                                                              | lab report          |
| Nov 21      | no lab                                  |                                                                                                           |                     |
| Nov 28      | no lab                                  |                                                                                                           |                     |
| Dec 5       | Poster session                          | posters                                                                                                   | attendance, poster  |