

## **ECOL496V/596V: TOPICS IN BEHAVIOR AND COGNITION**

3 Credit Seminar

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Do animals forage optimally? Why do some but not others live in groups? Is the mind composed of modules for different functions? How did language evolve? This course will focus on current topics in behavioral ecology and animal cognition research, and bring together methods and concepts used in these two approaches.

### **Course description and expected outcomes**

The course will give an overview of behavioural ecology and animal cognition research; current topics in these areas will be discussed, and students will get a chance to present on their own work as it relates to animal behavior. As a result, students will acquire a solid background in both in behavioral ecology and comparative psychology research. Students will also become familiar with terminology and learn about techniques used to study animal behavior in these fields. As a consequence, students will be able to read, compare and critique studies using either of these approaches.

The focus of the course is in obtaining the background knowledge necessary to understand current topics of research in animal behavior and cognition. However, after some introductory lectures the priority in class will be to discuss recent advances in these areas and the methods used in modern studies of behavior. Students will have the opportunity to select such topics for discussion.

### **Lecture outline**

1. Introduction, historical perspective
2. Methods in behavioral ecology
  - 2.1. Observation & correlation
  - 2.2. Comparative analysis
  - 2.3. Experimental manipulation
  - 2.4. Modelling
3. Neurobiology of behavior
4. Genetics of behavior
5. Topics in behavioral ecology
  - 5.1. Foraging & Biological Markets
  - 5.2. Predation & Parasitism
  - 5.3. Sociality & Group living
  - 5.4. Reproductive strategies & Parental care
  - 5.5. Cooperation & Conflict
  - 5.6. Communication & Deception
  - 5.7. Human behavioral ecology
6. Methods in animal cognition research
  - 6.1. Comparative analysis
  - 6.2. Experimental paradigms from psychology
7. Topics in animal cognition
  - 7.1. Perception & Attention

- 7.2. Learning & Memory
- 7.3. Orientation & Cognitive maps
- 7.4. Communication & Language
- 7.5. Empathy, Theory of mind, & Social learning
- 7.6. Mind, Consciousness & Intentionality
- 7.7. What is intelligence?

### **Student presentations**

Each student will give a presentation in class and lead a discussion on the same topic afterwards. If class size permits, each student will give two presentations, one on the study of behavior in a more ecological context, one focussing more on comparative cognition. Presentation topics should be current areas of research in the respective field – either from the student’s own research or from the recent literature. Some possible topics will be suggested in class. Graduate students’ presentations should be 30 minutes; undergrads’ should be 10 minutes.

### **Grading**

Graduate Students:

Final grade will be determined from the presentation(s) (30%), attendance and participation in class discussions (30%), and in-class quizzes on readings (40%).

Undergraduates:

Final grade will be determined from the presentation(s) (30%), attendance (30%), and in-class quizzes on readings (40%).

A: 90-100 %

B: 80-89 %

C: 70-79 %

D: 60-69 %

E (fail): 0-59 %

### **Textbooks**

Krebs, J.R. and Davies, N.B. An introduction to behavioural ecology. 1993 (3<sup>rd</sup> ed.),  
Blackwell Science

Shettleworth, S. J., Cognition, evolution, and behavior. 1998, Oxford University Press