University of Arkansas – Fort Smith
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General Syllabus

BIOL 4913 Animal Behavior

Credit Hours: 3 Lecture Hours: 3 Laboratory Hours: 0

Prerequisite: BIOL 2703/2701 General Zoology/Laboratory OR PSYC 2623 Research Methods in Psychology OR consent of instructor

Effective Catalog: 2018~2019

I. Course Information

A. Catalog Description

An examination of the principles of animal behavior from an explicitly evolutionary perspective. Topics will include communication, foraging, mate choice, and parental care, among others.

B. Additional Information

This course is intended primarily to serve as an elective for Biology majors.

II. Student Learning Outcomes

A. Subject Matter:

Upon completion of this course, students should be able to:

1. Evaluate how behavior is shaped by evolutionary forces, deepening their understanding of evolution
2. Analyze the differences between proximate and ultimate causes of behavior
3. Assess scientific method and experimentation as it specifically applies to behavioral hypotheses.
4. Compare basic models (optimality, game theory, inclusive fitness.) as they apply to behavior.
5. Critically evaluate current scientific studies in the field of animal behavior

B. University Learning Outcomes

Animal Behavior enhances student abilities in the following general education areas:

Communication Skills (written and oral)

Students will appropriately communicate factual information and reasoning in a written form via essay exam questions and written analysis of primary literature. Students will communicate factual information and reasoning verbally in a socially appropriate manner by interacting with classmates in small group settings when discussing literature.

Analytical Skills

Critical Thinking Skills: Students will critically evaluate scientific papers obtained from primary sources. Students will judge whether methodology was appropriated to test a given hypothesis and if conclusions made follow logically from results. Students will think through possible experiments that might be appropriately used to evaluate behavioral hypotheses. Students will utilize a number of mathematical models commonly used in behavioral research.

Quantitative Reasoning: Students will use scientific models (ie. solving the problems mathematically) to answer practical behavioral questions and,-explain the reasoning behind the math. Students will evaluate data, statistical analysis, and models in the primary literature, and will interpret and draw conclusions from others' data.

III. Major Course Topics

A. Behavioral genetics and the development of behavior
   1. Interactive theory of development
   2. Evolutionary development of behavior
B. Neuroethology
   1. Stimuli
   2. Neural command and control
   3. Evolution of cognitive skills
C. Hormonal influence on behavior
   1. Endogenous rhythms
   2. Environmental cues
   3. Hormonal mechanisms
D. Natural selection and behavior
   1. Cost-benefit approaches to behavioral biology
   2. Approaches to studying behavior
E. Communication
   1. Evolution of animal signaling
   2. Function of animal signalling
F. Foraging
   1. Avoiding predators
   2. Optimal foraging theory
G. Sexual selection
   1. Sex differences
   2. Intrasexual selection
   3. Intersexual seletion
   4. Sexual conflict
H. Mating systems
   1. Monogamy

2. Polyandry
3. Plygyny
4. Polygynandry

I. Parental care and conflict
   1. Offspring value and PI
   2. Costs and benefits
   3. Discriminating PC

J. Sibling rivalry
   1. Inclusive fitness
   2. Siblicide

K. Territoriality and group living
   1. Habitat selection
   2. Social relations