

Syllabus
ANIMAL BEHAVIOR

BIOL 512
Tues & Thurs 2:30-3:45; 114 Shoemaker
Lab** : Wednesday 1-4pm 429 Shoemaker
Office Hours: Tues 4-5pm

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Goals of the Course: There remain many mysteries to be solved in the study of animal behavior. The objective of this course is to survey some of the most puzzling questions of animal behavior and to introduce you to the methods and approaches used by animal behaviorists to solve these puzzles. The lecture is organized around the "four questions" of behavior. These are: How are behavior patterns inherited, elicited, stimulated and produced? How do behavior patterns change over the lifetime of an animal? Why do animals choose to perform one particular behavior rather than alternative ones? What are the evolutionary patterns in behavior seen across a range of species?

The lecture will be taught using a variety of visual aids including nature videos, powerpoint projection, and printed handouts. The laboratory portion of the course concentrates on teaching you the techniques used to describe, collect and analyze variation in behavior. Helping students develop effective verbal and written communication skills is a goal of this course. You will be asked to think critically to design your own experiments.

The lecture and laboratory portions of the course are inseparable. Lecture exams will cover lab material. Lab exercises integrate lecture material. Point contributions to your final course grade are as follows.

<u>Lecture</u>		<u>Laboratory</u>	
3 EXAMS	300 points	Research Report	100 points
Cumulative Final	100 points	Analyses & Assignments	180 points
Quizzes, Homework, Participation	50 points	Participation	70 points
<i>Subtotal</i>	<i>450</i>	<i>Subtotal</i>	<i>350</i>

Total 800 points available (Graduate students will have an additional 200 point project)

Your final grade will be determined as follows: A, 89-100%; B, 80-88%; C, 70-79%; D, 60-69%; F, <60%. The instructor may adjust final grades to account for poor conduct or attendance. **DO NOT** underestimate the amount of work. There is a lot of reading and contemplation necessary to truly comprehend this subject. You are expected to be an active participant in the lecture and lab portions of the course. Please make sure that you have the necessary background understanding of basic genetics, ecology and physiology. If you have any questions, please ask before you get behind in your studies.

You are expected to have completed assigned readings for the dates listed on the attached lecture/lab schedule. Because each class is unique in the rate that they learn new material, the course schedule and the exact dates of exams may vary. When working on assignments, please work independently and do not plagiarize. Additional required readings may be put on reserve in the Library. The required textbook is available at the campus or local bookstores or from internet sources: *Animal Behavior by John Alcock; 8th Edition 2005. Sinauer Associates Inc, Publishers. ISBN 0-87893-005-1*

About the lab: Some lab work will occur outside of normally scheduled class hours, and labs may sometimes run over the assigned time...animals can be unpredictable. You may be asked to care for your study animals outside of regular class hours. Please dress appropriately...animals can be messy, and there may be inclement weather. All animals must be handled humanely. Some labs will require you to feed/water/clean our animals.

Topic and Textbook Readings Schedule

(Animal Behavior BISC 512 Fall 2007)

Week One 20 August

Introduction to course; What is behavior? (no reading assigned)
Units of behavior; ethograms; variation (p. 99-103)
Models of behavioral motivation; adaptationism (no reading assigned)
Lab: Describing and measuring behavior

Week Two 27 August

Tinbergen's approaches (p. 3-12, not Table 1.1)
Studying behavioral evolution (p. 12-18)
Group vs. Individual selection (p. 18-23)
Lab: Field trip to Sardis dam, describing behavior, writing an ethogram

Week Three 3 September

Labor Day holiday on Monday
Heritability of behavior (p. 67-80)
Gene-environment interactions (p. 55-60)
When environments vary (p. 80-88)
Lab*: Is knowledge of warning coloration 'innate' to baby chicks?

Week Four 10 September

Bird song: an application of Tinbergen's approaches to behavior (Chapter 2)
Kin recognition and imprinting (p. 60-61, 64-67)
Lab*: How does learning modify chick behavior?

Week Five 17 September

Limits on learning (p.88-95)
Stimulus filters, cortical magnification, sensory abilities (p. 119-128)
Lab: Outdoor lab on campus, habitat effects on sights and sounds

Week Six 24 September

The 'bat detector' in moths (p. 105-115)
Central pattern generators and automation (p. 116-119, 143-160)
Lab*: Are you my mother? What looks like a good 'momma' to a duckling?

Week Seven 1 October

Mechanisms of navigation (p. 130-139)
Survival value of migration (p. 252-263)
Lab: Compass orientation in homing pigeons

Week Eight 8 October

The adaptationist approach (Chapter 6)

Solving puzzles (p. 175-201)

Lab*: Outdoors on campus, an experimental test of 'moth' camouflage

Week Nine 15 October

Optimality (p. 201-205, all of Chapter 7)

Lab: Field trip, Consequences of egg-sac defense in the green lynx spider I

Week Ten 22 October

Dispersal and territoriality (Chapter 8 except p. 252-263)

Sociality (Chapter 13)

Lab: Field trip, Consequences of egg-sac defense in the green lynx spider II, and lab

Week Eleven 29 October

Communication (Chapter 9)

Lab: Do male guppies put themselves in a good light?

Week Twelve 5 November

Mate Choice (p. 160-171, all of Chapter 10)

Lab: Are female guppies choosy?

Week Thirteen 12 November

Mating systems (Chapter 11)

Parental care (Chapter 12)

Lab*: All day trip to Memphis Zoo, operant conditioning, behavioral enrichment

Week Fourteen 19 November

Thanksgiving Holiday, No Class!

Lab: Human foraging behavior when faced with an overabundance of good grub

Week Fifteen 26 November

The evolution of human behavior (Chapter 14)

Lab: On campus, Human preferences for facial symmetry

NOTE: 1. Labs marked with an asterisk * will require that you invest additional time outside the typical W 1-4 lab period. These are required activities. 2. There is always a risk of injury or infection when working with living things or doing this field work, even after you are properly trained. You adopt this unavoidable risk when enrolling in this course. See the handout 'Being Safe in Animal Behavior Class' for more information.