

Bio 130: Animal Behavior

I. Instructor:

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III. The Course:

Why does an animal perform a given behavior? In this course, we will explore the many approaches used to answer this question. You will learn a logical framework within which all aspects of animal behavior can be examined. Because this course has the potential to change the way you look at nature, I hope you find it to be one of the most important classes of your academic career. The course is designed for undergraduate and graduate students who want to better understand the evolution, adaptive significance, and mechanisms of animal behavior.

IV. Prerequisites:

Bio 14 or consent of the instructor.

V. Attendance:

Class attendance is critical to your success in this course. Please arrive on time and prepared. Read over each assignment carefully and note any questions you may have about the material. I encourage class participation and look forward to your questions. If you need to miss a class for a College accepted reason, speak to me about it in advance.

No makeup exams will be scheduled without an official written excuse, signed by the appropriate authority (coach, Dean, doctor, etc.). All excuses, except those related to illness, must be presented at least 1 week *prior* to the scheduled exam.

All electronic equipment (e.g., cellular phones, etc.) must be turned off during class.

VI. Readings:

Textbook: Alcock, J. (2005). *Animal behavior: An evolutionary approach*, 8th Edition. Sinauer Associates, Inc., Southerland, Mass.

Additional Readings: Additional readings will be available on the course web site.

VII. Grading:

3 Exams (30% each): Format -- T/F, multiple choice, and short answer.

3 Written assignments (3.3% each): 2 T/F, 2 multiple choice, and 1 short answer questions with well-reasoned answers (5 total questions). These assignments must be emailed to me 1 week prior to the exam (Friday by 5PM). I **WILL** use a few of the best questions on the exam.

This class will have 29 lectures and 8 in-class movies. Movies are designed to emphasize lecture material and bring the subject 'to life'. This course will have 3 one-hour exams. Exam 1 will cover **weeks 1-4**, Exam 2 will cover **weeks 5-9**, and Exam 3 will cover **weeks 11-15**. (Week 10 is spring break.) There will be no traditional final exam. All exams will occur during class periods. *Exams taken in pencil will not be eligible for re-grades.*

VIII. Course Homepage:

The course has a web page on which all relevant information can be found (<http://blackboard.tufts.edu/>). I will hold virtual review sessions on-line via the discussion board prior to each exam.

IX. Lecture Schedule:

Week	Day	Topic	Readings
<i>Background Information</i>			
1	Th (01/17)	<u>Introduction</u> : Course Overview; Course Goals; History of Animal Behavior	
	F (01/18)	<u>Movie</u> : Evolution – Great Transformations	
2	Tu (01/22)	<u>Background Information (1)</u> : Evolution & Natural Selection; Fitness & Adaptation; Levels & Units of Selection.	Chapter 1; Reading (1)
	Th (01/24)	<u>Background Information (2)</u> : Scientific Method; Levels of Analysis.	Chapter 2; Reading (6)
<i>Proximate Causes of Behavior</i>			
	F (01/25)	<u>Behavioral Genetics (1)</u> : Nature vs. Nurture; Reaction Norms; Relationship Between Genes and Behavior.	Chapter 3
3	Tu (01/29)	<u>Behavioral Genetics (2)</u> : Experimental Methods and Results; Evolution of Behavior.	Chapter 3
	Th (01/31)	<u>Hormones (1)</u> : The Endocrine System; Hormonal Influences; Methods of Studying Hormone-Behavior Systems.	Chapter 5
	F (02/01)	<u>Hormones (2)</u> : Organizational and Activational Effects; Sex Differences and Sexual Behavior.	Chapter 5
4	Tu (02/05)	<u>Ontogeny of Behavior</u> : Development; Critical Periods; Learning; Bird Song; Evolution of Behavioral Plasticity.	Chapter 4
<i>Ultimate Causes of Behavior (focus on individuals)</i>			
	Th (02/07)	<u>Habitat Selection</u> : Natal Philopatry and Dispersal; Territoriality.	Chapter 8
	F (02/08)	<u>Orientation & Migration</u> : Definitions; Short and Long Distance Migration; Cues.	Chapter 8
5	Tu (02/12)	<u>Movie</u> : Trials of Life – Finding the Way	
	Th (02/14)	<u>Foraging</u> : Feeding Behavior; Optimality Models; Optimal Foraging.	Chapter 7

STARKS: ANIMAL BEHAVIOR SYLLABUS

	F (02/15)	<i>Exam 1 (Weeks 1-4)</i>	
6	Tu (02/19)	<u>Movie</u> : Trials of Life – Hunting and Escaping	
	Th (02/21)	<u>NO CLASS</u> : Tufts Monday	
	F (02/22)	<u>Anti-Predator Behavior (1)</u> : Crypsis & Mimicry; Polymorphism; Deception Mechanisms	Chapter 6
7	Tu (02/26)	<u>Anti-Predator Behavior (2)</u> : Fighting; Vigilance; Communal Defense.	Chapter 6
	Th (02/28)	<u>Sex</u> : The Evolution of Sex	Reading (5)
	F (02/29)	<u>Movie</u> : Evolution – Why Sex.	
8	Tu (03/04)	<u>Sexual Selection (1)</u> : Intrasexual Competition; Alternative Reproductive Strategies.	Chapter 10
	Th (03/06)	<u>Sexual Selection (2)</u> : Intersexual Competition; Mate Choice; Cryptic Mate Choice.	Chapter 10
	F (03/07)	<u>Movie</u> : Trials of Life – Courting.	
9	Tu (03/11)	<u>Sexual Selection (3)</u> : Conflict Between the Sexes	Chapter 10
	Th (03/13)	<u>Mating Systems</u> : Classifications; Evolution of Mating Systems; Mating Systems and Their Ecological Correlates.	Chapter 11
	F (03/14)	<u>Parental Care</u> : Parental Care; Conflicts of Interest; Evolution of Favoritism	Chapter 12
<i>10 Spring Break (03/15-03/24)</i>			
<i>Ultimate Causes of Behavior (focus on group living animals)</i>			
11	Tu (03/25)	<u>Group Living</u> : Costs and Benefits; Dominance; Territoriality.	Chapter 13
	Th (03/27)	<u>Cooperation & Altruism</u> : Kinship and Reciprocity; Kin Selection.	Chapter 13
	F (03/28)	<i>Exam 2: (Weeks 5-9)</i>	
12	Tu (04/01)	<u>Kin Recognition</u> : Mechanism; Example, The Recognition System of Paper Wasps.	Readings (4 & 7)

	Th (04/03)	<u>Eusociality</u> : The Evolution of Eusociality; Reproductive Skew Models.	Chapter 13
	F (04/04)	<u>Cooperation & Conflict</u> : Game Theory	Reading (2)
13	Tu (04/08)	<u>Movie</u> : Trials of Life – Living Together	
	Th (04/10)	<u>Communication (1)</u> : Definition; Channels; Functions; Signals vs. Cues	Chapter 9
	F (04/11)	<u>Communication (2)</u> : Principals of Communication; Evolution of Honesty	Chapter 9
14	Tu (04/15)	<u>Animal Cognition</u> : Animal Minds.	Reading (3)
	Th (04/17)	<u>Movie</u> : Triumph of Life – Brain Power.	
	F (04/18)	<u>Darwinian Medicine</u> : Definition; Applications	Chapter 14
15	Tu (04/22)	<u>Human Sociobiology</u> : Adaptationist Approach; Mating Systems	Chapter 14
	Th (04/24)	<u>Movie</u> : Evolution – The Mind’s Big Bang	
	F (04/25)	<i>Exam 3: (Weeks 11-15)</i>	

X. Additional References:

1. Dawkins R. (1982) Replicators and vehicles. pp. 45-64 in *Current problems in sociobiology*, (Kings College Sociobiology Group, ed.). Cambridge Univ. Press
2. Krebs JR & Davies NB. (1993) Chapter 7: Fighting and Assessment. In *An introduction to behavioural ecology*, 3rd ed. Blackwell Scientific: Oxford (pp. 147-167).
3. Neese RM & Williams GC. (1994) Signs and symptoms of infectious diseases. In *Why we get sick*. Random House, New York.
4. Pfennig DW & Sherman PW. (1995) Kin recognition. *Scientific American*. 272: 67-73.
5. Ridley M. (1993) The Enigma. In *The red queen*. Macmillan, New York.
6. Sherman PW. (1988) The levels of analysis. *Anim. Behav.* 36: 616-619.
7. Liebert AE & Starks PT (2004) The action component of recognition systems: a focus on the response. *Annales Zoologici Fennici*. 41: 747-764.