

EEB 461: Special Topics: Behavioral Ecology

Professor: Dr. Elizabeth Derryberry (liz@utk.edu) 537 Hesler (office hours by appointment)
Project coordinator: Mae Berlow (mberlow@vols.utk.edu)

Course Description: The goal of this course is to teach students to critically analyze theories and research in the field of behavioral ecology. The course will begin with an introduction to the application of the scientific method to the study of behavior (levels of analysis, hypothesis testing, and Darwinian theory). Topics that will follow include foraging and anti-predator behavior, habitat selection, migration, communication, reproductive behavior, mating systems, parental care, and the evolution of social behavior. The course emphasizes a practical understanding of behavioral ecology as implemented through a course project.

Course outcomes: EEB 461 Behavioral Ecology is a special topics course in ecology and evolutionary biology. Students are expected to: (1) Demonstrate factual knowledge of diverse topics in behavioral ecology, with an emphasis on the evolution of behavior; (2) gain a basic understanding of the principles and theories of ecology and evolutionary biology in the context of behavioral ecology; (3) practice a variety of techniques to examine behaviors and develop questions and testable hypotheses; (4) use written communication skills to relay information about observations and conclusions.

Specific aims: Through the lectures, videos, and readings in this course, students will experience and cultivate an appreciation for the diversity of life and behavior. Students will work in small groups and independently to conduct behavioral observations, prepare an ethogram and complete an independent assignment generated from their observations. In this way, students will have the opportunity to learn and practice techniques for observing organisms and to implement the first steps of the scientific method.

Professional Skills: I designed this course with the intention of helping you acquire and develop specific skills that will be helpful to you in your professional life. By ***mastering*** each assignment, you will develop the following skills:

- Development of conceptual skills related to acquiring a deep and lasting understanding of the scientific method
- Development of remembering and understanding basic jargon of behavioral ecology. Perhaps the most fundamental of all skills development related to mastering the content of any field.
- Development of communication (especially those related to explanation and argument) and teamwork (cooperation, tolerance, tutoring) skills.
- Development of higher order thinking skills, especially conceptual analysis, evaluation, problem solving, and synthesis and creativity
- Development of key writing skills and critical thinking skills, particularly those related to learning how to ask meaningful and appropriate questions, distinguishing credible from non-credible sources of information, developing rational arguments, drawing inferences, and considering alternative explanations for behavioral phenomena
- Development of oral communication skills in a professional setting, synthesis of information, and technical skills related to creating professional communication platforms.
- Development of skills related to the evaluation and synthesis of information, problem solving, and creativity.

Required Reading:

Textbook: *Animal Behavior: An Evolutionary Approach*, 10th Ed. (2013) by John Alcock.

Primary Literature: We will read and discuss a number of articles from the primary scientific literature in behavioral ecology. For each of those articles, there will be associated questions on the reading quizzes to answer that will require you to summarize key points of the article and tie the information from that article to the broader topics discussed in the class. These articles will be posted on Canvas.

Disability Services: If you need course adaptations or accommodations because of a documented disability, please let me know and contact the Student Disability Services at 100 Dunford Hall (website: <https://sds.utk.edu/>; phone: 865-974-6087; e-mail: sds@utk.edu) at the **beginning** of the semester. This will ensure that you are properly registered for services.

Academic Conduct: If you have not already done so, you should consult the “Academic Policies” section of your UT 2017-2018 Undergraduate Catalog and the “Academic Affairs” and “Academic Conduct” sections of the Hill Topics 2017-2018 Student Handbook. Briefly, by all means work with others in the class to learn the material – a great way to know if you have learned the material is whether you can successfully teach it to someone else. However, when it comes time to work on material that will be graded, do your own work. Understand the consequences if you are caught cheating.

Classroom Courtesy: I expect everyone in the class to respect one another and to act like mature adults during class. Arrive to class on time – if you must arrive late, please settle into your seat as quickly and quietly as possible. Please do not talk during class (except for the many occasions you hopefully will ask and will answer questions). **On Mobile / Messaging Devices:** If you have a cell-phone or any digital messaging device, we do NOT want to see or hear it in class, unless we are working specifically on something that requires their use.

Announcements and Assignments: The schedule and reading assignments contained in this syllabus are subject to change. You are responsible for all announcements concerning changes in the course outline, readings, assignments, exams, and other matters made during class periods, whether or not you are in attendance when those announcements are made. Reading assignments for each class are listed in the course outline below.

-- Note to Tennessee Education Lottery Scholarship Recipients: If you wish to drop a course that would result in changing your status from full-time (12 or more hours) to part-time (11 hours or fewer), you must receive approval from the Office of Financial Aid and Scholarships before doing so (865-974-1111). See Financial Aid website at: <https://onestop.utk.edu/financial-aid/>.

-- If you find you are having difficulty in any class you are taking and need assistance, a great resource at the university is the Student Success Center → <https://studentsuccess.utk.edu/>.

-- If on the day of a test the University cancels classes for whatever reason, the test will be held during the next class meeting.

Schedule: Readings should be completed the week *before* they are covered in class.

Date	Topic	Readings	Due Dates
1/11	How does this course work? Introductions		
Week 1: What is behavioral ecology?			
1/16	What constitutes a behavior?	Chapter 1	Syllabus Quiz (Canvas)
1/18	What does evolution have to do with behavior?		Quiz 1
Week 2: The Evolution of Altruism			
1/23	Why is altruistic behavior a Darwinian puzzle?	Chapter 2; PL 1	
1/25	Why do some bees dance?		Quiz 2
Week 3: The Evolution of Social Behavior			
1/30	Why should we do unto others as we would have them do unto us?	Chapter 3; PL 2	
2/1	Why help your parents?		Quiz 3
Week 4: The Evolution of Communication			
2/6	What is communication?	Chapter 4; PL 3	
2/8	When will a signal persist?		Quiz 4
Week 5: Behavioral adaptations for survival			
2/13	What is an adaptation?	Chapter 5	
2/15	How do we apply optimality theory?	Chapter 5	Quiz 5 Take home Exam 1
Week 6: The Evolution of Habitat Selection			
2/20	Why do animals migrate?	Chapter 6; PL 4	Exam 1 due
2/22	What are the costs and benefits of territoriality?		Quiz 6
Week 7: The Evolution of Reproductive Behavior			
2/27	Why are women from Venus and men from Mars?	Chapter 7; PL 5	
3/1	Why do bowerbirds build bowers?		Quiz 7
Week 8: The Evolution of Mating Systems			
3/6	Why is male monogamy more common in birds than in mammals?	Chapter 8; PL 6	
3/8	What explains the diversity of mating systems?		Quiz 8
Week 9: SPRING BREAK			
Week 10: The Evolution of Parental Care			

3/20	What are the costs and benefits of parental care?	Chapter 9; PL 7	
3/22	When will siblicide evolve?		Quiz 9
Week 11: Behavioral Theory Review			
3/27	Course/Exam Review		
3/29	Exam II		
Week 12: Observational Study of Behavior			
4/3	Observing animal behavior: taking a closer look	Exercise 1	
4/5	Orientation to Knoxville Zoo		Exercise 1 due
Week 13: Ethogram Part 1			
4/10	Comparing and contrasting sampling methods	Exercise 2 Altmann 1974, Sections I – III, V, VI, XI	
4/12	<i>No class</i>		Exercise 2 due
4/14	Trip to the Knoxville Zoo (Exercises 3 & 4)		
Week 14: Ethogram Part 2			
4/17	Collection of behavioral data	Exercise 5	Exercise 3 & 4 due
4/19	<i>No class</i>		Exercise 5 due
4/21	Trip to the Knoxville Zoo (Complete Ethogram Assignment)		
Week 15: Ethogram Part 3			
4/24	Peer review ethograms		Ethogram rough draft due
4/26	<i>No class</i>		
Week 16: Exam Week			
5/3	FINAL ETHOGRAMS DUE BY 10AM		

Grading and Evaluation:

Gradebook: Your grades for the course will be available via Canvas in a spreadsheet. The Canvas gradebook is based on weights and percentages, hence the "total points" values are often higher or lower than your raw score. These values will change as new assessments are added.

Weighting of assessments: Different assignments and exams will be associated with different numbers of points (e.g., not all exams are worth 100 pts). The final point totals for each category will be summed, converted to a percentage, and weighted as follows:

Class participation	10%
Quizzes	20%
Exam 1	25%
Exam 2	25%
Ethogram assignment	20%

Estimate your grade: Estimate your grade at any time using the following equations:

First, calculate the % of total points you earned for each item

$$\% \text{ Exam 1} = (\text{points you earned on Exam 1}) / (\text{points possible on Exam 1}) \times 100$$

Next, multiply the % values for each item by its weight and sum

$$\begin{aligned} & (\% \text{ Class participation})(0.10) \\ & + (\% \text{ Quizzes})(0.20) \\ & + (\% \text{ Exam 1})(0.25) \\ & + (\% \text{ Exam 2})(0.25) \\ & + (\% \text{ Ethogram assignment})(0.20) \\ & = \text{final percent for the course} \end{aligned}$$

Grading Scale: A = 93-100%, A- = 90-92%, B+ = 87-89%, B = 83-86%, B- = 80-82%, C+ = 77-79%, C = 73-76%, C- = 70-72%, D+ = 67-69%, D = 63-66%, D- = 60-62%, F < 59%

Class participation: Each class meeting will include a review of the previous day, a lecture and several case studies. You will be graded based on attendance and completion of work in class.

Reading Quizzes: Each Friday there will be a quiz that will review course material read or worked on since the previous quiz. Your lowest quiz grade will be dropped.

Exams: There are two exams. The exam format will be similar to the format of classwork and homework. Exams are cumulative. Questions will be drawn from material presented during class, case studies, and assigned readings. The first exam will be take home and the second exam will be in class. There will be no make-up exams; if a student misses an exam for any valid (and excused) reason, the overall exam score will be calculated based on exams that were taken. Valid reasons include the death of an immediate family member, your hospitalization, or a student athlete or performer being absent from a test due to commitments with the University. To be excused, you **MUST** have documentation from a doctor, hospital or health clinic or from the University regarding your absence from the test. Unexcused missed exams will receive a grade of zero.

Ethogram assignment: The ethogram assignment consists of six exercises. You will receive feedback on each exercise, which will help you to build towards the final Ethogram assignment. Some of these exercises will be completed in class and some will require collecting data at the Knoxville Zoo. There will be three organized trips to the zoo. One will be during a class period in order to orient you to the zoo and the final project. The other two trips will be on Saturday mornings (9:30 – 12:30). If you have a valid excused reason for missing the Saturday zoo trips, then you will need to make up the assignments on your own time. See valid, excused reasons as listed above under 'Exams'.

Extra Credit: Every test, and some of the quizzes, will have extra credit points. That's it for extra credit!

Regrading: Everyone makes mistakes, including your professors! If you feel a mistake has been made in either tallying or awarding points on an assignment, then I am happy to review that concern. To make that process fair and consistent across students, you will need to submit a request using the official 'Regrade Request Form' posted on Canvas. You have one week from the time you receive back the assignment to submit this form. Note that when you request a regrade for a specific question, I reconsider the entire assignment. In other words, I look again at how points were awarded and tallied across the entire assignment.