OEB/NEURO 57: Animal Behavior (Spring 2024)

Lectures: TTh 10:30-11:45am (Location: Northwest B101)

Sections/Labs: Weekly 75-minute Meetings (Location: see Section page)

Welcome to Animal Behavior. A review of the behavior of animals under natural conditions, with emphasis on both mechanistic and evolutionary approaches. Topics include classical ethology; behavioral endocrinology; behavioral genetics; learning and memory; communication; orientation, migration and biological rhythms; optimal foraging; evolutionary stable strategies; sexual selection; parental investment and mating systems; selfishness, altruism, and reciprocity; and sociality in vertebrates and invertebrates.

Instructors:

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Mark Cornwall (Head TF)

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Recommended Textbooks

These textbooks are not required, though they may help you with some of the lecture material. We will provide links to excerpts of the most relevant sections. The Zupanc and Davies textbooks are worth purchasing if you would like to explore topics, in either neuroethology or behavioral ecology respectively, beyond those covered in the course.

â€¢ Alcock, J. 2013. Animal Behavior: An Evolutionary Approach. 10th Edition. Sinauer, Sunderland, MA *[this textbook covers material from both halves of the course]*

â€¢ Zupanc, G.K. 2010. Behavioral Neurobiology: An Integrative Approach. 2nd Edition. Oxford University Press *[this textbook covers the neuroethology material from the first half of the course]*

â€¢ Davies, N.B., Krebs, J.R. and S.A. West. 2012. An Introduction to Behavioural Ecology. 4th Edition. Wiley-Blackwell *[this textbook covers the behavioral ecology material from the second half of the course]*

Lectures

Tuesdays and Thursdays from 10:30 â€“ 11:45 AM in TBD

Lecture attendance is strongly encouraged. Most of the material covered on the exams is taken directly from the material presented in lecture.

The PDFs of the lecture slides will be uploaded to the course website before each lecture. However, the availability of the lecture slides should not dissuade you from taking notes during lecture.

Supplemental readings, often excerpts from the recommended textbooks, are available for most lectures. *These readings are optional*. However, if you are curious (or confused!) about a topic from lecture, these

readings are a helpful reference.

Sections

The weekly sections are designed to complement and expand upon the lecture material through (1) a hands-on introduction to experimental design and behavioral observations, (2) critical discussion of primary research literature in student led presentations, and (3) problems on quantitative topics covered in the second half of the course. We hope the sections will not only provide you with a better understanding of animal behavior, but also hone skills integral to further work in the sciences, including how to:

â€¢ Design a properly controlled experiment
â€¢ Critically evaluate published results based on the data and researchersâ€™ methods
â€¢ Lead a discussion with your peers
â€¢ Write concisely and precisely in the rarefied formats of scientific discourse
â€¢ Use online and other library resources to search for scientific literature

As a way of bridging topics covered in lecture and those covered in section, each week we will post on the course web site exam questions from previous years that address material discussed in lecture that week. You can use these to make sure that you understood the main concepts. At the beginning of section, your TF will quickly review this material and answer any questions that might arise.

Sectioning

Students planning to take the course must enroll in a section using the FAS sectioning tool. Sections will meet for 75 minutes once each week. *Sections begin the first week of classes (Jan. 24-26).*

Grading and assignments

Exams - there is a midterm exam and a final exam. The midterm exam covers the material from the first half of the course (*neuroethology*); the final exam is cumulative and, as such, covers the material from the second half of the course (*behavioral ecology*) as well as the first half of the course. Most of the material covered on the exams is taken directly from the material presented in lecture.

Written assignment - there is one written assignment (~5 pages) in the course. The written assignment emphasizes topics in neuroethology and experimental design. The written assignment will be generally structured like a scientific paper and will reinforce ideas discussed in section. For the written assignment, a draft will be submitted for feedback from both your TF and your peers.

Quantitative p*roblems in Behavioral Ecology* - there will be three short problem sets in the second half of the course that will reinforce the three main quantitative topics introduced in lecture: *optimal foraging theory*, *game theory*, and *kin selection*.

*Behavioral field experiment - s*tudents will collect behavioral data on animals found around campus. Groups of students will collect behavioral data for a few hours over the first two weeks of April. More information about this fun assignment will be provided in section.

Section participation - for discussion-based sections, you will be expected to have read several papers from the primary scientific literature before section. To encourage you to read the papers carefully, you will sometimes be asked to answer a few short questions on the assigned section readings. If you have read the assigned papers, you will have no trouble answering these questions quickly by referring to the papers. These questions will not be submitted and they will not be graded separately; instead, they will contribute collectively to your section participation grade. If you know the answers to the questions before section, you will be better able to participate in section. In addition, for sections that cover quantitative topics, you will sometimes be asked to attempt to solve quantitative problems before discussing them in section.

Academic Integrity

Discussion and the exchange of ideas are essential to academic work, and we encourage collaboration, except when explicitly instructed otherwise. That being said, you should ensure that any written work you submit for evaluation is the result of your own research and writing and that it reflects your own approach to the topic. You must also adhere to standard citation practices, and properly cite any books, articles, websites, lectures, *etc* . that have helped you with your work.

Missed Sections and Late Work

Attendance at all sections is required, and students may not ordinarily attend a section meeting other than the one in which they are enrolled. Missed sections will lower your section participation score. If you need to miss a section, please contact your TF a few days beforehand and try to attend another section that week. If you arrange to attend another section that week, you will *not* be penalized for missing your section. If you cannot attend another section, please contact the Head TF.

In fairness to everyone in the course, late work is penalized. Grades are reduced by 10% per day or part thereof that work is handed in late. For example, if an assignment is due at midnight and it is turned in the following day at 9 a.m., it is marked late and the grade is reduced by 10%. Please keep this in mind as you plan your schedules. Leniency will be offered for mitigating circumstances that are unforeseen or out of your control (but not otherwise). We are sympathetic to the fact that you may become overwhelmingly busy at times, but any advantage we give you with an extension is a disadvantage to everyone else that goes without one.

Generative Artificial Intelligence

This course encourages students to explore the use of generative artificial intelligence (GAI) tools such as ChatGPT for all assignments. Any such use must be appropriately acknowledged and cited. If you copy text from ChatGTP, you should acknowledge this in your work by using quotation marks and proper citations, much like you would with the use of Wikipedia. Moreover, we ask that you describe briefly HOW you used chat-GTP for your assignment. It is each studentâ€™s responsibility to assess the validity and applicability of any GAI output that is submitted; you bear the final responsibility. Violations of this policy will be considered academic misconduct. We draw your attention to the fact that different classes at Harvard could implement different AI policies, and it is the studentâ€™s responsibility to conform to expectations for each course.

Accommodations for Students with Disabilities

Students needing academic adjustments or accommodations because of a documented disability must present their Faculty Letter from the Accessible Education Office (AEO) and speak with Mark Cornwall (Head TF) by the end of the second week of the term. Failure to do so may result in the course's inability to respond in a timely manner. All discussions will remain confidential, although faculty are invited to contact AEO to discuss appropriate implementation.

Catalog of Graded Assignments

Assessment	Percentage of Total Grade
Midterm Exam (3/5)	15
Final Exam	25

Written Assignment	15
Problem Sets (x3)	15
Field Experiment	10
Section Participation	20
Total	*100*