

Animal Behavior (Biology 207 & 207L) Syllabus**

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Office Hours: Tues. & Thurs. 9:30 – 11 AM
And by appointment
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Welcome to Animal Behavior! In this course, students will receive a broad introduction to behavior. Topics will range from neurons and hormones to reproduction and kin selection. This course is intended for students who have a serious interest in animal behavior. Two major components of this course are a focus on scientific writing, and the investigation of behavioral research through off-campus experiences at the Memphis Zoo.

Students must enroll in both Biology 207 and Biology 207L. Due to the fact that the content from class lectures and discussions will complement and enhance research activities in the laboratory and at the Memphis Zoo, students will receive the same final grade for both 207 (4 credits) and 207L (1 credit).

OBJECTIVES

The purpose of this course is to familiarize students with the underlying mechanisms of animal behavior through lectures, scientific writing, discussion, and research. By the end of the semester, students should:

- Understand the proximate and ultimate causes of behavior;
- Have broad knowledge of the many areas of behavioral studies, including evolutionary, neural, developmental, ecological, and environmental behavior;
- Understand and be able to apply a range of theories associated with animal behavior;
- Be confident to read, understand, critique, and discuss scientific literature;
- Have strong scientific writing skills, and an ability to write original research papers, review articles, and articles intended for the general public; and
- Obtain behavioral research experience at the Memphis Zoo, and present the findings of such research at a public presentation for the Memphis Zoo employees.

Students will demonstrate their knowledge about and understanding of the subject material through a combination of exams, papers, class discussions, and a public presentation at the Memphis Zoo.

DEVELOPING EXCELLENCE IN WRITING

It is often remarked that scientists do not need to know (or are unable) to write well. This statement is far from the truth. In order to be a successful scientist, it is important to have strong writing skills. The ability to write in a clear, coherent manner is critical in order to convey one's research findings to other scientists and to the general public. Furthermore, many scientists spend a good portion of their job writing grants in order to fund their research projects. In this course, students will strengthen their writing skills through assignments targeted at addressing different behavioral concepts through a research proposal, scientific review paper, original scientific research paper, and commentaries on published behavioral research. Students will participate in class discussions on writing techniques, and they will receive regular feedback on their work through writing assignments, drafts of papers, and peer reviews.

OFF-CAMPUS EXPERIENCE AT THE MEMPHIS ZOO

A second major component of the Animal Behavior course is a research project that students will conduct at the Memphis Zoo. Students will work in small groups on a topic related to animal behavior, thereby relating their coursework to an off-campus experience. Through this experience students will interact regularly with the Memphis Zoo staff scientists, curators, and animal keepers. The course will culminate with students presenting their research findings in a paper (written in the format of a scientific article) on December 7, 2011, and in a poster presentation to the Memphis Zoo staff on December 5, 2011 in the Rendezvous Room at the Memphis Zoo. An electronic copy of each group's data must remain with Dr. Boyle upon completion of the course. The Memphis Zoo has granted Animal Behavior students access to the zoo and permission to conduct research, therefore all data will be shared with the zoo community.

Students will be required to purchase a semester-long membership to the Memphis Zoo. Details on such membership will be provided in class. This membership opportunity is not available to the general public or to other Rhodes students.

****The items in this syllabus are subject to change, based on the discretion of Dr. Boyle.**

REQUIRED READING

Students are required to read the assigned chapters in the following book:

Alcock, J. 2009. *Animal Behavior: Ninth Edition*. Sinauer Associates, Inc.: Sunderland, Massachusetts, 606 pp. ISBN: 978-0-87893-225-2.

Additional required readings are provided for students electronically, in PDF format, on Moodle.

ANIMAL RESEARCH

All protocols for the Animal Behavior course have been approved by Rhodes College's Institutional Animal Care and Use Committee (IACUC). Under no circumstance (either in the Rhodes College laboratory, at the Memphis Zoo, or elsewhere either on-campus or off-campus) are students to subject animals to pain or intense stress. All students are required to follow the protocols that have been established and approved for the Animal Behavior laboratory. Guidelines for the zoo project are posted on Moodle, and these guidelines will be reviewed in class.

ATTENDANCE

Students are required to attend and fully participate in all lecture and laboratory sessions. **Students must arrive to class on-time.** Failure to attend (or fully participate in) a laboratory session will result in a grade of "zero" for the work associated with the laboratory. Remember that your absence from laboratory affects you as well as your laboratory partners. In addition to not receiving points for the work associated with the missed laboratory, the following rules apply: If the student misses one laboratory, no additional points are deducted from the overall point total for Animal Behavior. If the student misses two laboratories, 10 points are deducted. If the student misses three laboratories, an **additional** 20 points are deducted (for a total of 30 points deducted). If a student misses four laboratories, an **additional** 30 points are deducted (60 points total).

Please keep in mind that much of the course will be spent at the Memphis Zoo, oftentimes in extreme heat, cold, and rain. Therefore, it is the responsibility of the student to dress appropriately for the weather (wear layers and sturdy shoes), and to bring water. All students must eat lunch prior to attending lab.

PLAGIARISM

It is required that all students familiarize themselves with the information regarding plagiarism that is posted on Moodle. The act of plagiarism is a violation of the Honor Code, and all cases of plagiarism will be dealt with in a serious manner.

GRADES

Students will receive a final grade for Animal Behavior (lecture and laboratory) based on a 500-point scale. The final grade for lecture (Biol 207) and laboratory (Biol 207L) will be the same. Items marked with an asterisk (*) emphasize writing. Points will be distributed as follows:

	<u>Points</u>	<u>% of Grade</u>
Exam 1	50	10%
Exam 2	50	10%
Final Exam	75	15%
*Review Paper (8-10 pages) - Includes Citations assignment	100	20%
*Paper Summaries (5 1-page papers; 10 points each)	50	10%
*Zoo proposal (5 pages; includes lab activities)	35	7%
*Zoo research paper (draft & lab activities; 8-10 pages)	100	20%
<u>Zoo presentation</u>	40	8%
Total:	500	100%

Final grades will be determined using the following scale:

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

WRITING-INTENSIVE ACTIVITIES

Review Paper

Each student will research an area in animal behavior of his or her choice, and write a review paper on the subject, using published scientific literature as references. The paper should be 8-10 pages in length, double-spaced. The subject of the review paper is the student's choice, as long as it addresses an aspect of animal behavior. The topic may be in the same *general* area as the Animal Behavior Laboratory's Zoo Research Project; however, the review paper will go into greater detail on the topic, and students are not allowed to duplicate work for the review paper and the zoo research paper. Possible sources may include the following journals: *Behaviour*, *Animal Behaviour*, *Behavioral Ecology*, *Ecology*, *Hormones and Behavior*, *Behavioral Ecology and Sociobiology* as well as journals that are taxa-specific (i.e., *Journal of Mammalogy*, *Journal of Entomology*, *International Journal of Primatology*, *Herpetological Review*). Guidelines on how to structure the review paper are available on Moodle. There will be one class dedicated to learning about literature searches.

The review paper is due by 10 AM on Friday, October 21, 2011. Electronic files of five scientific articles that will be cited in the review paper are due on Monday, September 19, 2011.

Summaries of Scientific Papers

Prior to attending class on Class Discussion Days, students will need to have read the paper(s) that will be discussed in class on that day. In order to better prepare students for class discussion, each student will be required to write a one-page summary of the scientific paper(s). Summaries of scientific papers are due by the start of class (10AM) through Moodle. Students will complete summaries for each of the discussion papers. Summary papers should be typed, with 1-inch margins, font size no larger than 12, and single-spaced. Unless stated otherwise by Dr. Boyle, the first paragraph should provide a brief summary of the paper(s). The second and third paragraphs should address any comments that the student has, questions, and suggestions for further study. Summaries must be received by 10AM, or a grade of zero will be assigned. The purpose of the summaries is to learn how to concisely summarize and comment within a strict space limitation.

Zoo Research Proposal

Based on the research activities that students decide to pursue at the Memphis Zoo, students will submit a 5-page (double-spaced) research proposal. The proposal will provide background information on the subject matter, outline the methods that will be used in the project, and provide justification for the research project. It is expected that students write this proposal after meeting with Dr. Boyle and the Memphis Zoo staff to discuss potential roadblocks with the project. This research proposal will be peer-reviewed. **Students' performances in weekly laboratory activities will impact their Research Proposal grade.**

Zoo Research Paper & Poster Presentation

As explained above, students will submit a research paper written in the format of a scientific paper. The research paper will provide the background literature search on the student's Memphis Zoo research project, as well as the methods, results, and discussion. The final paper will be 8-10 pages, double-spaced. A draft of the paper will be submitted on November 18, so that feedback may be provided before the final version is submitted. This research paper is due on December 7. It will be presented to the Memphis Zoo on December 5 in a public poster presentation. Lab activities will guide students in formulating their research and writing the paper. **Students' performances in weekly laboratory activities will impact their Research Paper grade.**

OTHER GRADED ACTIVITIES

Exams

There will be two exams and a final exam. The final exam will be cumulative. All exams will be based on lectures, assigned readings, laboratory materials, and discussion topics. All students must take the final exam. **There will be no make-up exams.**

Class Discussions

Each student is expected to participate in class discussions of the assigned readings. These reading are listed on the class schedule. **Failure to participate in class discussions will result in a lower final grade.**

Assignments

Assignments are due by 10 AM on the date given on the syllabus, unless stated otherwise. Late assignments will be accepted, with a penalty: within the first 24 hours there will be a 20 % deduction from the graded assignment (this rule applies to assignments that are 5 minutes late); each additional day will add an additional 10 % deduction from the grade of the assignment. **Please plan ahead to avoid technological problems!** "Moodle wouldn't let me upload my files" is not a valid excuse for late assignments.

Animal Behavior Syllabus

Day	Date	Subject	Required Readings	Assignment Due
Wed.	Aug. 24	Introduction	Ch. 1; Conde et al. (2011)	
Fri.	Aug. 26	Bird Songs	Ch. 2; Searcy & Nowicki (2008)	
Mon.	Aug. 29	Discussion 1: Scientific Writing	Hrdy (1977); Borries (1997); Bartlett et al. (1993)	Summary #1
		Lab 1: Sampling Methods & Statistics	Behavior Worksheet	
Wed.	Aug. 31	Literature Searches	Gopen & Swan (1990)	
Fri.	Sep. 2	Development: Evolution & Adaptation	Ch. 3 (pp. 62-75)	
Mon.	Sep. 5	Labor Day Holiday – No Class		
Wed.	Sep. 7	Development: Behavioral	Ch. 3 (pp. 76-105)	
Fri.	Sep. 9	Discussion 2: Zoo Research	Ben-Ari (2001); Watters et al. (2009)	Summary #2
Mon.	Sep. 12	Neurons	Ch. 4	
		Lab 2: Zoo Introduction/Keeper Chats	Zoo Worksheet; Saudargas & Drummer (1996)	
Wed.	Sep. 14	Cycles	Ch. 5 (pp. 148-167)	
Fri.	Sep. 16	Discussion 3: Seasonal Pheromones	Parker & Mason (2009)	Summary #3
Mon.	Sep. 19	Hormones	Ch. 5 (pp. 168-181)	Citations
		Lab 3: Hypotheses at the Zoo	Hypotheses Worksheet; Swaisgood & Shepherdson (2005)	
Wed.	Sep. 21	Environmental Changes & Behavior	Buchholz (2007); Luther & Baptista (2010)	
Fri.	Sep. 23	EXAM #1		
Mon.	Sep. 26	Predator Avoidance	Ch. 6 (pp. 182-199)	
		Lab 4: Ethograms and Activity Budgets	Ethogram Worksheet	
Wed.	Sep. 28	Predator Avoidance II	Ch. 6 (pp. 200-217)	Zoo Proposal
Fri.	Sep. 30	Peer Review of Zoo Proposal	Peers' Zoo Proposals	Peer Review
Mon.	Oct. 3	Foraging	Ch. 7 (pp. 218-235)	
		Lab 5: Data Collection		
Wed.	Oct. 5	Foraging II	Ch. 7 (pp. 235-247); Seeley et al. (2006)	
Fri.	Oct. 7	Discussion #4: Helpers at the Nest	Schoech (1998)	Summary #4
Mon.	Oct. 10	Habitat Selection	Ch. 8 (pp. 248-261)	Draft of Review Paper (Optional)
		Lab 6: Data Collection		
Wed.	Oct. 12	Migration	Ch. 8 (pp. 261-273)	
Fri.	Oct. 14	Territoriality	Ch. 8 (pp. 274-284)	
Mon.	Oct. 17	Fall Recess – No Class		
Wed.	Oct. 19	Communication	Ch. 9 (pp. 286-309)	
Fri.	Oct. 21	Deception	Ch. 9 (pp. 309-327)	Review Paper
Mon.	Oct. 24	Language	Balter (2010); Cohen (2010a); Cohen (2010b)	
		Lab 7: Data Collection		
Wed.	Oct. 26	Behavioral Plasticity		
Fri.	Oct. 28	EXAM #2		
Mon.	Oct. 31	Mate Competition	Ch. 10 (pp. 328-344)	
		Lab 8: Data Collection		
Wed.	Nov. 2	Mate Choice	Ch. 10 (pp. 345-376)	
Fri.	Nov. 4	Discussion 5: Bowerbirds	Borgia (1995)	Summary #5
Mon.	Nov. 7	Mating Systems	Ch. 11 (pp. 378-395)	
		Lab 9: Data Reduction and Analysis		
Wed.	Nov. 9	Mating Systems, continued	Ch. 11 (pp. 395-419); Elie et al. (2011)	
Fri.	Nov. 11	Presenting Data		
Mon.	Nov. 14	Parental Care	Ch. 12 (pp. 420-435)	
		Lab 10: Writing the Discussion		
Wed.	Nov. 16	Brood Parasitism	Ch. 12 (pp. 435-454)	
Fri.	Nov. 18	Altruism	Ch. 13 (pp. 456-483)	Draft: Zoo Paper
Mon.	Nov. 21	Zoo Paper Feedback/Discussion		
		Lab 11: Finalize Research Projects		
Thanksgiving Recess – No Class on Wednesday and Friday				
Mon.	Nov. 28	Eusociality	Ch. 13 (pp. 483-503)	
		Lab 12: Practice Presentations		
Wed.	Nov. 30	Behavior and Technology (Part I)	Cagnacci et al. (2010)	
Fri.	Dec. 2	Behavior and Technology (Part II)		
Mon.	Dec. 5	Sociobiology	Ch. 14 (pp. 506-518)	
		Lab: Memphis Zoo Presentations		Zoo Presentation
Wed.	Dec. 7	Human Mate Preference	Ch. 14 (pp. 518-546)	Zoo Paper
Sat.	Dec. 10	Final Exam: 8:30 AM		