

Bios 4644  
Spring Semester 2005

Animal Behavior

Dr. Jerry Howard  
Office hrs: T/H 10-11,221BB  
Phone: 280-5441

Lecture Syllabus

Date	Topic	Reading
Jan 18	History and methods of behavior, Evolution I	DVJ: 1-25
20	Evolution of Behavior II	DVJ: 44-50, 63-67
25	Behavior genetics I	DVJ: 52-61
27	Behavior genetics II, Sensory worlds	DVJ: 85-91, R: Gould Ch 10
Feb 1	Chemosensation, Audition	R: Gould pp 114-133
3	Vision	R: Gould pp 86-100
8	<b>Mardi Gras Holiday</b>	
10	Higher neural function	R: Gould pp 101-113,133-136
15	<b>EXAM 1</b>	
17	Hormones, Timers and Rhythms	DVJ: Ch. 8,9
22	Development	DVJ: 148-169
24	Instincts and motor programs	DVJ: 145-147, R:Gould Ch. 3,4,11
Mar 1	Learning	DVJ: Ch. 11
3	Communication	DVJ: Ch. 12;
		<b>RESEARCH PROPOSALS DUE</b>
8	Migration, Orientation, Navigation	DVJ: 220-237
10	Habitat selection, Territories	DVJ: Ch. 14; R: Alcock pp 299-319
15	<b>EXAM 2</b>	
17	Finding food, Foraging ecology	DVJ: 256-271; <b>Worksheet</b>
22-24	<b>Spring Break</b>	
29	Foraging, Anti-predator defense	DVJ: 271-277
31	Aggression	DVJ: Ch. 16; <b>Worksheet</b>
April 5	Game theory	R: Krebs & Davies pp 150-156; <b>Worksheet</b>
7	Reproduction	DVJ: 302-307
12	Sexual selection, Mating systems	DVJ: 307-322
14	Parental Care	DVJ: 323-330
		<b>DRAFT PAPERS DUE</b>
19	Social behavior, Selfishness and Altruism	DVJ: 332-345, R: Nowak et al., Krebs & Davies 278-289
21	<b>EXAM 3</b>	

	26	Kin selection, Social Insects	DVJ: 337-338, R: Krebs & Davies 265-278, 318-328
	28	Haplodiploidy and sociality	DVJ: 345-348, R: Krebs & Davies 328-338
	29	(Friday) <b>TERM PAPER DUE, 5 P.M.</b>	
May	3	Sociality in vertebrates	R: Gould Ch. 26-27
	5	Human social behavior	DVJ: 348-349
	13	<b>Final Exam, 12:30 P.M.</b>	

---

### Laboratory Syllabus

Date	Topic	Reading
Jan 25	Orientation Visit; Choose an animal to study for the next two weeks	
Feb 1	Ethogram	MB: 1-69
Feb 15	Sampling and Recording Rules	MB: 84-100, Howard paper
22	5-minute Ungraded Oral Presentations, BB 216	
March 1 - April 19	Independent Research	
April 26	Graded Oral Presentations, BB 216	
May 3	Graded Oral Presentations, BB 216	

**RESERVE READINGS  
ANIMAL BEHAVIOR SPRING 2004**

<b>Date</b>	<b>Reading title</b>	<b>Author, Ch/Pages</b>
Jan 27	Ümwelt	Gould Ch 10 - Other Senses
Feb 1	Audition:	Gould, Ch 8: 114-133
Feb 3	Vision	Gould Ch 6: 86-100
Feb 10	Higher function	Gould 101-113, 133-136
Feb 15	Lab 2, Sampling:	Howard paper
Feb 24	Instincts Motor programs	Gould Ch 3-4 Gould Ch 11
Mar 10	Territories	Alcock 299-317
Apr 5	Game Theory	Krebs and Davies 150-156
Apr 19	Selfishness & Altruism	Nowak et al paper Krebs and Davies 278-289
Apr 26	Kin Selection Social Insects	Krebs and Davies 265-278 Krebs and Davies 318-328
Apr 28	Haplodiploidy	Krebs and Davies 328-338
May 3	Vertebrate sociality	Gould Ch 26-27: 436-471

Course Notes

1) Readings are from the following sources:

DVJ: Drickamer, Vessey and Jakob, *Animal Behavior*, 5th edition.

MB: Martin and Bateson, *Measuring Behavior: An Introductory Guide*, 2nd edition.

R: Readings on reserve in the library and on the course website, which include the following:

James L. Gould, 1982. *Ethology*, W.W. Norton, New York

John R. Krebs and N. B. Davies, 1993. *Introduction to Behavioral Ecology*, 3rd ed.  
Blackwell, London.

John Alcock, 1993. *Animal Behavior*, 5th ed. Sinauer, Sunderland, MA

Research papers by various authors, listed by name

These readings are available as .pdf files on the course website; access Bios 4644 on Blackboard and download the papers from Course Documents.

Some lectures on this syllabus list no readings at this time; readings for these lectures may be assigned at a later date. Be alert and come to class regularly; these assignments will be made in lecture.

2) Grading: You will be graded on midterm and final exams, a research paper, and an oral presentation of your research paper. Exams are likely to include definitions, multiple choice, and (occasionally) calculations, but will emphasize essays. Exams will include material from lecture, the text, and laboratory. You may drop your lowest exam score, and count only the three highest scores toward your final grade. The final exam in this course is **OPTIONAL**; if you are satisfied with your three hourly exam scores, you may elect to skip the final exam. The final will be comprehensive. Point distributions are as follows:

Exam 1	100	
Exam 2	100	(Drop the lowest exam score)
Exam 3	100	
Final Exam	100	
-----		
Points from Exams	300	
Research Paper	100	
Oral Presentation	<u>50</u>	
TOTAL POINTS FOR SEMESTER:	450	

3) No make-up exams will be given. Should you miss an hourly exam for any reason, you

must take the final exam.

4) Three homework assignments are given on the models involving foraging ecology (March 17), aggression (March 31), and game theory (April 5). These homework assignments are **not** graded, but will be used as the basis of exam questions. It is up to you to do them on your own. Answers will be provided on the web site or in class.

5) Three laboratories will be held at the Audubon Zoo, January 25 - Feb 15, to introduce you to concepts in the observation and analysis of animal behavior. Attendance at all laboratories is mandatory. You are responsible for getting yourself from campus to the zoo in time for the 1:30 start of each lab. It is expected that you will work on your independent projects during open laboratory dates.

6) **FINAL DROP DATE is April 21, 2005.**

7) Student Learning Objectives: After completing this course, students will be able to:

1. Describe major patterns of behavioral biology, including evolution, genetics, learning, development, ecology, and social organization.
2. Analyze simple quantitative models of animal behavior.
3. Relate biological processes to patterns of human behavior.
4. Analyze novel adaptive problems and, knowing the major patterns of behavioral biology, predict the responses of selected organisms to these problems.
5. Design and implement a scientific study.
6. Write a scientific paper in standard format.
7. Give an oral presentation of scientific research.

### **The Research Project and Term Paper**

8) The laboratory in this course is oriented toward helping you develop an independent research project, from which you will write a paper and give an oral presentation. To help you find a study system, each student will select an animal to study for two weeks on the first Zoo visit. You will construct an ethogram and try out sampling and recording rules on this animal over the next two lab sessions. You may then elect to keep this animal for your semester project or switch to something else.

9) You are required to carry out a research project during the semester, and report the results in a term paper and in an oral presentation before the entire class. For undergraduates, the research project may involve either observation or experiments; observational studies must be based on a minimum of 20 hours of work. You must submit a proposal for your research project, which must be approved by the instructor. The deadline for submitting proposals for review is **Thursday March 3**. Failure to submit a research proposal by this date will result in you being dropped from the course.

10) The research paper will summarize the results of a research project designed and executed by you and approved by the instructor in advance. All papers must include 1) an *Introduction* containing a clear statement of the general problem you addressed, the objectives of your specific study, and a survey of literature relevant to the question, 2) a *Methods* section explaining how the study was carried out and what methods were used, 3) a *Results* section, describing what you observed and using tables or figures to summarize your results if appropriate, 4) a *Discussion* explaining the significance of your observations, and 5) a *Reference* section listing any scientific papers cited. Consult any recent issue of the journal *Animal Behaviour* for a suitable style of presentation. Papers not using the specified format may not be graded.

11) A preliminary draft of the research paper may be submitted for review; the instructor will check for appropriate format and make suggestions for improving the final draft. This check is absolutely free and neither credit or penalties are attached; **the preliminary draft will not be graded**. The deadline for submitting a preliminary draft for comment in **Thursday, April 14**.

12) Research papers must be turned in no later than 5 pm, **Friday, April 29**. Papers turned in late will be penalized a letter grade.

13) Research projects may be carried out on any animal subject to approval; projects at the Audubon Zoo or Aquarium of the Americas are by special permission of the Audubon Institute. If a project is done at the zoo or aquarium, an extra copy of the research paper must be submitted to the instructor at the end of the semester for the use of the Audubon Institute. **Failure to submit a copy of the paper to the Audubon Institute will result in a grade of F for the course. Abuse of privileges extended by the Audubon Institute, or failure to comply with regulations for use of their facilities, will result in a grade of F for the course.**

14) Research projects by graduate students must involve hypothesis testing. Consult the instructor for further information and assistance in developing projects.

### **Oral Presentations**

15) In order to give you practice in oral presentations, you will give a brief, ungraded, 5-minute talk on Feb 22, on the animal that you selected during your initial zoo visit. During this talk you will present your ethogram, discuss the utility of the recording and sampling rules for this animal, and explain your decision to keep the animal for your semester project or look for a new study system.

16) Assuming a class size of 24, final, graded oral presentations will last 10 minutes, with 2 minutes allowed for questions by the audience. Time slots will be assigned by lottery, but you may trade times with another student if you both agree and inform the instructor of the switch. Presentations will be graded on organization, clarity, and time management. Points will be deducted at the rate of 10 per minute for each minute the presentation runs longer than the 10 minute limit.

*Special Notes on Disability Policies*

*It is University policy to provide, on a flexible and individualized basis, reasonable accommodations to students who have disabilities that may affect their ability to participate in course activities or to meet course requirements. Students with disabilities are encouraged to contact their instructors to discuss their individual needs for accommodations.*

*This material is available in alternative formats upon request. Please contact: Coordinator, Disabled Student Services, 260 University Center, 286-6222 (voice/TDD) or 286-3975 (fax).*