BIOL 276 Behavioral Ecology
Fall 2009
MWF 11:45am – 12:35pm
MLS 107

Instructor:
Dr. Sara Helms Cahan
307A Marsh Life Sciences
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Phone: 656-2962
Office hours: MT 1:00 – 2:00 pm or by appointment

Course Description: In this course we will explore the function and evolution of animal behavior. Using the theory of natural selection as a starting point, we will investigate the survival and reproductive value of behaviors such as foraging, courtship displays, aggression and parental care, and how these are influenced by the environments in which organisms live.

Prerequisite: BCOR 102

Background text: The required textbook for the course is Krebs, J. R. and Davies, N. B., *An Introduction to Behavioral Ecology, 3rd Ed.* Reading chapters are listed on the course outline and students will be responsible for all assigned readings on the exams even if some material is not covered in lecture.

Blackboard: All primary literature pdf’s or other materials I provide, as well as all the homework and literature summary assignments, will be posted on Blackboard. Please make sure you can log on to the course Blackboard site and let me know immediately if you run into any problems.

Readings and reading summaries: In addition to the textbook, students will be locating and reading a primary literature article every two weeks. Articles should come from scientific journals. Here is a selection of some relevant journals; all are available electronically or in print at the Bailey/Howe library:

- Nature
- Science
- Proceedings of the National Academy of Sciences
- Animal Behaviour
- Behavioral Ecology
- Behavioral Ecology and Sociobiology
- Journal of Insect Behavior

There are also more specialized journals for specific taxonomic groups that may contain articles on behavioral ecology (e.g., *Journal of Herpetology*). For each reading, students will write up a 2-3 page summary of the article(s) and how it contributes to research on the current class topic. There will be a total of five literature summaries, which will be due every other Monday.
**Course structure:** We will have lectures Mondays and Fridays, with small-group discussions or oral presentations most Wednesdays.

**Homework:** There will be weekly homework questions and/or problem sets concerning the material we are covering in class (a total of 10 assignments). You should expect to devote 3 hours a week to completing the homework assignments. Homework assignments will be due each Friday. I strongly encourage you to join forces with other students and tackle the homework assignments in groups, but any verbal answers must be your own and not written jointly with other students. Suspiciously similar responses will result in a zero for all parties involved.

**Oral presentation:** Each student will have the opportunity to present one of their primary literature articles to the rest of the class (approximately 10-12 minutes). These will occur throughout the semester and the schedule will be determined in advance.

**Exams:** There will be two midterm exams, at week 5 and week 10, as well as a cumulative final exam. Exam questions will include definitions, short answers, problems, and essays. Make-up exams will not be given except with a valid medical excuse from the Dean’s office or a religious observance (see below).

**Grading:** your percentage grade will be calculated out of a total of 600 points.

<table>
<thead>
<tr>
<th>Component</th>
<th>Points</th>
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<tbody>
<tr>
<td>Exam 1:</td>
<td>100</td>
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<td>Exam 2:</td>
<td>100</td>
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<tr>
<td>Literature summaries (5 x 20pts):</td>
<td>100</td>
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<tr>
<td>Homework assignments (10 x 10pts):</td>
<td>100</td>
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<tr>
<td>In-class/Group assignments (4 x 5pts):</td>
<td>20</td>
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<td>Oral presentation:</td>
<td>30</td>
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<td>Final Exam:</td>
<td>150</td>
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**Total:** 600 points

**Policies on Academic Honesty:** University policies are in the Cat’s Tale Student Handbook (http://www.uvm.edu/~dosa/handbook/?Page=Academic.html). Plagiarism of ANY sort - e.g., copying from original references, texts, or websites - will NOT be tolerated. Acts of plagiarism or cheating constitute grounds for failing the course and university disciplinary action.

**Religious Observances:** If you have to miss any important events (exams, assignment deadlines) due to religious observance, be sure to tell me at least A WEEK in advance so I can make alternative arrangements for you.
Course schedule:

Aug. 31:  What is behavioral ecology?
Sept. 2:  Natural Selection (Chapter 1, pp. 4-10)
Sept. 4:  Testing for Behavioral Adaptation (Chapter 2)
          Observation and Its Limits
          The Comparative Approach
Sept. 7:  Labor Day – no class
Sept. 9:  Group discussion: Darwin’s views on evolution of behavior
Sept. 11, 14:  Can behavior evolve? (Chapter 1, pp.10-23)
          Hormones and behavior
          Genes and behavior
Sept. 16:  Innate versus learned behaviors
Sept. 18:  Optimality
Sept. 21-25:  Foraging behavior (Chapter 3)
Sept. 28:  EXAM I
Sept. 30:  Oral presentations
Oct. 2:  Guest lecture – Dr. Erich Jarvis, Duke University
Oct. 5:  Antipredator behavior (Chapter 4)
Oct. 7:  Oral presentations
Oct. 9:  Fall recess – no class
Oct. 12:  Antipredator behavior part 2
          Aposematism
          Co-evolution: Predators versus prey
Oct. 14:  Oral presentations
Oct. 16:  Animal spacing (Chapter 5)
Oct. 19:  Territoriality
Oct. 21:  Oral presentations
Oct. 23:  Fighting and Assessment (Chapter 7)
Oct. 26:  Living in groups (Chapter 6)
Oct. 28:  Oral presentations
Oct. 30:  Kin selection (Chapter 11, pp. 265-280)
Nov. 2:  Hamilton’s Rule
Nov. 4:  Reciprocal Altruism (Chapter 11, pp. 280-290)
Nov. 6:  EXAM II
Nov. 9:  Mating and reproductive behaviors (Chapter 8)
Nov. 11:  Oral presentations
Nov. 13:  Alternative breeding strategies (Chapter 10)
Nov. 16:  Female mate choice and sexual conflict
Nov. 18:  Oral presentations
Nov. 20:  Reproductive behavior: Parental Investment Theory
Nov. 23:  Mating systems (Chapter 9)
Nov. 25-27:  Thanksgiving recess
Nov. 30:  Parent-offspring conflict
Dec. 2:  Oral presentations
Dec. 4:  Sibling cooperation and rivalry
Dec. 7:  Oral presentations
Dec. 9: Wrap-up and course evaluations
Dec. 15, 3:30pm – 6:30PM: FINAL EXAM, MLS 107