

## **BEHAVIORAL ECOLOGY**

### **EBIO 329/629**

#### **INSTRUCTOR**

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#### **COURSE DESCRIPTION**

This course addresses the ecological and evolutionary causes and consequences of animal behavior, with a focus on using evolutionary principles and ecological context to understand complex behaviors. Topics include sociality, mating systems, sexual selection, animal movement, signal evolution, conservation, proximate mechanisms of behavior, and cognition. An emphasis is placed on reading, understanding, and critiquing scientific literature and contemporary research. The course also provides an optional service learning component, with the related goals of (1) raising public awareness about the behavioral ecology and conservation of fauna in New Orleans and the Gulf Region, and (2) enhancing student understanding of behavioral ecology via experiential learning opportunities provided by the service learning.

#### **SPECIFIC AIMS & LEARNING OUTCOMES**

The specific aims of this course are: 1) to attain an advanced understanding of knowledge in the field of behavioral ecology; 2) to understand and critique scientific literature and presentations in the field of behavioral ecology; and 3) to apply principles learned in class to understand behavioral variation in the natural world. All students in this course are expected to demonstrate that they have attained the following capabilities, consistent with the learning outcomes for the major: 1) to demonstrate basic factual knowledge of behavioral variation in the animal world; 2) to understand the causal mechanisms and evolutionary consequences of this variation; and 3) to develop and critique logical arguments about behavioral ecology based upon principles and theories in the discipline. Students participating in the Service Learning component of the course are additionally expected to develop expertise in the behavioral ecology of a focal Gulf species or group of Gulf species; to present this information in an accessible format to the general public; and to develop an enhanced understanding for how behavioral ecology intersects with social, cultural, and political life in the Gulf region.

## COURSE DETAILS

**Lecture:** T,TH 3:30 pm – 4:45 pm in Boggs 242

**Text:** There is no assigned text for this class. Reading materials will be made available online at the course website.

**Lectures:** Doing well in this course depends upon showing up and paying attention in lectures. There is no assigned text for this class: the majority of course material is covered only in lecture. There will also be regular quizzes and guest lectures during class that will impact the final grade. For these reasons, students are urged to come to class, pay attention, and take good notes. Lecture slides will be available on the course website.

**Readings & Participation:** Learning to read, understand, critique and discuss the scientific literature is an important part of this course. Reading assignments (usually one technical article published in a peer-reviewed scientific journal) will be downloadable from the course website. A significant portion of your grade in this class will be related to doing the reading and being able to understand, critique, and discuss the reading material. This will be determined by *posts to the Forum on the Blackboard website, quizzes on readings, participation in class discussions and questions on exams*. There will be 6 total reading assignments during the quarter, with an in-class discussion of approximately 30 min for each reading. Each class discussion will be preceded by posts on the course's Blackboard website in a Forum set up for each reading and, in class prior to the discussion, a short quiz. Each student will be required to post at least one critique, comment, or series of questions related to the reading in the appropriate Forum on the course Blackboard site by the night before the class discussion. Students should respond to or expand upon previous posts to the forum that are relevant to their own ideas – *simply repeating what another student has written is not acceptable*. Therefore, students need to read previous posts made to the Forum before finalizing their own post(s). Insightful or interesting posts will be used to stimulate class discussion when necessary. It is also hoped that the Forum posts will begin interchange of ideas about the readings prior to the discussion in class. Those students who are shy about speaking in class during the discussions are especially encouraged to write detailed and thorough posts to demonstrate that they have put time and effort into reading and understanding the material. *For service learners the effort and attitude in the Service Learning component will also strongly influence your grade for the Participation portion of the class.*

**Examinations:** Each of 3 exams during the semester will be a non-comprehensive test covering about one-third of the course. There is no comprehensive exam during finals week. The 3 exams consist of a combination of objective questions (e.g., fill in the blank, multiple choice, matching, true/false), short-answer questions, and longer essay questions. Each exam will cover all lectures, guest lectures, readings and discussions. Answers will be written directly on the exams and will be graded for understanding, accuracy and detail, including the use of appropriate terms in essay questions. *Note that service learners will be expected to draw upon their Service Learning experience when answering essay questions on exams.*

**No Make-up Exams:** *Exams are given at regular class meeting times as indicated in the schedule.* Please check your calendar: if you know that you will be unable to take any of these exams, **please drop the class now**. No early exams will be given under any circumstances. There will be no make-up exams. If a student must miss an exam due to truly extenuating circumstances (hospitalization, death in immediate family), the instructor must be contacted **before** the exam in order to be considered for an excused absence. This procedure will be the only means for obtaining an excused absence for a midterm exam; an un-excused absence will result in a grade of zero ("0") for the exam. Students missing more than one mid-semester exam (even for valid reasons) are advised to drop the course, or they will receive a failing grade in the course because too much timely work will have been missed.

**Grading**

|  |            |
|--|------------|
| Readings / Discussion / Service Learning, if applicable: | 200 points |
| Exam I:  | 260 points |
| Exam II:   | 270 points |
| Exam III:  | 270 points |

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TOTAL: 1,000 points

**Note:** For graduate students enrolled at the 600 level, the research proposal will count as 20% of the final grade and the grading scheme above will be pro-rated accordingly.

**Academic Dishonesty:** This course operates in accordance with the Code of Academic Conduct of Newcomb-Tulane College. There are no mitigating circumstances for academic dishonesty. Any suspected violations of the Code will be brought before the Honor Board of Newcomb-Tulane College. If you are unfamiliar with your obligations under the Code, please pick up a copy of it in the Dean's Office or read it online <http://college.tulane.edu/honorcode.htm>. Cheating is not tolerated, but collaboration is encouraged during preparation for examinations. If you prepare for exams with another student, do not sit near her/him during the exam so that it will be obvious that you did your own work on the exam.

**CREDIT AT THE 600 LEVEL**

Graduate students enrolled in the course at the 600 level are expected to complete all regular course work and to write an additional 10 double spaced pages (not including references) research proposal on a subject related to course material. An outline of this proposal is due in Week 5, a draft is due in Week 10, and the final proposal is due on the final day of instruction. Specific goals for the proposal will be discussed in class. The paper will count for 20% of the grade for graduate students.

**LECTURE SCHEDULE**

| <b>Date</b>       | <b>#</b>  | <b>Day</b>   | <b>Topic</b>  |
|-------------------|-----------|--------------|---|
| <b>WK1</b>        |           |              |   |
| August 27         | 1         | Tues         | Introduction & S.L. Orientation                       |
| August 29         | 2         | Thurs        | Introduction to Behavioral Ecology                    |
| <b>WK2</b>        |           |              |   |
| September 3       | 3         | Tues         | Foundations of Behavioral Ecology                     |
| September 5       | 4         | Thurs        | Endogenous & Exogenous control of behavior            |
| <b>WK3</b>        |           |              |   |
| September 10      | 5         | Tues         | <b>DISCUSSION 1</b> – Sociality 1                     |
| September 12      | 6         | Thurs        | Sociality 2   |
| <b>WK4</b>        |           |              |   |
| September 17      | 7         | Tues         | Sociality 3   |
| September 19      | 8         | Thurs        | Sociality 4   |
| <b>WK5</b>        |           |              |   |
| September 24      | 9         | Tues         | <b>DISCUSSION 2</b> – Sociality 5                     |
| September 26      | 10        | Thurs        | <b>EXAM I (thru 9/24 - 8 lectures)</b>                |
| <b>WK6</b>        |           |              |   |
| October 1         | 11        | Tues         | Anisogamy, male:male competition                      |
| October 3         | 12        | Thurs        | <b>DISCUSSION 3</b> - <i>Invited lecture S. Lantz</i> |
| <b>WK7</b>        |           |              |   |
| October 8         | 13        | Tues         | Sexual selection                                      |
| <i>October 13</i> | <i>--</i> | <i>Thurs</i> | <i>NO CLASS – FALL BREAK</i>                          |
| <b>WK8</b>        |           |              |   |
| October 15        | 14        | Tues         | Mating system ecology                                 |
| October 17        | 15        | Thurs        | Sperm competition                                     |

**LECTURE SCHEDULE, CONTINUED**

| <b>Date</b> | <b>#</b> | <b>Day</b> | <b>Topic</b>                                   |
|-------------|----------|------------|--|
| <b>WK9</b>  |          |            |  |
| October 22  | 16       | Tues       | Alternative mating strategies                  |
| October 24  | 17       | Thurs      | Case study: fairy- wrens                       |
| <b>WK10</b> |          |            |  |
| October 29  | 18       | Tues       | Communication                                  |
| October 31  | 19       | Thurs      | <b>DISCUSSION 4 - Invited lecture M. Dugas</b> |
| <b>WK11</b> |          |            |  |
| November 5  | 20       | Tues       | <b>EXAM II (thru 10/31 - 8 lectures)</b>       |
| November 7  | 21       | Thurs      | Behavior & speciation                          |
| <b>WK12</b> |          |            |  |
| November 12 | 22       | Tues       | <b>DISCUSSION 5 - Invited lecture TBA</b>      |
| November 14 | 23       | Thurs      | Movement                                       |
| <b>WK13</b> |          |            |  |
| November 19 | 24       | Tues       | Case study: seed dispersal                     |
| November 21 | 25       | Thurs      | Behavior & Conservation I                      |
| <b>WK14</b> |          |            |  |
| November 26 | --       | Tues       | <i>NO CLASS – THANKSGIVING BREAK</i>           |
| November 28 | 26       | Thurs      | <b>DISCUSSION 6 - Behavior &amp; Cons II</b>   |
| <b>WK15</b> |          |            |  |
| December 3  | 27       | Tues       | Case study: brown pelicans                     |
| December 5  | 28       | Thurs      | <b>EXAM III (thru 12/3 - 7 lectures)</b>       |

### **SERVICE LEARNING - OVERVIEW**

This course offers an optional Service Learning component (EBIO 389 or 689). Students wishing to participate in the Service Learning component of the class **MUST** register for EEB 389. Service learners will receive P/NP for the Service Learning component per se, but their *effort and involvement in the Service Learning component will heavily affect the Performance portion of their grade for the course (10% of overall grade, below).*

Our community partner is the **Bayou Land Resource Conservation & Development Council** (Bayou Land RC&D), see [www.bayoulandrcd.org](http://www.bayoulandrcd.org) for more info. Our primary contact at Bayou Land RC&D is Ms. Julia Strasser. Service Learning students will also receive guidance and support from Ms. Jennifer Roberts. Additional information on Bayou Land RC&D and the Service Learning component of the course will be provided at an orientation session on the first day of class.

Service learners will educate first themselves and then the local public on the behavioral ecology and conservation status of local fauna, with a focus on local species at risk from anthropogenic activities such as pollution, land conversion, global warming, and habitat degradation in New Orleans and the Gulf Region. *The focus of your project should be on how animal behavioral ecology interacts with habitat in the Gulf Region, specifically with issues like habitat restoration and water quality.*

The broad idea is to package the "Gee-whiz" aspects of the behavior of these animals in an easily understood format and get the word out as broadly as possible in an accessible format that will grab the interest and attention of the public. *The target audience is K – 12 students* that Bayou Land reaches through their outreach and education efforts.

The underlying premise is that with increased understanding and appreciation, comes respect and a desire to conserve. Thus, by increasing local awareness about the fascinating behaviors of animals in local back yards and the Gulf Region beyond, service learners will be broadening local horizons while providing indirect, but important, assistance with protecting the environment. A related goal is for service learners to use the experience to gain a deeper appreciation for the ways in which behavioral ecology intersects with social, political, cultural and economic aspects of our lives in the Gulf Region.

**The ‘final product’ will take one of two forms: (1) a 60 – 90 second video, to be posted on the Bayou Land RD&D website; or, (2) a 8.5 x 11 flier / pamphlet combining images and text suitable to be disseminated at festivals, class visits, door to door visits.**

### SERVICE LEARNING - SCHEDULE

The following are required of all students enrolled in the Service Learning component. The estimated time in hours dedicated to each activity is provided in parentheses. **All Service Learners are required to log at least 20 hours of service during the semester. Students who do not fulfill the 20 hour minimum requirement will not receive credit for the Service Learning component of the course.**

- Meet with Service Learning Fellow for orientation on overall project, and how to identify and conduct preliminary research on focal species (*1 hr, to be during first class meeting on August 27, 2013*);
- Attend Bayou Land RC&D's Service Learning orientation at LBC (*1 hr, some time between 10 – 2 pm on September 4, 2013*);
- Conduct independent, library-based research on the behavior, ecology, and conservation of focal species (*3 hr, to be completed in first 4 weeks; by September 17, 2013*);
- Prepare 5 page paper with > 10 references on behavioral ecology and conservation of focal species, with special reference to interaction with habitat / water quality / restoration. This paper will be read and graded by Professor Karubian and/or Teaching Assistant (*4 hr; to be completed in week 5; due September 26, 2013*);
- Work with Bayou Land RC&D staff, SL Fellow, and other service learners to identify the most interesting / relevant aspects of focal animal behavior and ecology, and the most pressing conservation threats facing the focal species, with special reference to interaction with habitat / water quality / restoration. *Each SL student is expected to post a 5 – 7 sentence summary of his or her project idea on the course Blackboard site under the "Discussion" tab, and to comment on at least 2 posts by other students.* Students will receive feedback on this same Discussion tab (*0.5 hr, to be completed by week 8; by October 17, 2013*);
- Work independently to create video or pamphlet (*4 hr, to be completed by week 10; by October 31, 2013*);
- **Meet in LBC with Bayou Land RC&D Staff and SL fellow** for evaluation of web-based materials. **This should be a near-completed draft at this point** (*0.5 hr, to be completed by week 12; by November 14, 2011*);
- Complete web-based materials and submit to SL fellow and Bayou Land RC&D Staff (*1 hr, to be completed by week 14; by November 26, 2013*);
- Attend meeting on campus for round-table discussion to share reflections on SL experience, and to provide feedback on how the experience could be strengthened. Dinner will be provided (*1 hr, 6 – 7 pm on December 3, 2013*);
- Write a 2 page essay on how the SL component of the course has influenced your understanding of behavioral ecology, to be read and graded by Professor Karubian and/or Service Learning Fellow (*1 hr, to be completed by week 15; due December 5, 2013*);
- **Additionally**, Service Learners will work with Bayou Land RC&D staff and SL Fellow to disseminate information about Bayou Land RC&D's core issues (natural resource conservation not necessarily directly related to your focal

species). This could include working in a Bayou Land RC&D stand at a conference or festival or participating in Bayou Land RC&D hands-on volunteer projects such as storm drain cleaning or native plantings. It can take place at any point during the semester, but must be coordinated by and documented by Bayou Land RC&D staff and/or SL Fellow (*3 hr, to be completed by week 15; **December 5, 2013***);

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