**Animal Behavior - Biology 472 and 532**

**Fall 2020**

**Lecture Instructor:** Dr. Luther

**Office:** Exploratory Hall, Room 1216

**E-mail:** dluther@gmu.edu

**Phone:** 703-993-5267

**Office Hours:** Monday and Tuesday 12:00-2:00pm

As well as by appointment

**Lecture: Distance Learning Class Meeting Time TBD**

**Lab Instructors: Instructor Kazo**

**Labs**: 001 EXPL L509, Tuesday 9:00 – 11:45 am

002 EXPL L509, Tuesday 12:00 - 2:45 pm

003 EXPL L509, Friday 12:00 to 2:45pm

**I. Course Purpose**

This course examines how ecological and evolutionary forces influence the ways in which animals interact with each other and their environment.

**II. Course Aim and Objectives**

**Aim:** In this class, we will survey the field of Animal Behavior from an evolutionary and ecological perspective. We will examine how animals use behavior to respond to the problem of resource limitations and how this influences their ability to find food, habitat, appropriate mates, and reproduce. We will also consider the means by which animals defend those resources. Finally, we will discuss how and when organisms evolve cooperative behavior and live in groups.

**Learning Objectives:** By the end of the course students will:

1. Understand and apply the basic concepts of:

* + natural selection
  + proximate and ultimate influences on behavior
  + influences of genes and learning on behavior
  + the evolution of sexual displays and communication
  + the evolution of cooperative and competitive behavior

1. Understand, discuss, and implement some of the techniques used to study animal behavior.
2. Be proficient at interpreting scientific research.
3. Present a proposal for original research.

**III. Course Materials**

**Text:** Rubenstein, D.R. and J. Alcock. 2018. Animal Behavior. 11th Edition. Sinauer Associates Print ISBN: 9781605355481

**Supplementary Readings:** Will be announced and made available on Blackboard.

**IV. Faculty Expectations/Course Policies**

**Academic Integrity/Honesty:** I expect you to honor the policies of George Mason University when completing all class assignments and exams.

**Course Format**: Classes will typically consist of a short lecture, interrupted frequently by questions and comments; class discussion; student presentations; and question & answer sessions. The course emphasizes the use of active learning strategies to promote interaction among students and instructor.

**Course Expectations**: Because our class activities are dependent on the readings, each student is expected to read the materials BEFORE the topic is discussed in class. In addition, you will often be expected to participate in class group discussions.

**V. Grading Procedures**

Your grade will be based on a combination of exams and assignments.

**Class Participation:**

Class participation grades will be a combination of answering questions in class, participating in group projects in class and submitting weekly questions about reading material to the discussion board on blackboard.

For each required reading, students will prepare two short question or comment of intellectual depth. These daily questions or comments should be 1-3 sentences in length, should include your name and the date, and should be submitted to the blackboard discussion forum before the start of each class. We will address these as time permits during class discussions. Every chapter in the text and every article assigned should be considered to be a separate reading. This means you will have 2 questions or comments to submit each week.

Questions are required for the purposes of:

• Increasing the likelihood that required reading will be completed

• Providing practice at critical thinking

• Providing the instructor with feedback on your understanding of the material

• Helping to move classroom focus to topics which students find interesting

A question should indicate some depth of thought, rather than questions such as, "why did the author want to study ABC?" A question could be something you don't understand. Alternatively, a question might be something that seems to contradict our prior knowledge of the subject. On the other hand, a question may be something that was not clarified by the reading.

**Assignments:** All assignments are due at the *beginning* of class on the date they are due. ***A late penalty of 10% will be assessed for every day past due.***

**Mid-term and Final Exams:** Exams are designed to assess your understanding of the material presented during lectures and assigned readings. Study guides will be provided on blackboard.

**Paper Summaries:** I will assign 3 readings from short (1-7 page) papers from the primary literature that cover material we will be talking about in lecture. These papers will be posted on Blackboard, and my expectation is that you will read these papers before class and come to class prepared to discuss them. A grading rubric will be provided on blackboard. ***Papers should be emailed to me on the due date before class starts. As the file name include your last name and the assignment number, for example LUTHERpaper1.***

**Grading:**

**Assignment Points % of Grade Date**

Midterm Exam 100 25% Oct 4

Class participation 50 12% all semester

*(combination of contributing in class and contributions on the discussion board)*

Paper summaries (3 25pt each) 75 19%

Final Exam 175 44% TBD

**400 total points**

**Points Percent Grades**

360-400 90- 100% A

352-399 88- 89% B+

320-351 80-87% B

312-319 78-79% C+

280-311 70-77% C

240-279 60-69% D

0-239 0-59% F

**BIO 532** **Graduate Students:**

In addition to the assignments for undergraduate students the graduate students will have more rigorous questions on the midterm and final exam as well as a written proposal.

**Written Proposal:** We will have one larger writing assignment for students in the Bio 532 portion of the class. Students will develop independent research proposals, that focuses on a novel research question in the field of animal behavior. Proposals can only focus on behaviors of wild animals. The goal is to build a novel, significant research proposal regarding an original question in the field of animal behavior – original in the sense that it is yours, and it has not been asked before, significant in the sense that it addresses a major issue in behavioral ecology. Students will decide which animals and behaviors interest them, learn about the animal and behavior from primary literature, and use the existing literature to pose and defend an original research question in animal behavior. A grading rubric will be provided on blackboard. The written proposal will be worth 100 points. A grading rubric will be provided on blackboard.

**Biology 472, 532 and 473**

**Lecture and Lab Schedule – Fall 2020**

**Dr. Luther is the coordinator for all Bio 473 Labs.**

**Schedule Of Topics To Be Covered**

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| --- | --- | --- | --- |
| **Week of:** | **Lecture Topic** | **Text Chapter(s)** | **Lab Exercises (BIO 473 students only)** |
| Aug. 24 | Introduction  Natural Selection, Hypothesis testing | 1 | Check-In; Safety; Introduction to measuring behavior  Lab 1 Ethograms – Animal Observations |
| Sept. 31 | Integrative Study of Behavior  Development of song learning | 2 | Ethograms Part 2 |
| Sept. 7 | Avoiding Predators and  Finding Food | 3 | **NO LABS LABOR DAY** |
| Sept. 14 | Avoiding Predators and  Finding Food | 6 | Prey Selection |
| Sept. 21 | Migration, Territoriality, and Habitat Selection | 7 | Oral Presentations |
| Sept. 28 | Migration, Territoriality, and Habitat Selection  **MIDTERM (Oct4)** | 7 | Cricket Territory Defense |
| Oct. 5 | Evolution of Communication | 8 | **Rain Date (make up date if needed)** |
| Oct. 12 | Reproductive Behavior | 9 | Bioacoustic part 1 introduction |
| Oct. 19 | Reproductive Behavior | 9 | Bioacoustic part 2 develop hypotheses |
| Oct. 26 | Mating Systems | 10 | Bioacoustic part 3 data collection |
| Nov. 2 | Mating Systems | 10 | Bioacoustic part 4 data collection |
| Nov. 9 | Parental Care | 11 | Bioacoustics poster preparation |
| Nov. 16 | Social Behavior  **Bio 532 Written Proposal due** | 12 | Bioacoustic Oral presentations |
| Nov. 23 | Social Behavior | 13 | **NO LABS Thanksgiving** |
| Nov. 30 | Conservation and Behavior  And Review for Final Exam | Assigned Reading TBA | Human Ethology |

**FINAL EXAM TBD**