**Essential Course Details:**

**Lecture:** MWF 9:30-10:45 am in Clough 127

**Course Instructor:** Dr. Emily Weigel [emily.weigel@biosci.gatech.edu](file:///C:\Users\Emily\Dropbox\Active%20Projects\111111.%20Tech%20Teaching\1520\emily.weigel@biosci.gatech.edu)

*Note: when sending an email please put BIOS 4471 in the subject line*

**Office Phone:** 404-385-1713

**Office:** Clough Commons 474E

**Office Hours:** Wednesday 8:30-9:30am, 10:45-11:45am, & by appointment

**Course Description:**

This course is an introduction to the study of the principles of behavior of all kinds of organisms, from microbes to mammals. We will examine basic principles derived from evolution, ecology, ethology, and development, and use these principles to explain how and why organisms behave as they do. In this course, we will learn how animal behavior is studied and how hypothesis testing is applied to key topics in animal behavior. We will focus on many important biological activities, such as foraging, communication, social behavior, predator-prey interactions, mating, and parental care. The general goal of the course is to develop the ability to think as a scientist. By the end of this course you should be able to identify an interesting scientific question, determine how it could be studied, and critically evaluate existing evidence to answer it.

***Prerequisites:*** Successful completion of BIOL 1510/11 or (BIOS 1107 and (BIOS 1107L or BIOS 1207L)) or BIOL 1520/21 or (BIOS 1208 and (BIOS 1108L or 1208L)) is required to enroll in this course.

**Required Resources:**

Animal Behavior: Concepts, Methods, and Applications, Second Edition

Shawn Nordell and Thomas Valone

Paperback ISBN: 978-0190658717

Dr. Tatiana’s Sex Advice to All of Creation

Olivia Judson

Paperback ISBN: 978-0805063325

Subscription to Learning Catalytics, purchased at lcatalytics.com

Other materials will be made available via T-square

**Learning outcomes**

By the end of this class, students will be able to:

1. Demonstrate how evolutionary and ecological processes shape behavior
2. Explain how genetic, developmental, and physiological systems affect behavior
3. Design and implement experiments to test behavioral hypotheses
4. Distinguish between proximate and ultimate causes of behavior
5. Explain concepts that explain behavioral differences within and between species.
6. Effectively communicate scientific findings concerning behavior in both oral and written modes
7. Read, interpret, and explain primary literature that concerns behavior
8. Generate testable hypotheses based on observations of animal behavior and make

predictions based on those hypotheses.

1. Engage in graph interpretation, appropriate graph choice & construction of experimental data
2. Conduct an independent search of current scientific literature on animal behavior

**Class Format**

This class will NOT consist of a series of PowerPoint presentations. This is not because I’m technologically inept, but rather, studies show that you don’t learn much that way (Ok, I know you’re thinking that you’re the exception, so here are a few citations: Hake (1998) American Journal of Physics, Klymkowsky et al. (2003) Cell Biology Education). So, instead of this being a class where you can expect to come in, sit back, let me do all the talking, download the slides off of T-square after class, and skim through the required reading the night before the test, you CAN expect that most of our class meetings will revolve around small group activities such as case studies and data analysis, and basically lots of you talking and listening to each other. This is because the ultimate goal of this class is for you to truly understand the fundamental concepts of animal behavior.

**What is your role as a student?**

Before class, read/watch/listen to the assigned preparatory material, complete work outside of class, and formulate any questions you want to ask. During class, you can expect to build your understanding through activities and class discussions.

This course format will ask you to develop skills in identifying what information you need, and learning how to break down a problem into achievable parts. Key attributes of A-level class participation include (based on rubric by Filipe and Pritchett 2013):

* Actively looking for and recognizing inadequacies of existing knowledge,
* Consistently seeking and asking probing questions,
* Using advanced and persistent search strategies,
* Evaluating solutions by assessing reliability and appropriateness of sources.

**Assessment:**

You will be assessed by your performance on various in-class assignments (Participation), Learning Catalytics (LC) assessments, two ‘essay’ projects, and on three (3) exams.

|  |  |  |
| --- | --- | --- |
| **Assessment type** | **Number of assessments** | **Percent of your final grade** |
| **In-Class Participation** | Minimum of 25 full classes out of the whole semester\* | 5% |
| **LC Assignments**  **(IKEs and Homeworks)** | 10 | 10% |
| **Dear Dr. Essay** | 1 | 20% |
| **Zoo Project** | 1 | 20% |
| **Take-Home Exam 1** | 1 | 15% |
| **Take-Home Exam 2** | 1 | 15% |
| **Final Exam (not cumulative; in-person)** | 1 | 15% |
|  | **TOTAL** | 100% |

***\*This is summer and I realize many of you may be traveling. The assessments are set up in such a way for you to complete your assignments and exams on-time from afar and to be able to miss some classes. Please, however, arrive on time to class when you intend to be there. We may need to move locations for the day’s activity, and arriving late means you’ll miss us!***

**Grades:**

This course is graded on a straight scale – you are not competing against anyone else for your grade.

The most stringent scale used will be: 90-100% an A, 80-89% a B, 70-79% a C, 60-69% a D, and 59% F.

**Grade Change:**

Grades are not negotiable commodities. However, mistakes can and do occur. If you feel a writing assignment or exam has been incorrectly scored, notify your instructors as soon as possible. Any requests for adjustment of grades must be submitted in writing no less than one week after the work has been returned. In all cases, the entire assignment will be reevaluated and a final, revised grade (higher or lower) will be assigned if warranted.

**Participation:** In-class assignments administered through LC or on paper, as well as active discussion during class, will determine your participation credit for the day. You will receive a score of 1 or a 0 based on your successful completion of assignments and active discussion in class. Although there are more than 25 sessions in the semester, your participation is graded out of 25 possible points, allowing you to earn extra credit by attending every class, and/or potentially miss a class without damaging your grade. *Note that attendance does not directly equal participation; if you are unprepared or off-task, merely being present in the room will not earn you points.*

**Incoming Knowledge Evaluations (IKEs)**: Before each class, you’ll complete pre-class reading. Once you’ve reviewed the material, log in to Learning Catalytics to complete that topics’ Incoming Knowledge Evaluation (IKE). IKE sessions close at the start of class and will not be reopened for credit, but you can review closed sessions for study purposes. I’ll use your responses to guide what we do in class. IKE questions are not often at the same level as you can expect to see on an exam; instead, they ensure that you come to class with effective baseline knowledge to work up to exam-level understanding in class. These are graded for accuracy.

Learning Catalytics can be purchased directly at <https://learningcatalytics.com/users/sign_up> or from the Georgia Tech Bookstore in Tech Square. To participate in class, you will need to bring an internet-ready smartphone, tablet, or laptop to class to earn participation points.

**Homeworks**: Homework assignments will be made available each week in Learning Catalytics and are due on Sundays at midnight. Homeworks close on Sunday at midnight and will not be reopened for credit, but you can review closed sessions for study purposes. *These are graded for accuracy.*

**Dear Dr. Essay Assignment:**

During the course of the semester, we will not only be learning all kinds of really cool stuff about animal behavior, but we will also be working on our ability to communicate what you’ve learned to a larger audience. Several years back, Dr. Olivia Judson published a fantastic pop science book about sexual behavior in the animal kingdom called Dr. Tatiana’s Sex Advice to All of Creation. In this book, Dr. Judson wrote under the guise of Dr. Tatiana, a kind of Dr. Abbey or Dan Savage advice columnist to the animal world, and as this character, she doled out all kinds of fantastic and salacious information about animal sexual behavior in the context of evolutionary biology. It has limitations: namely, it needs updating, and it needs broadening to behavior topics beyond just sex. This is where you come in:

Your assignment this semester will be to write an essay about some kind of non-sexual animal behavior in the advice column style of Dr. Tatiana (Judson, 2002). The essay should be 5-6 manuscript pages long, plus references; single- spaced, one-inch margins, 12 point Time New Roman or 11 point Arial font. Your essay should be accessible to the average pop science reader while at the same time contain primary literature sources and be well-seated and CURRENT (2010 and more-recent references) within the fields of animal behavior and evolutionary biology. You will receive a detailed assignment and rubric for the essays. Due dates for essay assignments are noted in the weekly breakdown section of the syllabus.

**Zoo Project Assignment:**

Part of the goal of this course is to get you to think like a scientist. In order to accomplish this, you will design and carry-out a mini-behavior project at Zoo Atlanta. We have free access in our course and will be working with Zoo staff to answer questions of importance and interest to ourselves and the Zoo’s researchers.

Your assignment this semester will be to observe an organism (or set of organisms) at Zoo Atlanta and generate a research proposal (2-page, single- spaced, one-inch margins, 12 point Time New Roman or 11 point Arial font) which includes a research question, hypothesis, and prediction related to a particular behavior; a plan of study (how you propose to collect data; and 3+ research references as background. You will then pilot your mini-study, analyze/summarize the data, and write a 1 page (including a single figure) summary of your findings. Due dates for the sub-assignments here are noted in the weekly breakdown section of the syllabus.

**Exams:**

Exams will be mainly short essay with some fill-in-the-blank and multiple-choice questions. The exams will require you to use critical thought to analyze data. That is, exams assess your understanding of concepts and ability to explain and apply those concepts, rather than your ability to memorize facts.

Note that Take-Home exams will be available online and only available once. That means that once you open your exam, you will not be able to close your exam and open it again. *I repeat, once you start your exam you MUST finish it in that sitting*. Exams should take about an hour and a half to two hours. So, plan on taking your exam when you have that much time to sit and spend writing your exam. Taking exams in this format (open book, open note, at your leisure, in an environment of your choosing) is a privilege and will be changed to a traditional class exam if I think there’s any form of cheating occurring. Cheating includes opening the exam and not finishing it in one sitting, discussing the exam with other students, as well as plagiarizing or copying and pasting.

**Late Assignment and Missed Exam Policy:**

No make-up exams will be administered unless you have a college approved absence. In which case, you will need to make prior arrangements to take the exam earlier. I will NOT accept late assignments unless otherwise noted or arranged with BEFORE the due date. There will be NO makeups for in-class assignments unless you have a dean or doctor approved absence.

**Timeliness and the End of Class:**

This is a 1hr and 15 min class. If you have a real problem getting here on time (and by real I mean a class conflict), please come talk to me. Also, one of my biggest pet- peeves is when people start getting ready to go before class is finished. The closing of books, capping of pens, and zipping of bags all tell me that you’ve left the building before I’ve dismissed class and are extremely disrespectful and annoying. I am punctual; I will always let you out on time.

**Acceptable Behavior/Etiquette Policy:**

You are expected to be engaged and respectful of others. Cell phones rings and text alerts must be turned off - mute those devices. Please keep in mind, when on campus or not, you represent Georgia Tech, and the guest speakers and access we have to resources can be cut off due to misbehavior.

**Technology Usage Policy:**

I encourage you to bring your laptops, smartphones, tablets, etc. to class to take advantage of on-line research tools during class time. However, I am fully aware of the constant temptation to do things other than class work on these devices during class time. *To prevent this abuse, there will be a 5-point grade deduction without notification for any “technology infractions”.* These infractions include, but are not limited to, on-line shopping, texting, on-line chatting, Facebook, non-essential e-mail checking, and any other activity not related to this class. *There will be no verbal warnings and no exceptions*, so wait until after class to send that text.

**Tutoring:** Georgia Tech offers a variety of free learning and communications support options. Learn about free tutoring resources at www.success.gatech.edu or at the Center for Academic Success’s tutoring desk in Clough Commons 273. For assistance with revising written work, consult the Communications Center (Clough Commons 447 or commlab.gatech.edu).

**Honor Code:** All students are expected to abide by the Academic Honor Code, which can be viewed online at www.honor.gatech.edu. Plagiarism is the unattributed use of the words of ideas of others; plagiarism on any assignment be referred to the Office of Student Integrity for adjudication. If you have any questions regarding your assignments and plagiarism, I encourage you to consult me before you submit the assignment. Cell phones must be turned off during exams, and any student found with a cell phone that is not off during an exam may be referred to the Honor Council.

**Learning Accommodations:** If needed, we will make classroom accommodations for students with disabilities. These accommodations should be arranged in advance and in accordance with the Office of Disability Services ([http://www.disabilityservices.gatech.edu](http://www.disabilityservices.gatech.edu/)).

**Course Schedule**

| **Week** | **Date** | **Topic** | **Pre-Class Reading** | **Assignment &**  **Due Dates** |
| --- | --- | --- | --- | --- |
| **1** | **May 14 M** | **Course introduction**  **Science of Animal Behavior** | Ch. 1 |  |
|  | **May 16**  **W** | **Methods in Animal Behavior** | Ch. 2 |  |
|  | **May 18**  **F** | **Methods in Animal Behavior** | Ch. 2,  Judson p. 9-39 | Essay topic due Sunday, 5/20 by 11:59 pm (T2) |
| **2** | **May 21**  **M** | **Evolution and Animal Behavior** | Ch. 3  Judson p. 75-92 |  |
|  | **May 23**  **W** | **Evolution and Animal Behavior** | Ch. 3 | 2 paragraph summary of paper due by class (T2) |
|  | **May 25**  **F** | **Evolution and Animal Behavior** | Ch. 3 | Start Observations in the Zoo; thinking of question |
| **3** | **May 30**  **W** | **Behavioral Genetics** | Ch. 4, Judson p.170-211 |  |
|  | **June 1**  **F** | **Behavioral Genetics** | Ch. 4 | “Dear Dr.” Letter Due by 11:59 pm (T2) |
| **4** | **June 4**  **M** | **Sensory Systems and Behavior** | Ch. 5 |  |
|  | **June 6**  **W** | **Sensory Systems and Behavior** | Ch. 5 | Annotated bibliography for 5 sources & 5 other papers due by 11:59 pm (T2) |
|  | **June 8**  **F** | **Sensory Systems and Behavior** | Ch. 5 | Take-Home Exam 1 DUE by Sunday 11:59 pm |
| **5** | **June 11**  **M** | **Communication** | Ch. 6 |  |
|  | **June 13**  **W** | **Communication** | Ch. 6 | Draft Paper due 11:59pm (T2) |
|  | **June 15**  **F** | **Communication**  *Dr. Mendelson, Zoo Atlanta*  *Guest Lecture* | Ch. 6 |  |
| **6** | **June 18**  **M** | **Learning and Cognition** | Ch. 7 | Peer Reviews to 2 partners due by class |
|  | **June 20**  **W** | **Learning and Cognition** | Ch. 7 |  |
|  | **June 22**  **F** | **Learning and Cognition** | Ch. 7 | Dear Dr. Paper DUE by Sunday 11:59 pm |
| **7** | **June 25**  **M** | **Foraging and Antipredator Behavior**  **Project Check-In with Zoo** | Ch. 8, Ch. 9 | Final topic and species due 11:59pm (first-come, first-serve!) |
|  | **June 27**  **W** | **Foraging and Antipredator Behavior** | Ch. 8, Ch. 9 |  |
|  | **June 29**  **F** | **Foraging and Antipredator Behavior** | Ch. 8, Ch. 9 | Take-Home Exam 2 DUE by Sunday 11:59 pm |
| **8** | **July 2**  **M** | **Dispersal and Migration** | Ch. 10  Judson p. 122-132 |  |
|  | **July 6**  **F** | **Remote: Proposal Working Time** |  | Zoo Project Proposal due Sunday 11:59 pm (T2) |
| **9** | **July 9**  **M** | **Habitat Selection, Territoriality, and Aggression;**  **Sociality** | Ch. 11, Ch. 15 |  |
|  | **July 11**  **W** | **Habitat Selection, Territoriality, and Aggression;**  **Sociality** | Ch. 11, Ch. 15 |  |
|  | **July 13**  **F** | **Habitat Selection, Territoriality, and Aggression;**  **Sociality** | Ch. 11, Ch. 15 |  |
| **10** | **July 16**  **M** | **Mating Behavior and Mating Systems** | Ch. 12, Ch. 13 |  |
|  | **July 18**  **W** | **Mating Behavior and Mating Systems** | Ch. 12, Ch. 13 | Zoo Data Summary due in class (hand-graphed on paper) **due in class** |
|  | **July 20**  **F** | **Mating Behavior and Mating Systems** | Ch. 12, Ch. 13 |  |
| **11** | **July 23**  **M** | **Parental Care** | Ch. 14 | Zoo Full Project Summary due11:59 pm Tuesday (T2) |
|  | **July 27 (Friday)** | **Final Exam, 8am-10:50am** |  |  |

**Changes:** Course content may vary from this syllabus to meet the needs of this particular class. Students will be notified in class by the instructor when adjustments to this syllabus are required.