Animal Behavior Lab (BIOL 343L) Fall 2018

M 1:40-4:40
RITA 261

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To really understand animals and their behavior, you must have an esthetic appreciation of an animal's beauty. This endows you with the patience to look at them long enough to see something. Without that joy just in looking, not even a yogi would have the patience.
-Konrad Lorenz

About the course: Science is an inherently creative process. Too often, however, undergraduate science labs focus on tools and technology – methods necessary to answer scientific questions – without any attention to or training in how to pose interesting questions in the first place.

In this lab, then, we will focus on the **process of generating interesting questions, posing hypotheses to address these questions, and designing experiments to test our hypotheses.** Animal behavior is an ideal field for such training: first, our species has been posing questions about the behavior of other species for as long as we've been human, so our task here is simply to refine that instinct in a scientific context; second, while the study of animal behavior often does involve fancy tools and technology, it is also possible to answer significant scientific questions with little more than pencil and paper. We do not, therefore, need to waste lab time learning how to run machines, and can focus on the creative processes of science.

Course goals:

- Learn how to:
  - generate novel and significant scientific questions;
  - generate hypotheses;
  - design experiments;
  - collect and interpret behavioral data;
  - construct scientific arguments;
- Improve:
  - ability to read and interpret primary scientific literature;
  - oral and written communication skills.

Texts: There is no text for this course; readings will be assigned from the primary literature.

Grading:
This course uses competency-based grading – that is, your grade is based on the degree to which you demonstrate competency across the material and activities in lab. Use the table on the next page to determine your grade.

Shown are "full" letter grades only; +/- grades will be given when not all of your scores fall in the same column. For example, if grades fall in a mix of 2 adjacent columns, such as a mix of As and Bs, a student with mostly As and 1 B would receive an A-; a student with mostly Bs and 1 A would receive a B+. If grades fall in nonadjacent columns, they are averaged (an A and a C would be the equivalent of a B, for example).

	A	B	C	D
Active collaboration in discussions, experimental design & data collection (in lab & in Group Projects)	Actively contribute to all labs; 10 hrs Group Data collected & entered on time	Actively contribute to all labs; 9 hrs Group Data collected & entered on time	1 lab missed OR 7-8 hrs Group Data collected & entered on time	2 labs missed OR 5-6 hrs Group Data collected & entered on time
Reading quizzes	Average > 90%	Average > 80%	Average > 70%	Average > 60%
Data analysis assignments (snapping shrimp; GP halfway)	Both meet all specifications	1 missed spec (across both)	2-3 missed specs (across both)	4-5 missed specs (across both)
Group project (protocol, data analysis & presentation)	Meets all specifications	1-2 specs missed	3-5 specs missed	6-7 specs missed
Journal club "presentation"	Meets all specifications	1 spec missed	2-3 specs missed	4-5 specs missed

Nobody's perfect: And stuff happens. So everybody gets 2 "not perfect / stuff happens" tokens. Each token can be used to:

- Erase 1 missed lab
- Replace 1 hour of missed or late or inaccurate group project data
- Raise quiz average 2% points
- Get 1 missed specification removed from an assignment

****About collaborative discussions, experimental design & data collection**: None of the laboratory work in this class is 'cook-book' – my goal is for your lab to mimic the professional study of animal behavior as much as possible. You will (with guidance, of course) generate your own questions and experimental protocols. So the full participation of everyone is crucial – you will need to be awake and feeling creative! Attendance is mandatory, but not sufficient.

About data collection and honesty: We're scientists; we do the work we do because we want to know the answers to questions. And as scientists, we're often very critical of each other's work, because we want to get the right answers, and so if we think that someone is going about the work in the wrong way – and getting the wrong answers – we speak up.

But at the same time, we operate in a culture of trust: much though I might disagree with the science of some of my colleagues (and even friends!), I absolutely trust that they are being honest in their reporting of their methods and data. It should be obvious, then, that making up data is completely unacceptable! It violates our trust as fellow scientists, and it is completely antithetical to why we are engaged in this work in the first place (you don't figure out how the world works by making up data).

For a scientist, there is no more egregious form of academic dishonesty than making up data. In this class, such behavior will result in a failing grade for the class, and a report to the Honor Board. **Please note:** If you are not familiar with the College of Charleston Honor Code, you can find it in the student handbook: http://studentaffairs.cofc.edu/honor-system/studenthandbook/index.php

About lab safety: The College of Charleston School of Sciences and Mathematics Safety Policy and Procedures is attached. Although we do not use chemical or biological hazards in this lab, it is important to be familiar with safety procedures in the event that unplanned exposure occurs (for example, due to use by another lab scheduled in the same room). Please review the policy; if you have any questions, we will discuss them on the first day of lab.

We use live animals in Animal Behavior laboratories. You are expected to handle these animals with utmost care. Careless or injurious treatment of animals is not acceptable. Accidents happen, however – it is impossible to work with live animals without some risk of harm. Please let me know immediately if an animal appears injured, and do not hesitate to ask questions if you are unsure how to handle an animal in this lab.

About Attendance: You are adults and can decide how to make use of your time; the grade consequences of missing lab or data collection can be found in the table under Grading. Because lab activities often build from day to day, there is no opportunity to 'make-up' missed labs.

Lab schedule:

8/27 Orientation, Introduction to behavioral observation, data collection

9/3 Behavioral data collection practice
***online reading quiz due (Altmann pp 235-262) by 9am 9/3*

9/10 Question -> Hypothesis -> Experiment: snapping shrimp
***online reading quiz due (Altmann pp 227-235) by 9am 9/10*

9/17 Data collection: snapping shrimp

9/24 Data analysis workshop
Introduction to Group Projects

10/1 Field data collection: Bird Boldness
Snapping shrimp exp. 1 data analysis due by 9am 10/1

10/8 Group Project planning workshop (Question -> Hypothesis -> Experiment)
Group Project reading quiz due
Final protocol due midnight Friday, 10/12

10/15 Lab meeting/journal club 1‡ [GP data collection on own time]

10/22 Lab meeting/journal club 2‡ [GP data collection on own time]

10/29 Lab meeting/journal club 3‡ [GP data collection on own time]

11/5 ***FALL BREAK***

11/12 Lab meeting: preliminary data share [GP data collection on own time]
GP halfway data analysis due by 9am 11/12

11/19 Lab meeting/journal club 4‡ [GP data collection on own time]

11/26 Group Project data workshop

12/3 Data analysis presentations
presentation files due by 9am 12/3

‡ *You will be a presenter at 1 of the 4 "journal clubs". Your article is due by 9am Friday before your presentation day.*

And now, this:

As per College of Charleston Policy 7.6.10, the following information must now appear on all course syllabi. Some of this has already been discussed above; I have a hard time imaging why you'd be interested in the rest of it, but rules are rules, so here goes.

3.1 Course Title, Course Number, and Section Number

See top of pg. 1

3.2 Course Prerequisites or Co-requisites

Prerequisites = BIOL 111/111L, BIOL 112/112L, BIOL 211/211D, BIOL 305

Pre- or Co-requisite = MATH 250, BIOL 343

(But you're all already in the class, so you knew this, right?)

3.3 Semester or Academic Term

See top of pg. 1

3.4 Faculty Name/Instructor of Record and Contact Information

See top of pg. 1

3.5 Course Meeting Places and Times

See top of pg. 1

3.6 Faculty Office Hours

See top of pg. 1

3.7 Instructional Objectives and Student Learning Outcomes

I think Instructional Objectives roughly correspond to Course Goals, pg. 1. As I understand them, Student Learning Outcomes (or SLOs, if you like the jargon) are supposed to be a short list of what you'll learn in this class. While it dismays me to think that learning in any class can be reduced to a short bulleted list, here goes:

- Generate hypotheses with respect to the function of animal behavior;
- Plan and implement experimental designs to test hypotheses of function in animal behavior;
- Identify and implement appropriate data sampling criteria for quantifying animal behavior;
- Analyze and present data to address hypotheses with respect to function in animal behavior.

3.8 Attendance Policies

See About Attendance, pg. 3

3.9 Grading Policy

If this refers to how grades are calculated, see Grading, pg. 2. Otherwise, my policy is to grade as carefully and fairly as I can. If you ever have any questions about any of your grades, please see me.

3.10 Required and Optional Textbooks, Equipment, and Technology

See Texts, pg. 1. Note that data analysis requires access to a data analysis program; Minitab is recommended, as it is what you used in MATH 250 and is

available on campus computers. However, if you are accustomed to using a different program, that's probably fine – see me to be sure.

3.11 Accommodations for Students with Disabilities

Please let me know early in the semester if you need extra time on exams or other accommodations. You can find information about our Center for Disability Services here: http://disabilityservices.cofc.edu/

3.12 Academic Integrity Statement(s)

See About data collection and honesty, pg. 3. "Academic Integrity" is a fancy way of saying honesty. I prefer to assume that folks are fundamentally honest (and generally I actually find this to be true), and let's face it, a dishonest person is not going to be persuaded to be honest just because of some statement on a syllabus. But I need to have a statement, so here goes: be honest. I know sometimes stress can make you do things you wouldn't otherwise do, and you might tell yourself that 'it's just a little cheating', but being honest is like being pregnant: you are or you aren't. Your integrity is worth a lot more than any grade; don't turn yourself into someone you can't respect for an exam or assignment you won't even remember in a couple of years.

Any cheating, plagiarism, etc. will be reported to the Honor Board. If you are not familiar with the College of Charleston Honor Code, you can find it in the student handbook:
http://studentaffairs.cofc.edu/honor-system/studenthandbook/index.php

3.13 Program-Specific Elements

I'm not sure what this refers to, so until told otherwise, I'm not going to include anything here. (It's possible that this refers to things like the School of Science and Math Safety Policy and Procedures, which is appended below.) In the first lab, I am also required to ask you to sign a statement to the following:

I have read and fully understand the rules, safety practices and regulations governing my conduct in the laboratory. I will abide by these rules and regulations for my own safety and that of others. I understand that failure to follow the rules and safety practices presented may result in dismissal from the laboratory session (receiving no credit for the experiment).

So be ready for that.