

Animal Behavior Lab (BIOL 343L) Fall 2016

M 2:30-5:30
HWEA 302

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Office Hours: after lab (or by appointment)

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:

Collaborative experimental design & data collection	50%
Data analysis assignments (2 @ 10% ea)	20%
Reading quizzes (2-4)	10%
Independent Project	20%
Planning document (5%)	
Oral Presentation (15%)	

About collaborative 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.

Collaborative experimental design & data collection will be graded as in a grading contract. There are a total of 10 opportunities: experimental design and data collection in the introductory activity (book carrying), 2 snapping shrimp experiments, Shark Shallows, and the Group Project. Active engagement in experimental design for each yields 1 “CED&DC” point; accurately collecting the required amount of data for each also yields 1 “CED&DC” point.

“CED&DC” points	“CED&DC” grade
10	A
9	B
8	C
7	D
<7	F

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.

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.

Some of our labs will take place at the SC Aquarium. Following all Aquarium policies and being respectful of staff and other visitors is, of course, required.

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 Attendance: You are adults and can decide how to make use of your time. You obviously cannot participate in collaborative experimental design or data collection when these things happen in lab and you are not there, so missed labs on those days will cause the expected reduction of CED&DC points. Because lab activities often build from day to day, there is no opportunity to 'make-up' missed labs.

Grade Scale:

93.5 – 100%	A	73.5 – 78.49%	C
90.0 – 93.49%	A-	70.0 – 73.49%	C-
88.5 – 89.9%	B+	68.5 – 69.9%	D+
83.5 – 88.49%	B	63.5 – 68.49%	D
80.0 – 83.49%	B-	60.0 – 63.49%	D-
78.5 – 79.9%	C+	<60.0	F

Lab schedule:

- 8/29 Orientation, Introduction to behavioral observation, data collection
- 9/5 Questions, hypotheses & experimental design: my snapping shrimp experiment
****online reading quiz due (Altmann pp 227-235)**
- 9/12 Data collection: my snapping shrimp experiment
****online reading quiz due (Altmann pp 235-262)**
- 9/19 Data analysis & interpretation: my snapping shrimp experiment
Questions, hypotheses & experimental design: your turn!
****online reading quiz due (TBD, background)****
- 9/26 Data collection: your snapping shrimp experiment
- 10/3 ****Snapping Shrimp Data analysis & interpretation due online****
Introduction to group & independent projects
Shark Shallows: Questions, hypotheses, experimental design
- 10/10 [Shark Week (data collection)]
- 10/17 Group Projects: Questions, hypotheses & experimental design
****online reading quiz due (TBD, background)****
****Shark Shallows Data analysis & interpretation due online****
- 10/24 [Group Project data collection begins;
Individual meetings for Independent Projects]
- 10/31 [Deadline for Individual meetings for Independent Projects]
[Continue GP Data collection]
- [Fall Break]
- 11/14 [GP & IP data collection]
- 11/21 [GP & IP data collection] (Short week = Thanksgiving Break)
****GP data due 11/21, 5pm****
- 11/28 Group Project data summary
- 12/5 Independent project presentations, Final projects due on Oaks

The vertical lines roughly indicate project boundaries (more or less). The process for each starts with generation questions and hypotheses, then designing the experiment to these hypotheses, then collecting the data, and finally analyzing the data. The flow of the lab goes like this: after a very short introductory activity (8/29), you'll follow me through this process (my snapping shrimp experiment); then with the whole class working as a group, we'll go through this process 2 times (your snapping shrimp experiment and Shark Shallows, for examples of designing both manipulative and correlative studies); then working in small groups you'll go through this process (Group Projects); and then finally, you'll do it on your own (Independent Projects).

[] = weeks we won't be meeting as a group in lab at 2:30 on Monday – you are responsible for collecting data on your own (according to schedules worked out with other students) during these weeks. Note that you are also responsible for scheduling individual meetings with me to discuss your Independent Project plans.

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 imagining 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. 2

3.9 Grading Policy

If this refers to the break-down of how grades are calculated, see Grading, pg. 1, and Grade Scale, pg. 3; you might also want to peruse the information on grading for Collaborative Experimental Design & Data Collection, 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. 2. “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.

COLLEGE of CHARLESTON

SCHOOL OF SCIENCES
AND MATHEMATICS

SAFETY POLICY AND PROCEDURES

The School of Sciences and Mathematics of the College of Charleston understands that the safety of our students, staff and faculty is of paramount importance. Engendering a safety culture is an important part of our mission in teaching and doing science. Each department, course of instruction, or research lab may require higher standards or procedures. The policies and procedures set forth below are understood to be minimum requirements across our departments.

In this document, the term "laboratory" is meant for a work space/facility where chemicals, biological agents, or equipment is used for research and/or instruction.

No one (student, staff, faculty, or visitor) will be allowed in a laboratory (teaching or research) to perform experiments or where experiments may be in progress unless these regulations are followed.

Students dismissed from a teaching lab due to violations of the safety procedures will not be allowed to re-enter the laboratory until authorized to do so by their supervisor (instructor) and, in the case of research laboratories, by the department chair or designee. Any course work missed because of a violation of these guidelines cannot be made up at another time (or by an extension of the lab period) and will be treated as an unexcused absence.

1. You are responsible for knowing the biological, chemical, electrical, ergonomic, mechanical, and physical hazards associated with the equipment and materials that are being utilized in the laboratory. Listen to all instructions and ask questions about that which you do not understand.
2. Know the location of safety equipment: telephones, emergency shower, eyewash, fire extinguisher, fire alarm pull.
3. Know the appropriate emergency response procedures. If there is an injury or emergency, call 953-5611.
4. Do not work alone in the laboratory if you are working with hazardous materials or equipment.
5. Use hazardous chemicals, equipment, and biological agents only as directed and for their intended purpose.
6. Do not engage in horseplay, pranks or other acts of mischief while in lab.
7. Drinking, eating, and application of cosmetics is forbidden in laboratories where chemicals or biohazards are present. Smoking is forbidden in all College buildings.
8. Appropriate personal protective equipment shall be worn. The dress code for laboratory work when using chemicals, biological or physical hazards, or when instructed to do so by the laboratory supervisor is as follows:
 - a) Wear safety glasses or goggles at all times.
 - b) No exposed skin on arms, legs or torso.
 - c) Wear lab coats or other approved protective garments.
 - d) Wear gloves or other personal protective equipment (PPE) as directed by the instructor or mandated by prudent practices based on the chemicals being handled. If in doubt, wear appropriate gloves. Latex is not permitted. Avoid cross-contamination.
 - e) Remove PPE (gloves and lab coat) when exiting the laboratory.
 - f) Wash your hands, even if gloves were used, before leaving a lab where you did any lab work.

- g) Closed toe shoes are required. The heel and top of foot must be covered. High heeled shoes, sandals, and perforated shoes are not permitted.
- h) Confine long hair and loose clothing.

9. Inspect equipment or apparatus for damage before adding chemical reagents or biological samples or energizing electrical equipment. Do not use damaged equipment.

10. Never remove chemicals, biological samples, or laboratory equipment from a lab without proper authorization.

11. Presume that all chemicals and biological samples used in the laboratory are hazardous for you and the environment, unless instructed otherwise.

12. Never leave an experiment unattended unless proper safety precautions are in place.

13. Read all labels on chemicals twice before using them in the lab. Read all instructions twice for the operation of any equipment or machinery.

14. Properly and safely dispose of all waste materials.

15. Treat sharps and broken glassware containers carefully.

a) Broken glass should be disposed of in properly marked safety containers. All sharps (needles, razor blades, etc.) used for any purpose must be disposed of in specially labeled SHARPS containers.

b) Do not place contaminated glass in the broken glassware container. Consult your supervisor.

c) Waste chemicals and contaminated PPE should be discarded as directed.

16. When using a reagent, replace the lid immediately. Never return unused reagents to stock bottles. Take only the amount needed for your experiment.

17. All chemicals and biological samples/media are to be disposed of in appropriately labeled containers. Specific instructions for each material will be provided. Pay attention to waste container labels before adding the material to be discarded.

18. Use good personal hygiene. Keep your hands and face clean. Wash hands thoroughly with soap and water after handling any chemical or biological agent.

19. Keep the work area clean and uncluttered with chemicals and equipment. Clean up the work area on completion of an operation or an experiment. Before leaving the laboratory, you are responsible for making sure your lab area is clean and organized.

20. Never store a chemical or biological specimen in an unlabeled container.

20. Always have your College of Charleston identification and insurance information with you when working in a laboratory. MedicAlert identification must be worn if you have any potential life-threatening chemical sensitivities or medical conditions.

21. Report any accident or injury, however minor, to your teaching assistant, instructor, or lab supervisor immediately. An accident report form must be completed and forwarded to the department chair, dean, and to the Director of Environmental Health and Safety.

If you have questions/concerns about safety in the lab please first consult your instructor. If these are not answered, please see the department chair. Finally, you may consult the director of Environmental Health and Safety, Randy Beaver at 3-6802 or beaverr@cofc.edu

Adopted: March 7, 2012

CougarAlert

The College of Charleston has an agreement with the Blackboard Connect Inc. [formerly The NTI Group, Inc. (NTI)] to use its Connect-ED communication software to provide an emergency notification system that is capable of reaching students, faculty, staff and parents within minutes of a campus crisis. This system is called **CougarAlert**.

Information for Students

The CougarAlert emergency notification system will contact up to six phone numbers for the student. Students may include family member numbers in their address and phone number information.

All students should log onto [MyCharleston](#) to review their address and telephone information and update as needed.

To access the address and telephone information, follow these steps:

1. Log on to [MyCharleston](#)
2. Click on the Academic Services tab
3. Click on the Banner Self-Service link in the third column
4. Click on the Personal Information link
5. Click on the Update Address and Phones and Cougar Alert link

The CougarAlert system will pull the phone number in the following order – cell phone with text messaging option, cell phone without text messaging option, residence hall room phone number, mailing phone number, home phone number, parent phone number and parent 2 phone number.

If you do not have one of these numbers in your student record, the system will select the next number on the list. To avoid issues related to timely communication of emergency messages to the proper places, every student must update his or her contact information in [MyCharleston](#) with current accurate information.

CougarAlert Display Information

When you receive an emergency message from the College of Charleston's CougarAlert System, the return e-mail address will be displayed as cougaralert@cofc.edu, and Caller ID will be displayed as 843.725.7246 (this is the College's Emergency Information Hotline).

Testing and Implementation

Testing will be conducted each semester to verify all systems are operating properly. The campus community will be notified via e-mail and web page postings when testing of the system will be conducted.

Blackboard Connect Software

[Blackboard Connect](#) is an emergency communication software that sends notification before, during and after an emergency. With this new system, the College will be able to communicate in many modes, including voice messages to home, work and cell phones; text messages to cell phones, PDAs and other devices; written messages to e-mail accounts; and messages to teletypewriters and telecommunication devices (TTY/TDD) for the hearing impaired. In combination with our existing communications methods and emergency response plans, this new notification system will significantly enhance the College of Charleston's ability to maintain a learning environment in which students are safe, secure and comfortable.

In an emergency, communications to the campus will be issued in the following priority order:

1. Message to the [Blackboard Connect](#) Emergency Notification System (phone and e-mail).
 2. Recorded message to the College's Emergency Information Hotline, 843.725.7246.
 3. Update to the Website.
 4. Printed update sheets to be distributed and posted on campus (if necessary).
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The CougarAlert system will only be used to notify you in the event of a campus crisis or emergency.