

Biology 354 Lab, Fall 2014

Animal Behavior Laboratory

Course Description: This laboratory course is intended to further your understanding of central concepts in animal behavior using hands-on, group research projects designed and conducted by you. During the first several weeks of class, we hope to give you the knowledge and tools needed to successfully complete a semester-long research project, which will be presented to your peers and the local scientific community at the end of the semester.

The specific goals of this laboratory are as follows:

- Gain practical experience in directly observing and recording animal behaviors.
- Apply the scientific method by developing testable hypotheses, designing and performing experiments, and analyzing and interpreting the results.
- Clearly and concisely report findings to your peers, in both oral and written form.
- Gain a working knowledge of how to use the library's resources, both online and print, and learn how to successfully find relevant primary scientific literature.
- Learn to critically read, discuss, and critique relevant scientific journal articles
- Approach these objectives within an evolutionary context to understand the broader significance of basic research.

General Course Policies and Etiquette:

1. **Respect the animals that you are working with.** This class makes use of live animals to facilitate learning through behavioral observations. We expect that all animals used in experiments will be treated with respect and cared for appropriately. If you have any questions or concerns regarding the care of the animals, talk to your instructor.
2. **No eating or drinking in the laboratory.** We expect that standard laboratory safety procedures will be followed throughout the semester; therefore eating or drinking will not be allowed in the classroom. This is a long class (3 hours), so you will be allowed to take short breaks throughout the class to step into the hall to take a drink or eat a snack. Please leave all food or drink in your bag while in the lab.
3. **Respect other group's research projects, space, animals, and materials.** In this course, groups will work together to conduct research on a specific project of their choosing. Please respect the space and materials that other group's have claimed as their own. Also, be careful not disturb other group's research animals without their knowledge and consent.

Online Resources:

Library guide: An online library guide created specifically for this course can be found at the following url: <http://instr.iastate.libguides.com/biology354lab>. Here, you can find tips on how to search for books, links to high quality journals focusing on animal behavior, and suggested article databases that will search many journals for relevant articles based on keyword searches. Check this site out and visit it often!

Blackboard Learn resources:

- **Announcements:** Watch for announcements on a regular basis. Your TA will post reminders and changes in the schedule here.
- **Course Content:** The syllabus, all assigned reading material, and all lab activities will be available prior to lab. You are responsible for any material posted on Blackboard throughout the semester.
- **Groups:** Once you have determined the group members for your research project, create a discussion group on Blackboard so that you can discuss ideas, assign each other tasks, and share work/data easily. Only members of your group will be allowed access to your discussions.
- **Discussions:** Post questions on Blackboard that may be relevant to the entire class, or ask for your peer's input on troubling issues you may run into while doing research.
- **My Grades:** All your grades will be posted on Blackboard and kept as up-to-date.

- **Send Email:** Send private email messages to the other members of your class or to your TA or instructor.

Special Needs: Any student who needs accommodation based on a disability should contact me and the Disability Resources Office (at 515-294-7220 in room 1076, Student Services Building) to coordinate reasonable accommodations.

Attendance: During the first several weeks of this course, we will discuss material that will provide you with the knowledge and tools necessary to complete your research project. In order to ensure that all students have obtained this basic training and understand the unique structure of this course, attendance to these labs during the scheduled time is MANDATORY. If you must miss a class for a valid reason (e.g., sudden illness or family emergency), please inform the TA prior to class. **Each unexcused absence will result in a deduction of one full letter grade from your final score.** Mandatory labs are listed on the semester schedule below. We will follow this weekly schedule closely.

Once you begin your research projects, you and the members your group can determine what times you will meet to complete your research projects. Attendance to lab during the scheduled class time is not mandatory during these weeks, but progress on your project is still expected during this time.

Grading: Your final grade in the course is completely separate from the lecture portion of the course and will be determined by using a 90/80/70/60 scale.

Science is a nearly always a cooperative endeavor, thus you will work in groups throughout the entire semester. You will, however, be evaluated *individually* on the final report and poster presentation based on group and self-evaluations. Group members that did not contribute equally to the group project will receive lower scores. Prior to starting the project, each group will fill out and sign a contract agreeing what duties each member will be responsible for and what expectations each group member must meet. If you do not meet the expectations outlined in your contract, your group members may kick you off the project, at which point it will be unlikely for you to succeed in passing the class. Decisions of this caliber must be discussed with the teaching assistant, who will determine whether or not this is a valid decision.

Submitting work that is not your own is unethical and will not be tolerated. If you are caught plagiarizing (either all of your work or portions of it), you will receive 0 points for that assignment. All group members should check any work that is turned in to ensure that the writing and ideas are original. If you have any questions of what constitutes academic dishonesty, please talk to your teaching assistant. To avoid plagiarism issues, a review of each article referenced in the final report/presentation MUST be turned in with the final version of the final report.

You are expected to turn in your work on time. Late work will have three points deducted each day for late assignments. If you are having difficulty completing an assignment on time, talk with the TA before it is due to negotiate an extension.

Final report: At the end of the semester, a final report on the research project is to be handed in by each group. The report is to be written in a scientific format and must include a *minimum* of 10 peer-reviewed primary literature references. Writing is an important skill for communicating science; therefore poorly written reports that do not follow the requested format will be marked down accordingly. Please use spell-check and grammar-check appropriately and ensure that the report follows the specifications of the rubric in order to receive all possible points. If you need help improving your scientific writing, consult *Scientific Writing and Communication* by Angelika H. Hoffman.

Final poster presentation: At the end of the semester, you will be expected to present your research in the form of a poster presentation to your peers and other members of the local scientific community. This will require you to design a 3' x 3' poster using PowerPoint presentation that adequately explains your experiment,

results, and the broader significance of your project. This presentation will take place during lecture on December 11th. Your attendance is **MANDATORY**.

Extra credit: You have the opportunity to gain 10 extra credit points by attending a departmental seminar that is related to animal behavior and writing a brief (300-400 word) essay that presents a summary of the talk to a lay audience. This can be done at anytime throughout the semester. The Ecology, Evolution, and Organismal Biology Department hosts seminars every Thursday afternoon at 3:45, but you may also seek out seminars from NREM, Entomology, or other departments. View a list of the seminars at:

<http://www.eeob.iastate.edu/seminars/SeminarFall-2013.html>.

Your grade will be based on the following point allocations:

Assignment	Points	Due Date
Behavioral Observations	10	26 or 28 Aug
Group contract	10	16 or 18 Sep
Scientific article review	10	9 or 11 Sep
Background and hypothesis	30	9 or 11 Sep
Experimental design and materials	30	23 or 25 Sep
Experimental update and results-to-date	30	21 or 23 Oct
Final report	100	02 or 04 Dec
Poster presentation	100	10 Dec
GRAND TOTAL	320	

Date	Lab Activities	Due	Homework
26 or 28 Aug MANDATORY ATTENDANCE	Review syllabus, Review the scientific method and how to develop a hypothesis, Honey bee behavior experiment	<ul style="list-style-type: none"> Behavioral Observations 	<ul style="list-style-type: none"> Read: "How to choose a good scientific problem" Determine group project Read: "How to read a scientific article" Purchase lab notebook
02 or 04 Sep MANDATORY ATTENDANCE	Visiting librarian to explain resources, literature search, complete group contract		<ul style="list-style-type: none"> Scientific article review Background and hypothesis
9 or 11 Sep MANDATORY ATTENDANCE	Statistics, experimental design, and graphing techniques	<ul style="list-style-type: none"> Background and hypothesis (min. of 1 page + references) Scientific article review 	<ul style="list-style-type: none"> Read: "Error bars in experimental biology" Experimental design and materials (1 page)
16 or 18 Sep MANDATORY ATTENDANCE	Feedback on experimental design	<ul style="list-style-type: none"> Group contract <p>Experimental design and materials (1 pg)</p>	Read: "The importance of stupidity in scientific research"
23 or 25 Sep	Research project		
30 Sep or 02 Oct	Research project		
7 or 9 Oct	Research project		
14 or 16 Oct	Research project		<ul style="list-style-type: none"> Experimental update and results-to-date
21 or 23 Oct	Research project	<ul style="list-style-type: none"> Experimental update and results-to-date 	
28 or 30 Oct	Research project		
04 or 06 Nov	Research project		
11 or 13 Nov	Research project		
18 or 20 Nov MANDATORY ATTENDANCE	How to orally present research, how to write up results, statistics and graphing consultations		
25 or 27 Nov	NO CLASS-		<ul style="list-style-type: none"> Final report
02 or 04 Dec	Optional poster presentation consultation session	<ul style="list-style-type: none"> Final report due 	

04 Dec		• Digital poster due for printing	
9 or 11 Dec	NO CLASS		
10 Dec MANDATORY ATTENDANCE	Final poster presentations -- during lecture		