

# BIOL 3411 – Introduction to Animal Behavior

## **Instructor:**

Dr. Mark Bee  
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612-624-6749  
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Office Hours: 10:30-11:30am Monday and Wednesday in 312 Ecology, or by appointment

## **Times & Locations:**

Lecture: 495 Hodson, M & W 9:35a-10:25a

Laboratory: 176 Biosci, Sec. 002 W 12:50p-3:50p; Sec. 003 Th 8:30a-11:30a;

Sec. 004 Th 12:50p-3:50p, Sec. 007 Th 4:30p-7:30p, Sec. 006 F 9:35a-12:35p

## **Required Texts:**

Alcock, J. (2005) *Animal Behavior: An Evolutionary Approach.*, 8<sup>th</sup> edition. Sunderland, MA: Sinauer Associates.

Stephens, D. W. and Bee, M. A. (2008) *Exercises in Animal Behavior.* 3<sup>d</sup> edition. St. Paul, MN: University of Minnesota Duplicating Service.

## **Course Description:**

This course provides a broad introduction to animal behavior. As one of the most interdisciplinary fields in all of biology, understanding animal behavior requires an understanding of cell biology, physiology, genetics, development, ecology, endocrinology, evolution, learning theory, and even physics and economics! This course will draw on questions and methods from each of these disciplines to answer what on the surface appears to be a very simple question: "Why is that animal doing that?" The course will review such key topics as feeding behavior, reproductive behavior, perception, learning, animal conflict, social behavior, parental care, and communication. The lecture parallels a required laboratory.

## **Course Objectives:**

The main goal of this course is to provide an overview of biological approaches to behavior. The course emphasizes a comparative approach with the goal of giving students a deeper understanding of the animal behavior they see around them (including the behavior of humans!). In addition, the course provides a foundation for further studies in the life sciences that involve behavior. Through active participation in this course, students should...

- gain a broad understanding of the diversity of animal behaviors as well as the causal mechanisms, development, evolution and function of these behaviors
- learn basic facts and theories about animal behavior and be able to place these into a conceptual framework based on broader biological principles (e.g., evolution by natural selection).
- gain an appreciation for the diversity of approaches to studying animal behavior, from investigations of neural mechanisms to the analyses of broad scale geographic patterns.
- acquire the knowledge and skills required to successfully investigate animal behavior using the scientific method.

- gain an appreciation of science as a *collaborative, integrative, hypothesis-driven process* that attempts to provide answers to questions about the natural world.
- learn to think critically about ideas in order to assess the merits of different views and develop the ability to effectively communicate with others to facilitate the productive exchange of ideas.
- gain the knowledge and background required to attend a professional meeting (e.g., the annual meeting of the Animal Behavior Society) or pick up a professional journal (e.g., *Animal Behaviour* or *Behavioral Ecology*) and follow, understand, and even critique professional talks and published papers in the field of animal behavior.

**Grading (850 points total):**

Approximately 50% of your grade will be determined in lecture and 50% in lab. To do well in the course you must do well in both the lab and the lecture. Students are responsible for all material and procedural matters discussed in lecture and lab, including the assigned readings that accompany each lecture and lab. It is not the instructor's or TAs' responsibilities to repeat material for students who miss lectures and labs.

Grading Scale	
100 to 92.5%	A
less than 92.5% but more than 90%	A-
less than 90% but more than 87.5%	B+
less than 87.5% but more than 82.5%	B
less than 82.5% but more than 80%	B-
less than 80% but more than 75%	C+
less than 75% but more than 65%	C
less than 65% but more than 60%	C-
less than 60% but more than 50%	D
less than 50%	F

- **Exams (300 points; ≈35%).** There will be three 50 point midterm exams each covering approximately one-third of the course (see Course Schedule). A **comprehensive** final exam worth 150 points will be given during finals week.
- **Weekly Web-based Quizzes (100 points; ≈12%).** Each week (for 13 weeks during the semester), you will take an online, web-based quiz. Quiz questions will be taken from that week's assigned readings for the lecture and/or lab exercise. Each quiz will be worth 5-10 points for a total of 100 points during the semester. You will be required to take the quiz using the course WebVista site (see below). **The timed quizzes will be open-book and you may take the quiz anytime between Sunday 8am and Wednesday 12:50pm of the week for which the specified readings are assigned.** You will have 30 or 60 minutes (depending on the length of the quiz) to complete the quiz once you begin. The purpose of these quizzes is to reward students for reading the assigned materials ahead of time. It is strongly recommended that students read the assigned materials and take notes prior to taking the online quiz instead of trying to outsmart the quiz by searching for answers in the book during the quiz. There are no make-up quizzes and failure to take a quiz will result in a score of 0 for that quiz.
- **Lecture Attendance & Participation (25 points; ≈3%).** Educational research data show that students learn better when they attend lectures. As the instructor, my job is to facilitate your learning. As a way to encourage attendance, each student can expect to be **randomly** called on by name several times during the semester. This allows the instructor to get to know each of you, and to assess the average understanding of the material. All students start with 25 participation points and lose points (in 5-pt. increments and as solely determined by the instructor) for unexcused absences or other failures to participate such as leaving class early, sleeping, completing Sudoku puzzles, newspaper reading, bubble-gum blowing and anything else that might disrupt the learning experience of others.

- **Lab Journal (100 points; ≈12%).** In the laboratory, you must maintain a journal that records your activities in each exercise, as specified on page xi of the lab manual. You may not submit journal entries or formal lab reports (see below) for a lab that you did not participate in. Journals will be collected and graded three times during the semester. Your TA may request your journal at any time. **So a word to the wise...keep your journals up to date!**
- **Formal Lab Reports (150 points; ≈18%).** Although everyone is responsible for recording each laboratory in their Lab Journal, the responsibility for formally writing up each exercise will rotate through your group, so that each of you will write up two exercises. *Each student must write up 2 labs* even if this means that there will sometimes be two write-ups from a single lab group. When you act as the "author" of a formal lab report, another member of your group will act as "editor", and this responsibility will rotate as well. Roles (author and editor) can only be changed with your TA's permission. It's not acceptable to say: "I was in a rush so my roommate did the editing." The purpose of having peer editors is for both the author and editor to improve their scientific writing skills. Full details of these lab reports are provided on page xii and in Appendix C of the lab manual. These lab reports should be significant pieces of scientific writing with thoughtful explanations of what you've done, reference to outside sources, and detailed analyses of the data. If you are unfamiliar with library research or using Excel to graph data, please speak to your TA, and they will be happy to direct you toward University resources that you will find helpful. Reports are due 2 weeks after the lab.
- **Independent Project (100 points; ≈12%).** The final four weeks of the laboratory are scheduled for independent projects. Working with a partner you will design, conduct, and write-up a study of your own during this time. **You need to begin planning this project very early in the semester.** You must submit a formal proposal that describes your project. This proposal is due in lecture on **Monday 6 October**. This proposal will be 10% of your independent project grade. Additional details about Independent Projects can be found in Chapter 11 of the lab manual.
- **Lab Attendance & Participation (75 points; ≈9%).** Attendance will be taken in the laboratory sections. In the laboratory you will work in groups of four. You will work with the same four people every week, so you should come to think of yourselves as a "team". Each laboratory covers a different topic in behavior, so it is extremely important that you attend each laboratory to be a good team member. **Each week, you are fully expected to attend the lab section in which you have enrolled.** Due to the large size of the course, we cannot accommodate students who might want to occasionally "switch" labs. **There are no provisions for make-up labs.** In *exceptional* circumstances you may be able to attend another section during a given week. You must arrange to cover any absences *in advance* with your TA. Excused absences should be arranged with your TA *before any absence occurs*. If an unexpected emergency arises you can leave a message at the "Emergency Absence Number" 612-624-8736. This is the Lab Coordinator's number, and you may leave a message at this number 24 hours a day, 7 days a week. Nearly 10% of your overall course grade depends on your active participation in each laboratory section. These discretionary points are assigned by your TA after they, you, and the other members of your lab group evaluate your level of participation. So be prepared to participate! **You will lose 20 of your lab participation points for any unexcused absence from your assigned lab section; this is in addition to points lost due to missing Lab Journal entries and Formal Lab Reports.** (Hint: We REALLY expect you to attend EVERY lab!)

**Additional Course Information:****Ethical Treatment of Animals**

To study animal behavior we must observe and manipulate real animals. Nearly all of the laboratory exercises involve living animals. Students must treat all animals with caution and respect. We will not tolerate actions that recklessly or maliciously cause harm to animals. At the University of Minnesota, oversight on all animal experimentation (including our labs!!) is provided by the Institutional Animal Care and Use Committee (IACUC). As part of your fulfillment of this course, you must read Appendix D in the lab manual and certify that you have read this by your signature. **Blatant failures to comply with the guidelines for the ethical treatment of animals will result in dismissal from the course and a grade of "I" for Incomplete. No exceptions.**

**Late Policy**

Your TA will deduct 10% of the possible points for each day that your work is handed in late. This policy applies to all due dates in the course. Late work interferes with your TA's ability to provide timely, thorough feedback, and your ability to keep up and learn new material.

**TA Contact Information**

Your TA's will set office hours after consultation with you in the first lab. The lab coordinator is Eileen Furlong: her office is 216 Biosci and her phone number is 612-624-8736.

<b>Section/Meeting</b>	<b>TA</b>	<b>E-mail</b>	<b>Office</b>
Section 002 - 12:50p-3:50p W	Alejandro Velez	velez011@umn.edu	307 Ecology
Section 003 - 8:30a-11:30a Th	Jordan Wein	weinx003@umn.edu	309 Ecology
Section 004 - 12:50p-3:50p Th	Lauren Terwilliger	terwi017@umn.edu	180 McNeal
Section 007 - 4:30p-7:30p Th	Lauren Terwilliger	terwi017@umn.edu	180 McNeal
Section 006 - 9:35a-12:35p F	Jordan Wein	weinx003@umn.edu	309 Ecology

**WebVista**

For this course, we will be using WebVista. The page will have copies of the syllabus and other handouts, lectures notes, class datasets announcements, quizzes, and other course materials that may be posted at different times throughout the semester. In this class, our use of technology will sometimes make students' names and U of M Internet IDs visible within the course website, but only to other students in the same class. Since we are using a secure, password-protected course website, this will not increase the risk of identity theft or spamming for anyone in the class. If you have concerns about the visibility of your Internet ID, please contact Dr. Bee for further information. **THIS IS IMPORTANT:** To access the site, your web browser must be properly configured. For more information on configuring your browser, see <http://webct.umn.edu/browser>.

Accessing the Course WebVista Site: You can access the course WebVista site by logging on to your MyU portal at [myu.umn.edu](http://myu.umn.edu). The page should show up under your "To Do List," which will include links to all the WebVista sites to which you have access. When you are finished visiting the site, *be sure to log out to avoid leaving your personal information accessible to others.* If you have trouble logging in, contact 612-301-HELP.

Support: The course instructor and TAs **cannot** be responsible for providing user support for WebVista. If you are having trouble, you must make use of other resources available to you. For help using WebVista, please contact the Technology Helpline at 1-HELP (612-301-HELP) or by email at [help@umn.edu](mailto:help@umn.edu). You can also receive context-specific help by using the online Help link available in the navigation bar for the course. You may also find the following websites helpful:

WebVista Student Support Menu: <http://webct.umn.edu/students/>  
How to Configure Your Browser: <http://webct.umn.edu/browser/>  
Student Online Tutorial: <http://uttc.umn.edu/training/resources/webct/vista/>

### **SafeAssign**

To help insure that each student is given the full credit they deserve for turning in their own work, we will be using SafeAssign, a web-based service that detects plagiarism. In addition to submitting a written copy of your formal lab reports and the independent project report, you will submit an electronic copy of your paper to SafeAssign using WebVista in order to generate an originality report. Your TAs will provide you with more information in lab.

### **Changes to the Syllabus**

Although we would be extremely reluctant to do so, unexpected circumstances may require that we change the details outlined in the syllabus.

### **Definitions of Grades:**

**A** - achievement that is outstanding relative to the level necessary to meet course requirements.

**B** - achievement that is significantly above the level necessary to meet course requirements.

**C** - achievement that meets the course requirements in every respect.

**D** - achievement that is worthy of credit even though it fails to meet fully the course requirements.

**S** - achievement that is satisfactory, which is equivalent to a C- or better (achievement required for an S is at the discretion of the instructor, but may be no lower than equivalent to a C-.)

**F** (or **N**) - Represents failure (or no credit) and signifies that the work was either: (1) completed but at a level of achievement that is not worthy of credit; or (2) was not completed, and there was no agreement between the instructor and the student that the student would be awarded an "I" (see also I).

**"I"** - (Incomplete) Assigned at the discretion of the instructor when, due to extraordinary circumstances, e.g., hospitalization, a student is prevented from completing the work of the course on time. Requires a written agreement between the instructor and student.

### **Disability Services**

Students with disabilities are strongly encouraged to consult with the University's Disability Services (<http://ds.umn.edu>) to learn about ways that your participation in this course can be facilitated.

### **Academic Integrity**

The following excerpt applies to this course and was taken from the webpage of the Office for Student Conduct and Academic Integrity ([www1.umn.edu/oscai/index.html](http://www1.umn.edu/oscai/index.html)):

*“Academic integrity is essential to a positive teaching and learning environment. All students enrolled in University courses are expected to complete coursework responsibilities with fairness and honesty. Failure to do so by seeking unfair advantage over others or misrepresenting someone else’s work as your own, can result in disciplinary action. The University Student Conduct Code defines scholastic dishonesty as follows:*

**Scholastic Dishonesty:** *Scholastic dishonesty means plagiarizing; cheating on assignments or examinations; engaging in unauthorized collaboration on academic work; taking, acquiring, or using test materials without faculty permission; submitting false or incomplete records of academic achievement; acting alone or in cooperation with another to falsify records or to obtain dishonestly grades, honors, awards, or professional endorsement; altering forging , or misusing a University academic record; or fabricating or falsifying data, research procedures, or data analysis.*

*Within this course, a student responsible for scholastic dishonesty can be assigned a penalty up to and including an "F" or "N" for the course. If you have any questions regarding the expectations for a specific assignment or exam, ask.”*

### **Credits**

One conventional credit is hereby defined as equivalent to three hours of learning effort per week, averaged over an appropriate time interval, necessary for an average student taking that course to achieve an average grade in that course.

## **10 Things You Can Do to Increase Learning and Improve Your Grade:**

- 1. Come to Every Lecture.** It's really a simple equation: students who attend lectures get better grades. Period.
- 2. Take Good Notes.** Many students find the online lecture handouts to be a substitute for taking their own notes and writing down key points made during the lectures. *Don't fall into this trap!* Take your own notes and you will learn and retain more of the material for a longer period of time. Your own notes will come in handy when studying for the comprehensive final exam.
- 3. Make Sure You Understand Key Terms.** During the course, you will be exposed to a lot of new terms and definitions. These will often be highlighted in **colored** text in the lectures. Make sure you put effort into learning these terms. This will take some good old memorization on your part!
- 4. Read the Assigned Readings.** Your textbook provides more in-depth coverage of topics than we can afford to cover in lectures. What you learn in this course will benefit by reading the textbook. Material from the textbook is considered fair game for exams.
- 5. Take Advantage of Office Hours.** If you do not understand something from lecture or lab, be sure to meet with your TA or with the Instructor either during their office hours or by appointment. Don't be shy to say that you didn't understand!!! We want to help you learn!
- 6. Take EVERY Online Quiz.** You would be surprised at how many students shoot themselves in the foot by not taking all of the weekly quizzes. They are open book and you have nearly 3 days to complete them. You should consider these to be FREE points!
- 7. Study in Groups.** Without question, one of your best learning resources will be the other students in the course! Take advantage of your peers by forming regular study groups. Since there is no "curve", you are not "competing" with your peers for grades, so be collaborative when it comes to learning!
- 8. Solicit Peer Reviews for Lab Reports.** Use your peers to improve your writing skills. In addition to the official "editor" of your lab reports, ask your lab mates, your roommates, and your friends to read over early drafts of your work so that you can write the best report possible. Real scientists read things for each other all the time! You should do the same.
- 9. Keep Thorough and Up-to-date Lab Journals.** These will be collected three times during the semester without prior warning. Many students needlessly lose points because they do not keep their journals up-to-date.
- 10. Be a Prepared and Active Participant in Your Lab Group.** Nearly 5-10% of your final course grade will be based on how your TA and your lab mates evaluate your participation in the weekly labs and independent projects. So prepare for all labs by reading the lab exercise before class, and then contribute to the group effort during the lab. You and they will be glad you did.

**Course Schedule:**

Week	Date	Lecture	Lab Exercise & Assigned Reading	Lecture Reading	Web Quiz
1	M 01-Sep	No Lecture — Labor Day			Quiz #1 10 pts.
	W 03-Sep	The Science of Animal Behavior	Ch. 1: Observing Animal Behavior	Ch. 1	
2	M 8-Sep	Proximate and Ultimate Explanations		Ch. 2	Quiz #2 10 pts.
	W 10-Sep	Genetic Mechanisms of Behavior	Ch. 2: Gene-Environment Interaction	Ch. 3 pp 55-80	
3	M 15-Sep	Neural Mechanisms of Behavior-1		Ch. 4	Quiz #3 10 pts.
	W 17-Sep	Neural Mechanisms of Behavior-2	Ch. 4: Recording Neural Activity	Ch. 5 pp.143-160	
4	M 22-Sep	Sensation & Perceptual Mechanisms		None	Quiz #4 5 pts.
	W 24-Sep	<b>Exam 1</b>	Ch. 5: Sensation & Perception in Elec.Fish		
5	M 29-Sep	Exam Return & Hormonal Mechanisms		Ch. 5 pp. 160-172	Quiz #5 10 pts.
	W 01-Oct	Animal Learning and Cognition	Ch. 6: Learning and Conditioning	Ch. 3 pp. 88-97	
<b>Monday 6 Oct – Project Proposal Due in Lecture</b>					
6	M 06-Oct	Evolved Behavior: Adaptation & History		Ch. 6	Quiz #6 10 pts.
	W 08-Oct	Optimization Models: Foraging	Ch. 7: Trade-offs in Squirrel Foraging	Ch. 7	
7	M 13-Oct	Sexual Selection-1: Introduction		Ch. 10 pp. 317-329	Quiz #7 10 pts.
	W 15-Oct	Sexual Selection-2: Game Theory & Conflict	Ch. 9: Principles of Sexual Selection – 1	WebVista Handout	
8	M 20-Oct	Sexual Selection-3: Intrasexual Selection		Ch. 10 pp. 329-348	Quiz #8 10 pts.
	W 22-Oct	Catch-Up Day	Ch. 8: Conflict, Escalation, & Assessment	None	
9	M 27-Oct	<b>Exam 2</b>		None	Quiz #9 5 pts.
	W 29-Oct	Exam Return & SS-4: Intersexual Selection	Ch. 9: Principles of Sexual Selection – 2	Ch. 10 pp. 348-366	
10	M 03-Nov	Finish Sexual Selection-4		Ch. 10 pp. 348-366	Quiz #10 5 pts.
	W 05-Nov	Mating Systems	Individual Projects	Ch. 11	
11	M 10-Nov	Parental Care		Ch. 12	Quiz #11 5 pts.
	W 12-Nov	Animal Communication-1: General	Individual Projects	Ch. 9	
12	M 17-Nov	Animal Communication-2: A Case Study		Review Ch. 2	None
	W 19-Nov	Catch-Up Day	Individual Projects		
13	M 24-Nov	<b>Exam 3</b>		None	None
	W 26-Nov	Exam Return & Applied Animal Behavior	NO LABS		
<b>Thanksgiving Break—27-28 November</b>					
14	M 01-Dec	Social Behavior-1		Ch. 13	Quiz #12 5 pts.
	W 03-Dec	Social Behavior-2	Individual Projects		
15	M 08-Dec	Evolutionary Psychology & Human Behavior		Ch. 14	Quiz #13 5 pts.
	W 10-Dec	Catch Up Day/Course Review	NO LABS		
<b>Finals 8:00am-10:00pm Wednesday, December 17 FINAL EXAM (Comprehensive!)</b>					