

BIOL 343.01: Animal Behavior (Fall 2016)**Melissa Hughes**MWF 10:30-11:20
HWWE 217Office/Lab: HWWE 201/101
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Office Hours: by appointment. Doesn't matter when I set office hours, they're guaranteed to be when you have some other class. So if you want to meet, we'll find a time that works for you! You can make appointments by seeing me after class, or via email. And I'm usually in my office or lab; feel free to stop by – if it's not a good time to talk right then, we'll set up a better time.

About the course:

Why does that animal do that? This course is about answering that question.

Animal behavior is an inherently integrative subject: to understand behavior, it is necessary to bring together diverse fields of biology (including physiology, neurobiology, genetics, development, ecology, and evolution) with comparative studies in psychology (including learning, cognition and perception), and an understanding of basic physics and economic theory. We will primarily focus on understanding behavior from a functional evolutionary perspective ('How does selection act on that behavior? What is the function of the behavior, from the animal's perspective?'), but as we will see, to do this, we will need to incorporate and integrate the other perspectives outlined above. We will use both theoretical models and empirical data to draw conclusions regarding the function of behavior.

One of the founders of the field, Niko Tinbergen, proposed that to fully understand the behavior of an animal, you had to answer the 4 questions below. We will focus primarily on the first, but (as true Tinbergenians) we will consider the other three to better inform our understanding.

- | | |
|---|---|
| 1) What is the FUNCTION of the behavior?
How does it affect reproductive success? | 3) How does it DEVELOP ?
Role(s) of genes, environment, & learning? |
| 2) What MECHANISMS underlie it?
How is it controlled and produced? | 4) What is its EVOLUTIONARY HISTORY ?
Identify homologies and/or hypothesize precursors |

Course goals:

- Study the function of behavior from an evolutionary perspective;
- Integrate diverse fields of study, as described above;
- Learn the difference between data and interpretation;
- Construct a scientific understanding of animal behavior through the synthesis of individual empirical examples;
- Interpret and test theoretical models in the study of behavior; &
- Marvel at the wonder and diversity of behavior in a wide array of taxa.

Also:

- Learn how to read and interpret primary scientific literature;
- Learn how to construct a scientific argument.

Texts: There is NO textbook for this class. Readings will be assigned as we move through the material, mostly from the primary literature. Assigned readings will either be provided on Oaks or available through the library on-line journals.

Grading:

Exams		65%
2 'in class' exams	20% each	
Final exam (cumulative)	25%	
Reading quizzes		15%
Behavior Portfolio Project		20%

About Exams: Exams will be short-answer and essay format. Do not expect to simply regurgitate; you may be asked, for example, to interpret data you have not seen previously, using theory learned in class. (We will discuss exam format in more detail as they approach.) *Exams will cover all material covered in lecture and reading assignments as discussed in class.* As noted above, the final exam is cumulative.

About Reading assignments: Reading primary literature is a skill quite different from reading textbooks or other sources: it requires the abilities to attend to detail (sorting out which details are critical), and to think critically – not just absorbing information, but engaging with the text, questioning it. To help you build this skill, you will be reading a few assigned journal articles (probably 4-5), and completing a reading quiz about each article on Oaks before the article is discussed in class. These quizzes are meant to foster deeper, more careful reading of the primary literature, and are 'open article' – in fact, you will need to have the article handy in order to answer the questions.

About the Behavior Portfolio Project: One of the main goals of this class is for you to learn how individual empirical examples can be used to build and support broader understanding. As you might expect, then, I'll be talking about a lot of examples in class, and I'll try, in those examples, to also highlight both taxonomic and behavioral diversity. But I'll fall short of that latter goal – the semester is too short to talk about all the cool animal behavior! So this project serves 2 main goals: (1) give you a chance to connect empirical examples to the broader theoretical issues we'll discuss in class (apply what we're learning, in other words); and (2) give you a chance to explore the behavior of an animal of your choosing. Over the course of the semester, you will find 6 recent (2010 or later) primary literature articles on the behavior of your animal, each relevant to a particular 'unit' in the class. From each, you will select one data figure, and post that figure to the Discussion Board with the following information: What question was the study trying to address; a brief (1-2 sentences) summary of the methods relevant to that data figure; and a summary of the interpretation of the result shown in the figure – how does it help answer the question, and how does it connect to what we've discussed about this topic in class? These will be posted to the Discussion Board so we can all learn from the diversity of examples – also, you will be able to gain additional points on this assignment by commenting on the examples posted by others. (See assignment info for more details.)

About Attendance: I do not take attendance in lecture – you are adults and can decide for yourselves how best to use your time. (Of course, if you miss class, it is your responsibility to obtain notes from a classmate to make sure you have the missed material. I am always happy to answer any questions you may have about the notes you get from your classmates, but please do not ask me to re-teach classes that you have missed. I do not provide lecture notes or slides – see below.)

About PowerPoint slides & lecture notes: Being able to listen and process information while taking notes is a skill necessary for professionals in all fields. In addition, educational research has shown that *having PowerPoint notes available before class tends to inhibit rather than improve learning*. For these reasons, I do not post PowerPoint slides or lecture notes on-line. Figures or tables showing data discussed in class will be posted on Oaks. If you have difficulty taking notes in this class, or if you feel you missed something on a particular slide, please see me – I’m happy to let you review slides at your leisure there. In addition, I am happy to work with you to help you improve your note-taking skills.

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

Animal Behavior: Class Schedule

(Exam dates are very unlikely to change but topic schedule is approximate & subject to change as necessary...)

Week	Dates	Topics:	Units for Portfolio Project: (Deadlines = end of each unit)
1	8/24-26	Intro to course, Tinbergen's 4 Questions History (& pitfalls) of Animal Behavior study	
2	8/29-9/2	Mechanisms of Behavior: Neurobiology & Hormones	Complementing function: Mechanisms, development & evolutionary history
3	9/5-9	Genes vs. learning Behavioral evolution	
4	9/12-16	Behavioral Syndromes Antipredator Behavior	
5	9/19-23	Foraging Behavior: Optimality Models, Risks, Groups, Tools	Stayin' alive (anti-predator & foraging behavior)
6	9/26-30	Competitive Behavior: Game theory, Dominance, Territories	Competitive (agonistic) behavior
7	10/3-7	Communication: Theory, Signaler vs Receiver-dependent costs Communication & competitive behavior, revisited	
8	10/10-14	Exam 1 = 10/10 (10/10-12: syllabus saver**)	Communication
9	10/17-21	Intrasexual Selection: Competition & sexual conflict	
10	10/24-29	Intersexual Selection: Mate choice signals & preferences	
11	10/31-11/4	Intersexual Selection, cont. Mating systems	Mate choice &/or Mating systems
12	11/9-11 (11/7=Fall Break)	Mating systems	
13	11/14-18	Social Behavior: Relatedness & Kin Selection, Hamilton's Rule	Social behavior
14	11/21 (W-F=Thanksgiving)	Social Behavior: Beyond Kin	
15	11/28-12/2	Exam 2 = 12/2 (11/28-30 = Syllabus-Saver / People's Choice**)	
16	12/5	Syllabus-Saver / People's Choice** / Ethics & Animal Behavior, Course Wrap-up	

Final exam: 12/7 8am

**Syllabus-Saver: It is not uncommon to get a few days behind this schedule; an interesting point raised in class leads to a side discussion, leads to a re-visiting of that discussion in a later class, etc. Rather than allowing the syllabus to dictate when we can follow such paths or not, I've built in a few extra days to ensure that even if we get off-track early on, we can still cover all the critical material.

**People's Choice: And if we cruise through this material with time to spare? There are many interesting topics not included here – these are just those I consider most important for an introductory behavior class. If we have extra time, we can choose among the following topics: Nonhuman perception (light & color, smells, sounds), Nonhuman cognition, Play, Behavior in Aging Animals, Effects of Disease and/or Parasites on Behavior, Behavior in domestic animals / human-nonhuman animal social behavior

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

(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:

- Apply behavioral ecological theory to the interpretation of novel empirical examples;
- Explain the function of behavior in terms of potential evolutionary advantages;
- Apply optimality models to predict behavior under varying ecological conditions;
- Calculate and explain pay-offs in game theoretical models.

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. 2, and Grade Scale, pg. 3. 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. 2. Note that the Portfolio Project requires copying selections from pdfs, which can be done with free software on both Macs and PCs; we'll discuss this more in class.

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)

“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.