

**BIOL 343.01: Animal Behavior (Fall 2018)**

**Melissa Hughes**

MWF 11-11:50  
RITA 154

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**Office Hours:** by appointment. If you want to meet, we'll find a time that works.

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 I can't meet 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) <b>What is the FUNCTION of the behavior?</b> <b>How does it affect reproductive success?</b>	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.

**Class format:** This class will involve a combination of traditional lecture/discussion format and “flipped” classes with writing and assignments completed in class after viewing an on-line lecture and taking a quiz on the material. Weeks 1, 2, 8, 12, 14 and after Thanksgiving will all be traditional lecture/discussion format. Weeks 3-7, 9-11 & 13 are “flipped weeks” (see Schedule).

**Flipped Weeks:** Using “Groups” on Oaks, CHOOSE A DAY: MONDAY OR WEDNESDAY. THIS IS YOUR “FLIPPED” DAY FOR ALL FLIPPED WEEKS. (EVERYONE COMES ON FRIDAYS, WHICH ARE TRADITIONAL LECTURE/DISCUSSION.) On Mondays and Wednesdays of “flipped” weeks, only half of you will be in class, so we will have smaller groups and can do some more in-depth discussion and working with the material. Some “flipped” classes will require a laptop computer. If you do not have access to a laptop, please let me know as soon as possible, so I can reserve some of the Department laptops. **NOTE:** Hardware and internet connections sufficient to access Oaks and watch VoiceThread lectures are required for this class. Contact IT as soon as possible if you experience technical problems accessing these.

Every flipped week requires the following:

- (a) Prepare by watching the assigned lecture(s) and reading the assigned primary literature article(s).
- (b) Lecture and Reading Quizzes due **noon Friday before the flipped week.**
- (c) Review Lecture and Reading Quiz answers before your flipped class.

**About Lecture Quizzes:** To prepare for “flipped weeks” (see **Class Format**, above), you will watch 1 or more on-line lectures (see **Class Schedule**, below) and take a Lecture Quiz. Both the links to the on-line lectures and the lecture quizzes themselves are on Oaks. Lecture quizzes are due at noon Fridays before flipped weeks, and can be taken “open note”.

**About Reading Quizzes:** 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 read assigned journal articles and complete a reading quiz 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 In-class assignments:** We’ll often be working on short assignments and writing short essays in class. On some occasions, assignments may be started in class but completed later. These assignments are graded pass/fail.

**About the Behavior Portfolio Project:** One of the main goals of this class is for you to learn how empirical examples are used to build and support broader theoretical understanding. But the semester is too short to talk about all the cool animal behavior! The class Portfolio project serves 2 main goals: (1) give you a chance to *apply* the theory we discuss in class to examples of specific interest to you; and (2) give you a chance to *explore* the behavior of an animal or animals of your choosing.

Portfolio Project Overview (see assignment documents for more details): find primary literature articles on the behavior topic of that week; select one data figure, and post that figure to the Discussion Board with some brief summary information. Add to the discussion by making substantial comments to the data posted by others.

Portfolio Deadlines: Examples = due midnight Friday 2 weeks from discussion of topic in flipped class (or 12/3, whichever comes first); Comments on examples = due midnight 3 days after original post (or 12/3, whichever comes first).

**About the Final Exam:** The Final Exam is cumulative, and covers all material (lectures, readings, in-class work) throughout the semester. It will be primarily 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.

**About Attendance:** You might notice that attendance is not “counted” in your grade – you are adults and can decide for yourselves how best to use your time. Of course, as adults, 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.

Assignments given during “flipped” classes must be completed in class, and are a pre-requisite for requesting a 2<sup>nd</sup> version of a quiz (see **Grading**).

**About PowerPoint slides & lecture notes:** Being able to listen and process information while taking notes is a skill necessary in all professions. 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. For “nonflipped days”, any figures or tables showing data that I show 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 help.

### **Grading:**

This course uses competency-based grading; that is, **your grade is based on your demonstrated competency in the topics covered**. In other words, how well do you master each of the topics covered in the course? Someone who shows high competency across all topics receives an A. Someone who shows moderately high competency across all topics, or high competency across some but slightly lower across others, receives a B. And so forth.

The flipped weeks focus on 9 major topics in animal behavior; each “topic score” = the average of the lecture and reading quizzes for that topic. Some “nonflipped weeks” also have readings and reading quizzes; these will be averaged as a 10<sup>th</sup> topic score in determining your grade.

Use the table below to determine what is necessary to demonstrate competency for each grade. (Intermediate grades (+/-) will be given if not all of your scores fall in the same column. For example, if you have 2 grades in the B column and 1 grade in the C column, you receive a B-.)

One advantage of this grading scheme is that your letter grade is a direct reflection of how well you master the topics in the class. Another is that it provides you with precise information regarding how best to use your time. For example, if you are struggling to maintain a C average on the topic quizzes, you can see from the table that completing 1 or 2 Portfolio examples will not improve your grade; you are better off spending the time learning the basic lecture and reading material.

	A	B	C	D	F
Topic scores	All $\geq 90\%$ OR Average across topics $\geq 93\%$	All $\geq 80\%$ OR Average across topics $\geq 83\%$	All $\geq 70\%$ OR Average across topics $\geq 73\%$	All $\geq 60\%$ OR Average across topics $\geq 60\%$	All $\leq 60\%$ AND Average across topics $\leq 60\%$
Final Exam (cumulative)	$\geq 90\%$	$\geq 80\%$	$\geq 70\%$	$\geq 60\%$	$\leq 60\%$
Portfolio Assignment (1 attempt per topic allowed)	5 examples meeting all assignment specifications	3-4 examples meeting all assignment specifications	1-2 examples meeting all assignment specifications	0 examples meeting all assignment specifications (Final Grade based on module & exam scores only)	

But wait: nobody's perfect! Everybody has an off-day, gets sick, misreads a question, etc. That's what "tokens" are for. **Everyone starts with 6 tokens.** You can also earn additional tokens (up to 2) by commenting on Portfolio examples posted by other students (see assignment specifications for details). Tokens can be exchanged for the following:

- **Take a 2<sup>nd</sup> version of a Lecture or Reading Quiz = 1 token.** Make a mistake on a quiz that you recognize as soon as you look at the answers, or understand the topic better after your flipped class? Take a 2<sup>nd</sup> version of the quiz! **Details:**
  - You must complete a topic's "flipped class" assignments to request a 2<sup>nd</sup> version quiz on that topic;
  - 2<sup>nd</sup> version quizzes must be requested by noon Friday on that topic's week (i.e., 1 week after 1<sup>st</sup> version's deadline), and are due 1 week after they are made available;
  - 1<sup>st</sup> & 2<sup>nd</sup> version grades will be averaged;
  - 2<sup>nd</sup> version LQs are taken on-line and are open-note; 2<sup>nd</sup> version RQs are taken in-person (we'll set up a time to take the quiz in my office) and you will *not* be able to view the article while taking the quiz. Both will be new quizzes (not the same as the 1<sup>st</sup> version), and will be primarily short-answer format.
- **Second attempt at Portfolio post or comment within the same topic = 1 token.** Normally, you can only make one attempt / topic, but if you find a second article on the same topic that you're excited about and would like to use for the Portfolio, that's possible for 1 token. **Details:**
  - Second attempt must be a different article (cannot be a second figure from the same article as the first attempt);
  - Can only be used once/topic.
- **Erase a 'missed specification from a Portfolio example.** So, you forgot one little detail in submitting a Portfolio example – you can erase that mistake with a token (1 token for each missed specification). **Details:**
  - Erases a missed specification from example posts only, not comments.
- **Add 2% pts to Final Exam grade = 1 token.** If you've got a token left over at the end and your Final Exam grade within 2% pts. below a threshold, I'll bump it up 2% pts. **Details:**
  - 1 token only.

**Animal Behavior: Class Schedule** (subject to change as necessary...)

“nonbold” weeks – everyone attends everyday

week\* = nonflipped week that may have Reading Quiz Due NOON PREVIOUS FRIDAY

**BOLD weeks = FLIPPED weeks: (LQ & RQ Due NOON PREVIOUS FRIDAY)**

**Attend class on Monday OR Wednesday (i.e., “your” day); Friday = everybody**

<u>Week</u>	<u>Dates</u>	<u>Topics: (◇ indicates possible Portfolio topic)</u>	<u>On-line lectures (time approx.)</u>
1 <sup>(W-F)</sup>	8/22-24	Intro to course, Tinbergen’s 4 Questions History (& pitfalls) of Animal Behavior study	
2	8/27-8/31	Animal personality / Behavioral Syndromes	
<b>3</b>	<b>9/3-9/7</b>	<b>Background/review – nonfunct. perspectives:</b> <b>Genes vs. learning; Behavioral evolution</b> <b>Mechanisms of Behavior: Neurobiology &amp; Hormones</b> <b>Personality / Behavioral Syndromes</b> ( <i>if not completed 8/31</i> )	<b>4 lectures, 3.25 hrs</b>
4	9/10-14	Antipredator Behavior ◇	1 lecture, 1.5 hrs
5	9/17-21	Foraging Behavior: ◇ Optimality Models, Risks, Groups, Tools	2 lectures, 2.5 hrs
6	9/24-28	Competitive Behavior: ◇ Game theory, Dominance, Territories	3 lectures, 2.5 hrs
7	10/1-5	Communication: ◇ Theory, Signaler vs Receiver-dependent costs Communication & competitive behavior, revisited	2 lectures, 2 hrs
8	10/8-12	Communication: complexity & perception	
9	10/15-19	Intrasexual Selection: ◇ Competition & sexual conflict	2 lectures, 1.5 hrs
10	10/22-26	Intersexual Selection: ◇ Mate choice signals & preferences	2 lectures, 1.75 hrs
11	10/29-11/2	Mating systems ◇	2 lectures, 2.75 hrs
12* <sup>(W-F)</sup>	11/7-9	Mating systems & behavior in social context (M=Fall Break)	
13	11/12-16	Social Behavior: ◇ Relatedness & Kin Selection, Hamilton’s Rule Beyond Kin	2 lectures, 1.5 hrs
14* <sup>(M)</sup>	11/19	More social behavior: families & complex societies (W-F=THANKSGIVING)	
15-16* <sup>(MWFM)</sup>	11/26-12/3	People’s Choice** Ethics & Animal Behavior, Course Wrap-up	

\*\* People’s Choice: You decide! There are MANY interesting topics not included here! Nonhuman perception, cognition, play, behavior in aging animals, effects of disease and/or parasites on behavior, human-nonhuman animal social behavior, others?

**Final exam: Wednesday, 12/12 8am**

**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; much of the rest of it is stuff you already know, 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

**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. 3

**3.9 Grading Policy**

If this refers to the break-down of how grades are calculated, see Grading, pg. 3-4. 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 Class Format (pg. 2) and Texts (pg. 1). 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.