About the course:

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

Behavior is where internal states (physiology, genetics, development) meet the external world. 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.

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. While we’ll be focusing primarily on the first, 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?
2) What MECHANISMS underlie it? How is it controlled and produced?
3) How does it DEVELOP? Role(s) of genes, environment, & learning?
4) What is its EVOLUTIONARY HISTORY? Identify homologies and/or hypothesize precursors

We will use both theoretical models and empirical data to draw conclusions regarding the function of behavior.

Goals:

“Liberating education consists in acts of cognition, not transferals of information.” Paolo Freire

As far as I’m concerned, the goal of all education is liberation. With regard to the material in this particular course, our goals are these:

- 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 be provided on Oaks.
**About COVID:** Don’t be lulled into complacency those saying the virus is “endemic”; endemic does not mean “no precautions necessary”. (For example, if you travel to a country where malaria is endemic, you would be foolish to not take any precautions!) As I write this in mid-August, an average of over 400 people die of COVID daily in the US (nearly as many as were killed in 9/11 every week). And while most who contract the virus have relatively mild symptoms, our understanding of long-term effects is still evolving, and what we do know is deeply troubling. I hope we all stay safe and well through the semester, but whatever happens, I’ll work with you as best I can. PLEASE DO NOT COME TO CLASS IF YOU ARE EXPERIENCING SYMPTOMS OR HAVE REASON TO SUSPECT YOU MAY HAVE COVID. You may not personally be at high risk, but the person sitting next to you may be. Don’t risk your own or anyone else’s health for this (or any!) class. We’ll figure out how to make things work.

As of August 16, 2023, the CDC lists Charleston County community level as HIGH (for updates, see: https://www.cdc.gov/coronavirus/2019-ncov/your-health/covid-by-county.html). As case numbers do not necessarily reflect the full extent of community spread (due to widespread use of home test kits), I also find this site useful, as it uses networked digital thermometers to measure community illness levels: https://healthweather.us/map/south-carolina-SC/charleston-county-45019?mode=covid_risk

**CLASS FORMAT & PHILOSOPHY:** This class is “partially flipped” – some of the lecture material is on-line, and you will need to watch it before class. The on-line lectures provide a foundation for each topic we discuss; we’ll use some class time to review / clarify that foundational material, clear up any misunderstandings, and then build on it with both the readings and discussion of advanced topics.

The philosophy underlying this structure is this: we rarely learn things the first time we hear them; repetition is key. Similarly, we learn better when we get a chance to “play” with what we’re learning – actively review, apply it to problems, etc. So, here’s how things will work for most of the semester:

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**For each topic:**

**Before class Monday:** watching on-line lecture(s); be sure to answer all embedded questions.

**In class Monday:** discussion & practice of material from lectures

**Before class Wednesday:** on-line Reading Quiz due

**In class Wednesday:** clear up remaining questions from previous material; advanced topics

**In class Friday:** continue advanced topics OR free time to start preparing for next week (DEPENDING ON WEEK, will depend on how discussion go earlier in week)

[Repeat 2-3 weeks, depending on topic – see schedule.]

**Before 8am on Monday following the end of a topic (see schedule):** on-line Lecture Quiz due [NOTE: YOU WILL NOT BE ABLE TO START THE NEXT WEEK’S ON-LINE LECTURES UNTIL YOU COMPLETE THE PREVIOUS WEEK’S LECTURE QUIZ, SO DO NOT DELAY.]

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Why do I say that this is how we’ll work for “most” of the semester? See the schedule; sometimes we’ll deviate from this general plan. Also, plans might change – we might have a hurricane, or get behind for some other reason. But we’ll maintain the basic “flow” as outlined above, and you will never have a quiz on material on the same day it’s presented in class.

**About embedded questions in on-line lectures:** The on-line lectures will be in VoiceThread. You will need to access them via the Content section in our Oaks class. As you work through them,
you will encounter occasional slides with white backgrounds and **purple text**: these slides will ask you a question that you can then answer in a comment on that slide. I’ll “grade” these questions but they do not impact your grade – they are there to help you assess how well you are understanding the material. They are mandatory to complete, however (if you do not submit an answer, Oaks will not know that you have completed the lecture).

**About Lecture Quizzes:** Lecture Quizzes are open-note – the goal is to test your procedural and conceptual knowledge of the subject, not your memorization ability. Expect questions that ask you to apply the material, not simply repeat what you’ve been told. You will not be able to access the Lecture Quiz for a topic until you have completed the on-line lectures for that topic (including all embedded questions).

**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. Reading recent primary literature also helps connect the concepts we’ve been talking about to current research in animal behavior. You will read assigned journal articles and complete a Reading Quiz on Oaks before the article is discussed in class on Wednesday. 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 learning & second chances:** What if it takes a bit longer for the material to “click” for you? My goal is for you to learn, not to learn on my schedule. And I know sometimes we don’t “get” things right off the bat. So, after we finish a topic, if you look back think “hey, I really get it now; I could do much better on that Lecture Quizzes if only I had a second chance!” – guess what – you have a second chance! Second chance Lecture Quizzes are “free” (no “token” required) and there’s no limit – you can take a second chance for as many of the Lecture Quizzes as you want.

**For 2nd chance Lecture Quizzes:** Email me within a week of the Lecture Quiz. In that email, provide a brief self-reflection and assessment. Consider the following: Which questions were most problematic for you, and why? What did you misunderstand when you took the quiz? How has your understanding changed since then? Please take some time to think about this – this is where learning often happens, when we reflect on our misunderstandings! I’m happy to chat with you about this process.

Once you’ve done the self-reflection and assessment, I’ll provide you with a “second chance” quiz. It won’t be the same questions, and will likely differ in format (i.e., more short answer questions); in some cases, “second chance” quizzes are taken in-person rather than on-line. Your grades on the “original” and “second chance” quizzes will be averaged.

Second chance quizzes are for Lecture Quizzes only; I haven’t figured out how to write multiple sets of questions on the same article for Reading Quizzes. But reading primary literature definitely takes practice! To give you space for that practice, you have options to drop some Reading Quizzes (see Grading for details).

**About the 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 examples of 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):

Examples = find a primary literature article that *directly address the theory we discussed* for the behavior topic of that week; select *one* data figure and post that figure to the Discussion Board with some brief summary information.

Comments = add to the discussion and practice “scicomm” by creatively commenting on the data posted by others. (Comments earn tokens!)

**Portfolio Deadlines:** Examples = due *2 weeks* from when we discuss the topic in class (or 12/5, whichever comes first); Comments = due *3 weeks* from when we discuss the topic in class (or 12/5, 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.

**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 course is organized around 7 major topics in animal behavior; *each “topic score” = the average of the lecture and reading quizzes for that topic.* Most topics will have more than one reading assignment (because most topics will extend over more than 1 week, see schedule) – the topic score is always the average of the quizzes for that topic. **The cumulative Final Exam is treated as an 8th topic grade** (the Final Exam is weighted the same as the topic scores, in other words).

Use the table below to determine what is necessary to demonstrate competency for each grade.

<table>
<thead>
<tr>
<th></th>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
<th>F</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Topic scores</strong></td>
<td>&gt; 90% OR</td>
<td>&gt; 80% OR</td>
<td>&gt; 70% OR</td>
<td>&gt; 60% OR</td>
<td>&lt; 60% OR</td>
</tr>
<tr>
<td>(for each topic, average of Lecture and Reading Quizzes) &amp; Final Exam</td>
<td>Average across topics &amp; Final Exam &gt; 93%</td>
<td>Average across topics &amp; Final Exam &gt; 83%</td>
<td>Average across topics &amp; Final Exam &gt; 73%</td>
<td>Average across topics &amp; Final Exam &gt; 60%</td>
<td>Average across topics &amp; Final Exam ≤ 60%</td>
</tr>
<tr>
<td><strong>Portfolio examples</strong> (meeting all specifications)</td>
<td>4</td>
<td>3</td>
<td>1-2</td>
<td>0</td>
<td>0</td>
</tr>
</tbody>
</table>

**But wait, what about +s and -s?** If your topic scores and Portfolio grade fall into different columns in the table, your letter grade will be determined by the topic scores, with a plus if your Portfolio grade is higher than your topic grade, and a minus if your Portfolio grade is lower than the topic grade.
your topic grade. For example, if some of your topic scores are < 90% but all are > 80% (or your average across topic scores is between 83-93%), and you have successfully completed 3 Portfolio examples, you will have earned a B. If you have the same topic scores but have only successfully completed 2 Portfolio examples, however, you’ll have earned a B-; if you had those same topic scores and successfully completed 4 Portfolio examples, you would receive a B+.

In other words, your letter grade is a direct reflection of how well you master the topics in the class. You also have more information regarding how best to use your time. You can think of the “base” of your grade as determined by the topic scores; if you are struggling on these, it is best to spend more time working on a better understanding of that material than working on Portfolio examples.

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 2 tokens. See below for how to earn more!

**Tokens can be exchanged for the following:**

- **Drop a Reading Quiz = 1 token.** Did you not do well on a reading quiz, or do you not have time and want to skip one? Tokens can be used to skip or drop reading quizzes. **Details:**
  - Reading quiz 1 cannot be dropped or skipped;
  - No more than 2 reading quizzes can be dropped or skipped (1 token/quiz; 2 tokens total).

- **Replace Lecture Quiz grade with second attempt grade = 1 token.** Normally, second attempt lecture quizzes do NOT require a token (free!) and are averaged with the original lecture quiz grade. But if you missed class the day of the lecture quiz or if you really understand it much better after class than you did originally, you can use a token to completely replace the original lecture quiz grade with the second attempt. **Details:**
  - You must decide that you want to replace your Lecture Quiz grade before taking the second attempt quiz.

- **Second attempt at Portfolio post or comment within the same topic = 1 token.** Normally, you can only make one post/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 be used regardless of whether you received credit for the first post in the topic or not (i.e., can be a “re-do” for that topic, OR can permit 2 posts in that topic);
  - Can only be used once/topic.

- **Fix a ‘missed specification from a Portfolio example.** So, you forgot one little detail in submitting a Portfolio example – you can go back and fix that mistake with a token (1 token for each specification that you fix). **Details:**
  - Fix a missed specification from example posts only, not comments.
  - Post fixed version as comment under the original post.
  - Late posts can be “fixed” with a token only if submitted within 48hrs of the deadline.

- **Add 2% pts to Final Exam grade = 1 token.** If you’ve got a token left over at the end of the semester, I’ll increase your Final Exam grade 2% pts. **Details:**
  - 1 token only.

**Tokens can be earned by:**

- **Creative comments on other folks’ Portfolio examples (see previous page & assignment info for details) = 1 token.**
• **Examples posted for coolness = 1 token/cool example.** Find an example of animal behavior in the primary literature, but you’re not sure if it directly addresses any theory we talked about (or you’re sure it doesn’t but still think it’s pretty cool)? Post a brief summary of what the study found (under the Portfolio project) and why you think it’s cool for a token! You can submit a cool example to a topic that you’ve already submitted a “regular” Portfolio example, but as with regular Portfolio examples, only 1 “cool” example / topic, and they can not have been previously posted (by you or any other student).

• **Other opportunities to earn tokens may be announced as the semester progresses; stay tuned.**

**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’ll help provide additional information as much as I can, but you may find notes from classmate’s who participated in class activities more useful than my assignment slides!)

**About PowerPoint slides & lecture notes:** Educational research has shown that **having PowerPoint notes available before class tends to inhibit rather than improve learning.** Note-taking is an active process, helping you learn the material, and being able to listen and process information while taking notes is a skill necessary in all professions. For these reasons, I do not post PowerPoint slides or lecture notes on-line. However, all the figures and tables showing data that I show in class will be posted on Oaks. Of course, you might feel like you missed other stuff from the slides sometimes – just let me know, I’m happy to show you the slides you need. If you find that you’re having difficulty taking notes in this class, please see me – I’m happy to help.
**Animal Behavior: Class Schedule** (subject to change as necessary...)

Boxes = central topics we’ll be studying

* Lecture Quizzes (on previous topic) due on Monday of these weeks

◊ Reading Quiz due Wednesday of these weeks

◊ possible Portfolio topic (8)

<table>
<thead>
<tr>
<th>Week</th>
<th>Dates</th>
<th>What will we be learning?</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>8/24-26</td>
<td>Intro to course, Tinbergen’s 4 Questions</td>
</tr>
<tr>
<td>2</td>
<td>8/29-9/2</td>
<td>History (&amp; pitfalls) of Animal Behavior study</td>
</tr>
<tr>
<td>3 RQ</td>
<td>9/5-9</td>
<td>Background/review – nonfunc. perspectives: Genes vs. learning; Behavioral evolution</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Mechanisms of Behavior: Neurobiology &amp; Hormones</td>
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<td></td>
<td></td>
<td>Personality / Behavioral Syndromes</td>
</tr>
<tr>
<td>4 RQ</td>
<td>9/12-16</td>
<td>Stayin’ alive: Antipredator Behavior ◊</td>
</tr>
<tr>
<td>5 RQ</td>
<td>9/19-23</td>
<td>Stayin’ alive: Foraging Behavior: ◊</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Optimality Models, Risks, Groups, Tools</td>
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<tr>
<td>6 RQ</td>
<td>9/26-30</td>
<td>Contest Behavior: ◊</td>
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<tr>
<td></td>
<td></td>
<td>Game theory, Dominance, Territories</td>
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<tr>
<td>7 RQ</td>
<td>10/3-7</td>
<td>Communication: ◊</td>
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<tr>
<td></td>
<td></td>
<td>Theory, Signaler vs Receiver-dependent costs</td>
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<tr>
<td></td>
<td></td>
<td>Communication example: contests</td>
</tr>
<tr>
<td>8 RQ</td>
<td>10/10-14</td>
<td>Introduction to Sexual Selection</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Expectation &amp; bias; anthropomorphism revisited</td>
</tr>
<tr>
<td>9 RQ</td>
<td>10/17-21</td>
<td>Intrasexual selection: Contests &amp; sexual conflict ◊</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Intersexual Selection: Mate choice signals &amp; preferences ◊</td>
</tr>
<tr>
<td>10 RQ</td>
<td>10/24-28</td>
<td>Mating systems ◊</td>
</tr>
<tr>
<td>11 RQ</td>
<td>10/31-11/4</td>
<td>Mating systems, mating behavior in social context</td>
</tr>
<tr>
<td>12*(W/F only)</td>
<td>11/9-11</td>
<td>[M = Fall Break] *Lecture Quiz due FRIDAY this week</td>
</tr>
<tr>
<td>13 RQ</td>
<td>11/14-18</td>
<td>Social Behavior: ◊</td>
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<tr>
<td></td>
<td></td>
<td>Relatedness &amp; Kin Selection, Hamilton’s Rule</td>
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<tr>
<td></td>
<td></td>
<td>Beyond Kin</td>
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<tr>
<td>14*(M only)</td>
<td>11/21</td>
<td>Ethics &amp; Animal Behavior</td>
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<td></td>
<td></td>
<td>[W/F =Thanksgiving]</td>
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<tr>
<td>15(M only)</td>
<td>12/5</td>
<td>Course Wrap-up</td>
</tr>
<tr>
<td>12/7, 10:30-12:30</td>
<td>FINAL EXAM</td>
<td></td>
</tr>
</tbody>
</table>

**What am I missing?** These are the “core” behavior topics but there are MANY interesting topics not included here! Perception, cognition, play, effects of aging, disease and/or parasites, human-nonhuman animal social behavior, others? There’s some flex built into this schedule – maybe we’ll fill it all with discussions of the core material, but let me know if there’s something you’re interested in that’s not here – maybe something you come across in researching your Portfolio examples, etc. – and I’ll try to work it in!
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. 6
3.9 Grading Policy
   If this refers to the break-down of how grades are calculated, see Grading, pg. 4-5. 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. 2-3) and Texts (pg. 1). You need to be able to access Oaks and VoiceThreads; you may need a computer or laptop to complete the embedded questions in VoiceThreads. The Portfolio Project requires copying selections from pdfs, which can be done with free software on both Macs and PCs and available on campus computers; please see me if you have any difficulties.
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](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.