Animal Behavior
Biology 3254
Spring 2019

Course Prerequisites: Biology 2227 (Principles of Ecology) with a grade of C or better

Class meeting times: Monday, Wednesday, and Friday, 1:00 – 1:50 pm at 332 Biology-Life Sciences

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Office Hours: Monday, Wednesday, and Friday 2-3 pm, and by appointment.

Course Description:
Animals exhibit a wide diversity of behaviors that enable successful feeding, habitat selection, navigation, communication, social interactions, reproduction, and rearing of young. Why do animals behave in these ways, and why do animals differ in their behaviors? In this course, we will investigate the proximate (physiological and genetic-developmental) and ultimate (functional and evolutionary) explanations for these behaviors, with an emphasis on ultimate explanations. In particular, we will investigate in depth how functional, ecological, and evolutionary processes shape animal behavior. We will study classic theories and major principles of animal behavior, weighing the experimental and observational evidence for each idea. We will illustrate concepts with examples from a wide range of taxonomic groups of animals in diverse ecosystems. We will also discuss some emerging theories in animal behavior and applications for conservation and human behavior.

This course will be taught with lectures, the textbook, supplemental readings, and student-led discussions of classic and contemporary articles from the primary literature. Students will therefore learn a variety of ethological approaches to explaining and predicting animal behaviors, and their evolutionary basis.

Course Objectives:
By the end of this course, students will understand:
- distinctions between proximate and ultimate explanations of animal behavior,
- the ultimate functional, ecological, and evolutionary mechanisms underlying animal behavior,
- foundational and contemporary theories of animal behavior, and their practical application

By the end of this course, students will be able to:
- distinguish between proximate and ultimate explanations for animal behaviors,
- describe major concepts in animal behavior and evidence supporting ultimate explanations of animal behavior
- discuss the applications and implications of major concepts in animal behavior,
- understand how concepts in animal behavior are developed through the process of scientific inquiry, and
- understand and critically evaluate articles from the primary literature.

Required textbook
The required textbook for this class will be:
This textbook will be available at the campus bookstore. It is also available through a variety of online and other sources; you may be able to find it ‘used’ or as an ebook, at a significant discount. Readings should be completed according to the course schedule listed below – please read chapters prior to class in order to fully understand the material in lecture.

**Required supplemental readings from scientific articles**

In addition to textbook readings, I want you to read articles from the primary literature, to illustrate and go into further depth on lecture topics. Readings should be completed according to the course schedule – it is critical that you read these prior to the class period listed, so that you are able to participate fully in discussions and learn from them. To be fully prepared, I recommend that you:

- Identify why, according to the author, the topic is important
- Identify the main objective or objectives of the study
- Understand the main methods or approach used in the study
- Identify the most important results. Pay special attention to figures and tables.
- Determine what the key take-home message of the paper is
- Identify important implications of the study for understanding animal behavior
- Identify the strengths and weaknesses of the study
- Consider carefully how the article relates to topics from lecture or the textbook readings
- Identify any questions that you still have about the article (or the implications of its findings), and come prepared to ask the student leaders or discuss in small groups.

**Online Quizzes**

To help encourage your preparation for discussions, I will have a series of online quizzes throughout the semester. These will be due at 12:45pm on the date listed on the course schedule – however, I encourage you to work well in advance of class to ensure that you don’t run into any last-minute connection issues or other problems. You can access these online via Canvas outside of class time. The online quizzes are open book / open notes / open article – in other words, you are free to refer to these sources of information as you complete the quizzes. However, you must do these quizzes on your own. Completing these quizzes with others, discussing questions, sharing answers, or otherwise helping or getting help from others will be considered cheating. Quizzes will focus on the supplemental readings (scientific articles), and will cover the key elements of the article (see list in the previous section of the syllabus). Some questions on the textbook readings from recent class periods may also be asked.

**Student-led discussions of scientific articles**

Each student will present one discussion during the semester. You will present together as part of a group of students (~5 students in a group). By the end of your discussion, all students should:

1. understand what the authors hoped to accomplish, and the main ideas of the article(s) assigned for that day;
2. be able to explain the key evidence presented in the article (such as in important figures or tables or other major results) in support of those main points;
3. be able to discuss the implications the article has (or at least had at the time it was published) for understanding animal behavior more broadly (i.e., in other populations or species and in other areas and under other conditions);
(4) be able to discuss the strengths and limitations of the study (these can include an understanding of how well executed the study was, the degree to which conclusions are supported by the evidence the authors present, the extent to which they have considered factors that could influence their results, how applicable the main findings are to other circumstances); (5) be aware of alternate perspectives on the article’s findings or main arguments, including potential disagreements or controversy that it might generate among other researchers; and (6) understand how the article(s) fit(s) into our broader understanding of animal behavior (especially how it relates to material we are covering during this course). Please highlight links between specific points in the article and broader concepts from elsewhere in the course, such as textbook readings, other readings, or my lectures.

In terms of format: I would like to see each member of your group lead small-group discussions for part of the discussion period. The point is to generate in-depth discussion among students and to deepen their understanding. For this reason, please do not plan to lead simple quiz games, which only cover basic factual information or otherwise summarize in a superficial way without deepening understanding of the concepts highlighted in the article. Instead, find ways to engage students in the conceptual aspects of the material – what were they trying to figure out, what did they find, what did it mean, etc. Also, one of the most important contributions you can make to student understanding is to link the material back to the broader themes of the course.

One possible format that I have seen work is as follows:

(1) a short introductory summary of the research article to the full class, accompanied by a PowerPoint presentation (remember, though, that all students have already read the article, so this does not have to be extremely detailed – however it could quickly summarize the objective and key elements of the study to get everyone on the same page). This section should ideally be 5-10 minutes long in total.

(2) break up the class into several small groups, each led by one of your group members, to conduct a more in-depth discussion of the article and its implications. As small-group discussion leaders, be prepared to guide discussion and provide starting points for discussion with small group participants in case they are unsure how to answer at first. Focus on what you view as key take-home messages and engaging points that have important implications, since you will probably only have time to cover a handful of in-depth questions. This section should be about 15-20 minutes long.

(3) the student group can lead a large group discussion with the whole class to report back from the small groups to the class as a whole. Use this to make sure everyone understood all the main points and especially to allow sharing of some intriguing ideas that came up in small group discussions. I encourage you to actively prepare for this section as well, by thinking of questions that will encourage students to share what they discovered in their small groups with the rest of the class. This section can be about 5-10 minutes long or so.

However, I encourage you to be creative with how you handle each of these three elements. You can also bring in additional information related to the topic, as long as it is tightly related to the article and facilitates understanding of the concepts of the article. Be sure to get students actively participating in some way, such as by discussing main ideas or participating in an in-class activity. I am happy to discuss with you in advance of your presentation the format you are thinking of using, and any questions you might have about the article(s). Please send me a copy of your PowerPoint slides, handouts, or other visual aids by noon on the day of your presentation so I can add them to the course website and bring them to class. Be sure to also bring an electronic copy of your slides with you to class on your own thumb drive so you can load them onto the class computer.

You will have 25-35 minutes in total for your discussion. This may seem like a lot, but if you are truly engaging students in the material, the discussion will take some time. Your work in preparing and leading this discussion will be worth 8% of your overall grade in the course. Except in exceptional circumstances, all students in the same group will receive the same grade for leading the discussion.
Exams

There will be three midterm exams and a final exam in this course. Midterm exams will focus primarily on the section of the course since the last exam, but I may assume in the questions that you understand some information from previous sections of the course. The final exam will be cumulative, with extra emphasis on the last section of the course. Exams will be principally multiple choice, though various question formats are possible.

Grading:

The grades in this course will be apportioned as follows:

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<tr>
<td>Midterm 1</td>
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<tr>
<td>Midterm 2</td>
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<tr>
<td>Midterm 3</td>
<td>15%</td>
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<tr>
<td>Online Quizzes</td>
<td>14%</td>
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<td>Student-led Discussion of Scientific Articles</td>
<td>8%</td>
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<tr>
<td>Attendance &amp; Participation</td>
<td>5%</td>
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<tr>
<td>Final Exam</td>
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Grades will be assigned based on the overall weighted score at the end of the course, with a score of 93% or better for an A, a 90% for an A-, a 87% for a B+, an 83% for a B, and so on.

Attendance and Participation:

Please also make every effort to attend and participate during class. If you are absent, you are still responsible for all the material covered in class. Slides will be available on the course website, but of course not all information discussed in lecture can be conveyed on them.

Further, in this course, in addition to learning from my lectures and from the readings, students will learn from each other, especially during discussions and student presentations. Since we will engage in a lot of active learning activities in class, I expect your regular attendance and full participation in the class period. While I don’t expect everyone to say something to the whole class in every lecture or discussion, please engage fully in small group activities, and the whole class should hear your thoughts on a number of occasions during the semester. I will also be looking for informed discussion and questions that together illustrate that you have prepared fully for class. This is especially important during the discussions.

Absences on presentation or exam days

If you have a conflict on the day you are scheduled to present, or on an exam day, please notify me as far in advance as possible. I will try my best to be flexible and offer a make-up exam if you have an occasional, legitimate conflict due to something that will otherwise provide you a significant opportunity for learning or professional development or a university-sanctioned activity. In addition, if something unexpected and unavoidable turns up at the last minute, such as an illness or family emergency, then notify me as soon as possible after this occurs.

Conduct:

Freedom to teach and freedom to learn are inseparable facets of academic freedom. The University has a policy on Student and Faculty and Academic Rights and Responsibilities (Policy #03.70.02) which can be accessed through the following link: http://policies.temple.edu/getdoc.asp?policy_no=03.70.02.
Please keep your focus on course material while in class. You may feel you can multitask or use smartphones and other electronic devices discreetly, but I and many of the students around you tend to find it disruptive and disrespectful to teaching and learning when during class you read or send text messages, consult your email, chat online, or otherwise are distracted by things not related to the course. Further, studies consistently show that users of text/chat, etc. are not aware of the degree to which they are distracted by this activity, or the extent to which their comprehension and performance on other tasks suffers while they use these devices. Therefore, you may use a laptop or other device to take notes or display an article or lecture notes, but please turn off or otherwise ignore anything not related to class during the course meeting times. Also, during small group work, keep conversations focused on the topic we are studying; unrelated chatter can be distracting to the rest of your group. Lack of engagement in the class due to electronic or other distractions could negatively affect your attendance and participation grade.

In addition, all students are expected to follow Temple University’s Student Code of Conduct, which prohibits “academic dishonesty and impropriety, including, but not limited to, plagiarism and academic cheating.” Also in accordance with the Code, let’s all work together to:

1. Foster an environment conducive to continued intellectual and educational stimulation within the university free from unlawful harassment by other members of the community; and
2. Foster the maintenance of physical and mental health, the safety and welfare of each member of the community; and
3. Respect the rights of others.

How to do well in this course:

It is certainly true that if you work harder you do better. Hard work is most definitely a necessary prerequisite to obtaining a good grade. As a rough guide, most professors assume, when assigning readings and other work to students, that students will devote about 3 hours on average to studying outside of class for every hour spent in class (thus, 9 hours of outside-class work in this course per week). Of course the time will vary depending on many factors, including the amount of related courses you have taken in the past.

However, hard work alone is not always sufficient for a good grade. The students who do best in my classes – and in most university classes for that matter – are those that not only work hard, but who attend regularly, are well-prepared for class, participate in class, and are proactive. Here is a description of what I mean:

First, attend all class periods. On days with interactive activities (most days), much of the learning comes from interacting in small and large groups, so if you are absent on those days, you will miss critical information that would be hard to make up. Also, keep in mind that there are only 9 or so classes per midterm, so if you miss one you will have missed a significant portion of the material for the exam. If you miss several classes you are digging a hole for yourself, from which it is hard to emerge with a good grade. Try to attend all class sessions, and if you do miss a class, you should work extra hard to learn the material you missed.

Second, prepare. Complete all the assigned readings prior to class. We have a lot of material to cover; and simply won’t have sufficient time to cover it all in class. I will cover key points and assume that you are reading to understand the rest. If you read in advance, then what I present will reinforce and strengthen what you have already learned from the reading. Good preparation will also enable you to participate fully in – and get the most from – in-class activities and discussions. If you have not read in advance, you may find it difficult to keep up.

Third, participate. If you don’t understand something, ask a question. If you think of an interesting implication of one of the concepts we are covering, then share it with the class. And join fully in the discussions and other activities. Participation is powerful in helping you to understand the material, and will help you improve learning among your classmates as well.
Finally, be proactive. If you find that you don’t understand something, are falling behind, or are not satisfied with your performance in the course, then get additional help. I encourage you to come see me and/or contact one of the resources listed below as soon as possible if you are concerned about your performance and don’t know how to improve. Often I can give suggestions about ways to study to help get you back on the right track, as long as you don’t wait until the very end – there is little anyone can do to help you out at the very last minute, or after you have already received your final grade! By seeking help as soon as you perceive a problem, I will most likely be able to help you to understand concepts or with your study skills.

Additional resources:
Here are a few additional resources on campus that may be helpful:

- Temple Student Success Center. This is an academic support center to assist students who are having academic difficulty, or who are doing well but want help improving their study skills and performance. It is free to Temple University students, and is located at 201 Tuttleman Learning Center, or by phone at 215-204-0702 or online at [http://www.temple.edu/class](http://www.temple.edu/class).

- Tuttleman Counseling Services. This is a support center for a variety of educational, vocational, or emotional concerns. This center is free to Temple University students, and is located at 1700 N. Broad St., 2nd Fl. Corner of Broad St. and Cecil B. Moore Ave. (above Barnes and Noble). Or you can reach them by phone at 215-204-7276, or online at [http://counseling.temple.edu/](http://counseling.temple.edu/).

- If you think you need an accommodation for this or another class, including special accommodations for access to technology resources and electronic instructional materials required for the course, please contact Disability Resources and Services (DRS) at 215-204-1280 in 100 Ritter Annex (1301 Cecil B. Moore Ave.) to learn more about the resources available to you. I will work with DRS to coordinate reasonable accommodations. More information is available online at [https://disabilityresources.temple.edu/](https://disabilityresources.temple.edu/).