

# Animal Behavior

10:00- 11:20am T/R, Talbot 212 • 1:30-4:20pm M, Talbot 541

## Who:

Dr. Susan Villarreal (she/her)

Email: [villarreal@denison.edu](mailto:villarreal@denison.edu)

Office: 227 Talbot

Office Hours: Here is a link to my [google calendar](#) where you can sign up for a meeting. Generally speaking, I'll have time slots spread across typical working hours. Feel free to email me for a custom time and I'll happily work something out with you.

## What:

This course investigates the causes, functions, and origins of animal behavior. We will use an evolutionary perspective to understand and integrate common behavioral adaptations, e.g., obtaining food, avoiding predators, living in groups, communicating, mating, and caring for offspring. Laboratory projects emphasize design, analysis, and communication of quantitative tests of hypotheses carried out in the lab and field. Two lectures and one scheduled lab per week.

**Required Text:** [Animal Behavior](#) by Nordell and Valone (3<sup>rd</sup> edition preferred, digital or paper copy)

Overall Course Goals	Nested Learning Objectives
Apply the principles of animal behavior studies	Classify studies according to the Tinbergen 4 questions
	Demonstrate fluency in terms related to behavioral research
	Demonstrate competency in the diverse methods related to behavioral research
	Design and conduct behavioral research
Improve scientific literacy, specifically for behaviorally-focused journals	Analyze behavioral literature, including critiquing the rigor of the study and validity of the journal
	Lead discussions on behavioral research literature
	Interpret and relate primary literature to your own hypothesis generation and data analysis
Appreciate the importance of animal behavior research	Apply your knowledge of behavioral theory to novel systems
	Explain the value of animal behavior research to a peer or the untrained masses

## How:

Proposed Schedule of Topics:

I've divided the semester into 4 "modules," loosely themed and broken up by the timing of exams.

1	2	3	4
The behaviorist's skill set	Understanding how behavior is perceived	Movement-based behavior (broadly)	Sex-based behavior (broadly)

	Week	Dates of Live Lectures	Topic	Major Assignments*†	Readings	Lab Specifics (Subject to change)
1	1	1/16 & 1/18	Methods		Ch 1 & 2 <a href="#">Supplemental</a>	Introductory Lab
	2	1/23 & 1/25	Evolution & Genetics		Ch 3 & 4 Supplemental	No Lab – MLK Day
	3	1/30 & 2/1	Learning	Paper Discussion	Ch 7	Non-verbal communication Lab
	4	2/6 & 2/8		Exam 1		Cricket Lab Pt. 1
2	5	2/13 & 2/15	Sensory Systems		Ch 5	Cricket Lab Pt. 2
	6	2/20 & 2/22	Communication		Ch 6	Mosquito Lab
	7	2/27 & 2/29		Exam 2		Variability Lab
3	8	3/5 & 3/7	Foraging		Ch 8	Phylogeny Lab & Project Ideas
	9	3/19 & 3/21	Anti-Predator		Ch 9	Group project proposal planning
	10	3/26 & 3/28		Exam 3		Week 1 Experiments
4	11	4/2 & 4/4	Mating	Paper Discussion	Ch 12	Week 2 Experiments
	12	4/9 & 4/11	Mating Systems		Ch 13	Data Analysis and Drafting
	13	4/16 & 4/18	Parental Care	Paper Draft	Ch 14	Tick behavior Lab
	14	4/23 & 4/25	Sociality		Ch 15 & 16	Time for Peer Review
	15	4/29		Final Paper		Time for end-of-term wrap up & Review

Final (Exam 4): Saturday, May 4, 6:30-8:30 p.m.

\* Towards the beginning of the semester there will be more labs and small write-ups, towards the end of the semester, there will be fewer labs and more time for paper writing

† Two major assignments are not on list: Participation will be scored through reflective logs throughout the semester; Oral presentations are spread throughout the semester based on the timeslot you sign up for

## Assignment Grading

<i>Assignment</i>	<i>% Overall Grade</i>	
Exams (1 per unit)	40	
Paper Discussions (2)	10	This course is graded on a standard grading scale, without curve applied (A: 94-100; A-: 90-94; B+: 87-90; B: 84-87; B-: 80-84; C+: 77-80; C: 74-77; C-: 70-74; D: 60-70; F: <60).
Oral Presentation	5	
Small writeups	20	
Paper Draft & Review	5	
Final Paper	15	
Participation	5	

## Course Format

**Weekly structure:** Look to the "Weekly Specifics" documents uploaded to [Canvas](#) each week to get all the details and documents you need for lecture and lab.

**Lecture:** I expect all book chapter readings to be completed prior to the first session of that week. By coming to class with some familiarity with the readings, we'll be able to use class time studying new examples of behaviors and doing in-class activities related to your readings. So take good notes (in your own words), highlighting in some way topics you want to discuss more fully in class. We will spend the beginning of lecture going over the key concepts in the chapter and the rest of the session using case studies, discussions, and active learning activities to dive deeper into the material. For any supplemental readings, I will let you know in the preceding week which lecture session we will be going over that material. Though not all topics from the assigned readings will be reintroduced into the lecture, you will be responsible for all assigned material for the exams. For some activities, like oral presentations, we'll continue our lecture topic into the lab time.

**Lab:** The purpose of lab is to teach you the basic components of animal behavior methodologies. The majority of lab time will go towards field-based and lab-based observations and experiments related to animal behavior. To provide some structure to lab I devised a set of assignments to be completed inside and outside lab, each focused on teaching a basic concept in animal behavior. Your lab training in animal behavior research will culminate in group projects of your creation (details to follow).

**Late work:** Work will be accepted without penalty if it is delivered to me before 11:59pm of the assigned due date. Do not miss class to complete assignments. Any work submitted after the deadline will be accepted, with 10% penalty each day it is late. Penalty-free extension on major assignments will be given in cases of illness or extenuating circumstances (arranged with me in advance when possible).

**Tips for success in this class:** I'm going to do my best to make sure the overall structure of the class is clear and easy to follow. Schedule a weekly meeting with me if you feel like you're not understanding the content. Don't judge yourself for being confusing or saying something "wrong" in class. Feeling dumb just means you are pushing yourself to learn new things, and only smart people do that. Based on data collected from college students, it is not preparedness or aptitude that most influences your GPA, it's your level of stress, anxiety, depression, and the consistency of your sleep schedule. So, the best way to get a good grade in this class is to sleep ~7hrs every night and structure your waking hours carefully, including time for eating, exercising, and socializing. Feeling overwhelmed? Come chat with me, maybe I can help.

## Major Assignment Details

**Exams & Final:** There will be four exams spread throughout the semester. My exams are writing focused and not every question has one right answer. The purpose of the exam is to see if you can apply course content to novel case studies. My exams are also point-focused, meaning the points assigned to each question should indicate the extend or depth of an answer. The exams are not "cumulative" but instead focus on the content occurring between the last exam and current exam, though as the semester progresses there will be some pertinent information from previous sections that apply (the information slowly builds with time). The final exam will be similar in format to previous exams. Each exam will be worth 10% of your final grade.

**Weekly Quizzes:** There are out-of-class quizzes each week. These quizzes will not be graded, but I will provide an answer key. These quizzes should help give you an idea of the types of questions I may ask on an exam.

**Small Write-ups:** Throughout the course there will be small write-ups assigned to train you on the process of performing animal behavior. Both during and outside of class time there will be activities related to these write-ups you need to complete. More details on each of these assignments will be provided to you as they arise. Each assignment will be weighed equally and go towards 20% of your final grade.

**Paper Discussions:** Twice during the semester I'll ask you to read and report out on a paper of your choosing within the topic we are discussing. The activity will allow you to select papers within a particular subject that is the most appealing to you. The Monday before the discussion date, you will submit to me the paper you're going to present in class (just to make sure there are no duplicates). I will confirm your selection and the following Thursday we will have an in-class group discussion in which the major findings, connections to course material, and analytical observations are made about the selected paper. At the end of the discussion, you will fill out the discussion reflection worksheet and your participation in the discussion and responses on the worksheet will go towards your final grade. These two discussion participations and reflections are worth 10% of your final grade.

**Oral Presentation:** Being able to verbally present scientific research to an informed audience is an essential exercise in biology. Therefore, once during the semester I'll ask you to present published literature relevant to a topic during the lecture period. Your presentation will be short (5-10 minutes) and graded based on your performance, slide presentation, and accuracy. This activity will go towards 5% of your final grade.

**Final Paper:** The second half of the semester you will work in groups to collect data on independently-designed projects. Each individual student will write up their analysis as a full, submission-ready manuscript formatted to [the journal \*Animal Behaviour\*](#) as a way to simulate the publishing process of researchers doing behavioral studies. Your final paper is due at the end of the semester (the exact deadline is flexible, though I do need to receive it by the finals deadline). Grading of your final paper will be based off of the scientific content, formatting accuracy, incorporation of reviewer feedback (see below) and counts towards 15% of your final grade.

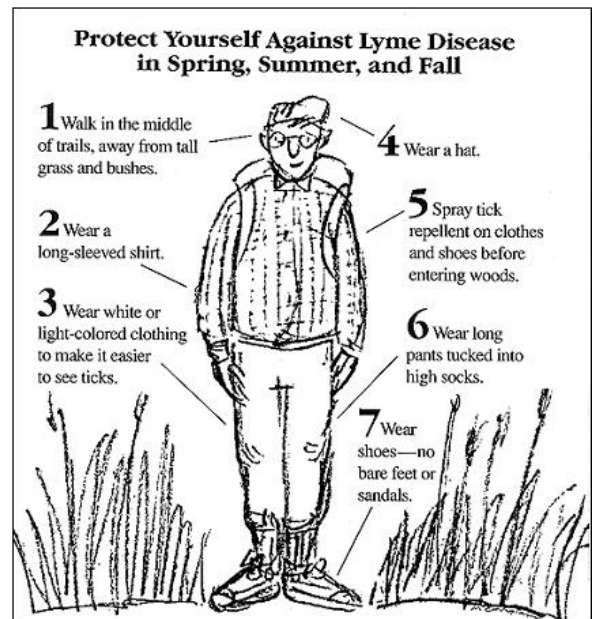
**Paper Draft & Peer Review:** To facilitate improvement in the final draft, I will ask you to submit a complete draft of your manuscript to me in week 13. This draft should be complete and submitted as a google document with editing permissions attributed to me (I will assess your draft history to ensure AI technology was properly used, see below). Once I have all the submitted drafts, I will anonymize your draft and give it to another student to review. You will then receive a randomly selected paper from another student for you to review. You will review the paper following the guidelines I provide during week 14 lab. You will then receive anonymous comments about your manuscript of which you will discuss with me during a one-on-one meeting. To earn the full 5% of your final grade, you will need to have submitted your paper draft to me on time, provided a complete and thorough review of another student's work, and had a one-on-one meeting with me (these are all graded on completeness). This process should allow you to get good feedback on your manuscript before turning in the final version.

**Participation:** There is no mandatory attendance for this course. However, you are expected to participate fully in course discussions when present, submit to me your participation log, which asks you to reflect on your performance in the class, and your oral presentation reflections, one for each presentation throughout the semester. Grading will be based on the completeness and accuracy of your participation logs and reflections for a total of 5% of your final grade. You can miss up to two oral presentations without penalty.

## Class Policies

**Safety:** Part of this course requires you to observe animals in nature and therefore you'll be subjected to some of the hazards of fieldwork. This includes walking through tall grasses and uneven terrain. Let me know if you have any health concerns (allergies, balance issues, etc.) or other limitations and we can work together to make sure you aren't inhibited from any activities. Make sure to dress appropriately for the field (see right).

When going off on your own, be cautious about your own personal health and safety. Avoid overly-isolated locations, make sure you have a good cell phone signal, go with someone you know if possible, and use virtual alternatives to outdoor interactions if you do not feel safe going outside to do observations.



**Accommodations for students with documented disabilities:** I strive to create a fully inclusive classroom, thus I welcome individual students to approach me about distinctive learning needs. In particular, I encourage students with disabilities to have a conversation with me and disclose how our classroom or course activities could impact your disability and what accommodations would be essential to you. You will also need to have a conversation about and provide documentation of your disability to the Academic Resource Center (020 Higley) for formal accommodations (i.e. extended time on exams). These need to be granted by the ARC and cannot be applied retroactively.

**Academic honesty:** Each student in this course is expected to abide by the policies outlined in the student handbook on honesty in academic work. All written assignments are expected to be solely your own production and in your own words. If you have questions about how an assignment relates to the [University's policy](#), consult with me in advance of the due date. In instances of plagiarism, I'm obligated to notify the Associate Provost, where the Academic Integrity Board will determine if a violation has occurred and, if so, its severity and sanctions.

As per the official policy of Elsevier, the publisher that produces *Animal Behavior*, we will use the following AI policy in this class (as taken from the Animal Behavior Journal website):

*“Where authors use generative artificial intelligence (AI) and AI-assisted technologies in the writing process, authors should only use these technologies to improve readability and language. Applying the technology should be done with human oversight and control, and authors should carefully review and edit the result, as AI can generate authoritative-sounding output that can be incorrect, incomplete or biased. AI and AI-assisted technologies should not be listed as an author or co-author, or be cited as an author. Authorship implies responsibilities and tasks that can only be attributed to and performed by humans, as outlined in Elsevier’s AI policy for authors.*

*Authors should disclose in their manuscript the use of AI and AI-assisted technologies in the writing process. ... A statement will appear in the published work [at the end of the manuscript]. Please note that authors are ultimately responsible and accountable for the contents of the work. ... This declaration does not apply to the use of basic tools for checking grammar, spelling, references etc. If there is nothing to disclose, there is no need to add a statement.”*

Unauthorized use of technology in the preparation or submission of academic work can be considered a form of cheating and/or plagiarism.

**Technology use in class:** I place no restrictions on technology use in lecture and lab. Notes can also be taken on laptops and other hand-held devices, though I caution you to not become stenographers and to interpret and rephrase lecture material to best promote your own retention and learning. For some activities, laptops will be required. I will inform you of when they are required and can make accommodations to provide you with a laptop if one is unavailable for you. Additionally, any electronic copies of course materials are for your personal use; make sure to adhere to the University's Code of Academic Integrity when using these materials.

**Multilingual support:** Students who use English in addition to other languages can meet with Denison's English Language Support Specialist, Anna Adams, as well as the student consultants that work with them. This service is available to ALL Denison students. Scientific papers are complicated to write and understand. Please reach out for help. You can email the Multilingual Learning Office directly at [englishhelp@denison.edu](mailto:englishhelp@denison.edu) to schedule an appointment.

**Writing support:** Scientific writing can be difficult, especially if you struggle with the fundamentals of sentence structure, grammar, or flow. The writing center is a freely available resource to every student for any stage of the writing process. For more information, and to sign up to meet with a consultant, please visit the [Writing Center's](#) page on MyDenison.