

PSY 435: Advanced Behavioral Neuroscience

Office Hours (Zoom): Drop-in (Zoom Room) office hours are [9-11am on Mondays](#). You can also make an appointment for a different day / time using [this form](#) to schedule. Sometimes students worry their questions are too small for office hours—I disagree, I enjoy meeting with students whether it's 30 seconds or 30 minutes. I will be most useful in these meetings if you arrive with a specific agenda. Questions about grades should definitely be addressed in a meeting.

Course Description: This course emphasizes the study of bodily structures, processes, and mechanisms related to various aspects of the organism's interactions with the environment. Topics covered include neurophysiological correlates (*aka biological basis*) of cognition, memory, motivation, emotion, attention, and sensory processes.

Learning Objectives: My goal is for each student to learn the structures and functions of neurons and neural systems, as well as skills, strategies, and ways of thinking about neuroscience.

1. Describe the process of action potential, including how and why they occur
2. Explain in detail the steps of neurotransmission and compare and contrast the specific process of synaptic transmission for diverse neurotransmitters and receptors.
3. Identify the behavioral function of major brain chemical systems, explain their role in the healthy brain as well as degenerative and psychiatric disorders.
4. Critique original research in behavioral neuroscience, identify limitations to current knowledge, integrate information from varying sources into a cohesive whole
5. Discuss current topics in behavioral neuroscience research

Prerequisites & Required Resources

1. Prerequisite: PSY 101, PSY 330
2. [Technology Requirements: MS Office; Zoom; Panopto](#)
3. Textbooks: I've finally cut all ties with expensive textbooks! Most reading will come from one of the following Open Access Textbooks; See BB modules for specific reading assignments.
 - INTRODUCTION TO NEUROSCIENCE: <https://openbooks.lib.msu.edu/introneuroscience1/>
 - Foundations of Neuroscience: <https://oercommons.org/courses/foundations-of-neuroscience/view>
 - NEUROSCIENCE: Canadian 1st Edition <http://neuroscience.opentext.utoronto.ca/>

Instructor Info

Elizabeth Flandreau (she/her) (Please call me Dr. or Professor Flandreau.)

I have a BA in Biology from Lawrence University in Appleton, WI and PhD in Neuroscience from Emory University in Atlanta. I did my postdoctoral work in La Jolla, CA at the Salk Institute and

UCSD. I live in Allendale with my spouse. I have four daughters ages 11, 7, and 3, plus my angel baby, Georgia, who passed away at birth 8/12/2019. We also have an 80-pound labradoodle named Charger and cat, Bayern. When I'm not nerding-out about brains, I enjoy podcasts...about brains, listening to music, and reading books. **Complete List of Published Work in MyBibliography:**
<http://www.ncbi.nlm.nih.gov/sites/myncbi/16yhpycv5JeQW/bibliography/49569051/public/?sort=date&direction=ascending>

Policies and Resources:

GVSU and Course Policies: <https://www.gvsu.edu/catalog/navigation/academic-policies-and-regulations.htm>

GVSU Expectations of Inclusion and Integrity

- The purpose of this course is to learn. Please treat your classmates and instructors with respect in face-to-face and online interactions and be respectful in your conversations about others. If you have any concerns, please contact me or the GVSU division of inclusion and equity (616) 331-3296). Please review GVSU's policy on Anti-Racism and Title IX
- Earning a degree from GVSU means you achieved knowledge, skills, and abilities worthy of that degree. Please do not short-change your education or compromise your integrity. Instructors are required to report incidents of academic integrity violations.
- To meet integrity standards, be sure that *you know which resources you're allowed to use* (if you're not sure, please ask!) *and ALWAYS cite your sources*. Using someone else's words as your own is plagiarism whether that 'someone' is a classmate, a textbook, or a predictive language model.

Email Policy: Questions about the course are relevant to all students and must be posted to the discussion board so everyone can benefit from the answer! Please do email me if: your question is urgent and hasn't been answered on the discussion board, you need a 1:1 outside my office hours availability, or you have a personal matter that can't wait for a 1:1 meeting. I typically respond to emails within 1 business day. flandree@gvsu.edu

Attendance Policy: It will be difficult to succeed in this class if you are not present during class and team meetings. There are a handful of specific class meetings where attendance is specifically required. If you are unable to attend one of these days, you'll need to make arrangements with me in advance (please visit office hours zoom to discuss).

Own Voice Standard: This class requires integrating content across topics and demonstrating knowledge through application. *Everything* you submit must be in your own voice. Direct quotations or paraphrasing from original sources or predictive language models are incompatible with this standard. Students will have an opportunity for a replacement assignment and grade for a first own-voice violation. Additional submissions that do not meet this standard cannot be considered for credit. Here's how to meet the "Own Voice" Standard:

1. *Use Course Resources:* Center the learning objectives in your studying, use the content posted on Bb and, where relevant, attend face-to-face classes. Avoid predictive language models which pull from sources that may be inaccurate or simply not use the same terms we do.

2. *Take careful notes:* identify the source of the notes at the top of the page; do not copy down words or phrases directly from the source.
3. *Avoid using notes while crafting your text.* Ability to speak from memory is a great way to demonstrate that you've mastered the content and prevents most accidental plagiarism.
4. *Read your answers aloud.* Does it sound like something you would say? Do you understand every word you've written? If so, it's probably a good fit for your target audience! If not, take a step back, revise, and ask questions.
5. *Ask Questions:* Are you unsure what a question is asking? Unclear about how to approach the topic? Use the discussion board. Meet with a team or the instructor.

Missed Deadline Policy: Most assignments are officially due by 11:59 pm on Fridays. However, there is a 48 hr grace period. Assignments with Friday deadlines will not be considered late until after 11:59pm on Sundays. Most assignments are available well in advance of the due date and can be turned in early. Most assignments can still be submitted late, but I cannot guarantee I will have time to grade them or provide feedback. *It's dangerously easy to fall behind, if you're struggling to stay on top of content, please meet with me ASAP so we can come up with a strategy.*

Resources: No one can reach their greatest academic potential if basic needs are not being met. Please check out these resources if you are experiencing [financial hardship](#), could benefit from a mental health [counseling appointment](#) or [wellness appointment](#). The student [academic success center](#) also has excellent resources. Here's what else you need to succeed:

1. *Time:* To meet the objectives of the course requires putting in the time for reading, lectures, studying, and practicing. If you have fewer than 10 hours per week to devote to this class, it will be difficult to succeed.
2. *Technology:* [Technology Requirements](#) and software through GVSU [MS Office](#), [Zoom](#), [Panopto](#).
3. *People:* Please use your instructor, classmates, and other resources within and beyond GVSU to support your learning. To the best of my ability, I design courses for inclusivity with opportunities for each student to reach their highest potential. It is my goal that each student meets all learning objectives. One of the most important resources for this course is me!!
4. *Course Content:* I very carefully create and curate content for this course. I do not recommend using other sources as I cannot guarantee their accuracy or alignment with the assessments.
5. *Library Resources:* The GVSU library has additional resources related to understanding and producing scientific writing as well as important information on how to cite sources and avoid plagiarism. <https://www.gvsu.edu/library/km/>
6. *Official Accommodations:* Please work with DSR (<https://www.gvsu.edu/dsr/>) and communicate with me to make sure your needs are met in this course.

Schedule: Subject to change if needed

WEEK	DAY	DATE	Course Module / Folder	Do / Due	Project
1	Tues	8/27/24	Start Here; Sources of Scientific Information		
	Thurs	8/29/24	Neuroanatomy		
	Fri	8/30/24		Optional Extra Credit Pre-Test	
2	Tues	9/3/24	Neuron Structure & Function		
	Thurs	9/5/24	Communication within a Neuron		
	Fri	9/6/24		Are you ready quiz	Team Assignment Survey
3	Tues	9/10/24	NTs & Communication between Neurons		
	Thurs	9/12/24			
	Fri	9/13/24			
4	Tues	9/17/24	Project Intro & Meet your team	Attendance required	
	Thurs	9/19/24	Techniques: Visualizing Cells		
	Fri	9/20/24			Team Contract
5	Tues	9/24/24	Techniques- Recording electrical activity		
	Thurs	9/26/24	Plan your project + Primary Research & Citations	Attendance required	
	Fri	9/27/24		Reflection Survey #1	Draft Project Plan
6	Tues	10/1/24	REVIEW 1		
	Thurs	10/3/24	TEST 1		

WEEK	DAY	DATE	Course Module / Folder	Do / Due	Project
7	Tues	10/8/24	Team Meetings (no class session, I will be in Chicago for Society for Neuroscience)		
	Thurs	10/10/24	Techniques- Quantifying Gene Expression; Genomics		
	Fri	10/11/24			Individual: How to read a scientific article
8	Tues	10/15/24	Sensory Systems- Overview		
	Thurs	10/17/24	Sensory Systems- Cutaneous Touch		
	Fri	10/18/24		Revised Project Plan; Own-Voice Article Overview	

WEEK	DAY	DATE	Course Module / Folder	Do / Due	Project
9	Tues	10/22/24	NO CLASS- FALL BREAK		
	Thurs	10/24/24	Sensory Systems- Pain		
	Fri	10/25/24			
10	Tues	10/29/24	Synaptic Plasticity		
	Thurs	10/31/24	Synaptic Plasticity	Extra credit for wearing a (safe-for-work) costume	
	Fri	11/1/24			
11	MON	11/4/24			Project Outline / Draft
	Tues	11/5/24	Project Peer Review #1	Attendance Required; Bring printed copy of project outline	
	Thurs	11/7/24	Neurological Disorders & Neurological Exams		
	Fri	11/8/24			Schedule Team / Flandreau Meeting
12	Tues	11/12/24	Psychiatric Disorders- PTSD		
	Wed	11/13/24			Revised Project
	Thurs	11/14/24	Team / Flandreau Meetings (Schedule in Advance); Zoom is OK		
	Fri	11/15/24		Reflection Survey 2	Notes & questions from team meeting
13	Tues	11/19/24	REVIEW 2		

WEEK	DAY	DATE	Course Module / Folder	Do / Due	Project
14	Tues	11/26/24	Team meetings to revise project		Notes from team meeting
	Thurs	11/28/24	NO CLASS- THANKSGIVING		
	Fri	11/29/24			
15	Tues	12/3/24	Project Workshop	Attendance Required	
	Weds	12/4/24			PROJECT DUE
	Thurs	12/5/24	Watch & evaluate other teams' projects	Attendance Required	
	Fri	12/6/24		Reflection Survey 3; Quizzes: Evaluate other teams' presentations	Team Evaluation Survey
EXAM WEEK	Thurs	12/12/24	8 - 9:50am	In person discussion, graded based on content, engagement, & thoughtful contribution; accounts for up to 5% of semester grade	

How am I graded?

Survey / Quiz (graded based on completion)	2%
Contribution to class and team	10%
Assignments	18%
Final Project & Discussion on Finals Day	25%
Exams (n = 2)	45%

Grading scale: A: > 93%; A-: 90 - 92.99%; B+: 87 - 89.99%; B: 83-86.99%; B-: 80-82.99%; C+: 77-79.99%; C: 73 - 76.99%; C-: 70-72.99%

Description of Graded Items

Exams 1 & 2: Both are in-class, closed-note, written format. Test 2 is cumulative because the course content builds on itself across the semester. If your test 2 score is higher than your test 1 score, test 2 will be weighted more heavily (30% of final grade for test 2, 10% for test 1). If the scores are the same or if test 1 score was higher, they will be weighted equally (each contributing to 20% of the semester grade). This is to reward improvement and growth across the semester!

Final Project: In teams, you'll select from one of several project options and choose your own topic. This semester-long project covers course-based learning objectives #4 and #5 and supports the first 3 as well. You'll be graded on content and quality. Your peers will also evaluate the content and quality of your product. The final exam time will be devoted to a project Q&A. You will be graded based on answering questions about your own project correctly and thoughtfully AND asking high-quality questions of other teams. This Q&A accounts for up to 5% of semester grade.

Assignments: These provide a scaffold throughout the semester to support teams in the project. Some assignments are individual though most are a team effort. You'll receive instructor and / or peer feedback on each assignment, and have opportunities to make improvements. Revision grades replace draft grades.

Contribution to Class & Team: Neuroscience is an interdisciplinary field and each of you arrive in this class with varied academic backgrounds and interests. Teams are assigned based on time availability and each person on the team will have a unique role. As with most things in life, the more you put in, the more you get out. This portion of the grade gives credit for the effort you devote to the class. This models real-world projects; employers **expect** high quality work-product and pay you for the *work* of creating that product.

Survey / Quiz: There are several reflection surveys throughout the semester. These surveys are designed to practice metacognition– “thinking about thinking”. Metacognition is a skill that can be developed to improve awareness and then control of our own thought processes. Data suggest that reflecting on our work is an important tool to improve performance.