

PSY 330: FOUNDATIONS OF BEHAVIORAL NEUROSCIENCE, Winter 2024

Section 01: Mondays, Wednesdays, and Fridays 9:00-9:50 AM, 2310 AuSable Hall

Section 02: Mondays, Wednesdays, and Fridays 10:00-10:50 AM, 2310 AuSable Hall

Instructor: Glenn R. Valdez, Ph.D.

Office: 1313 AuSable Hall

Office hours: Mondays, Wednesdays, Fridays, 11:00 AM -12:00 PM, 1313 AuSable Hall

Online meetings are available by appointment through Navigate

<https://gvsu.campus.eab.com/pal/SJc6c1-HHk>

Phone: (616) 331-3798

Email: valdezg@gvsu.edu

Course Description:

This course provides an introduction to Behavioral Neuroscience, the scientific study of the interaction between biological processes and behavior. Topics covered include the basic structure of the nervous system, research methods in behavioral neuroscience, psychopharmacology, and neural mechanisms involved in sensory and perceptual processes, and psychiatric disorders. Prerequisites: PSY 101 - Introductory Psychology. This course is subject to the policies listed at <http://www.gvsu.edu/coursepolicies>.

Learning Objectives:

Upon successful completion of this course, students should be able to:

- Identify the structure and function of the major parts of the nervous system
- Describe the process of action potentials
- Describe the process of neurotransmission
- Identify the behavioral function of major brain chemical systems
- Discuss basic research in behavioral neuroscience
- Relate biological processes and concepts to everyday behavior

Course Attendance:

This course will be taught in a traditional face-to-face format. **Please do NOT come to class if you are sick.** At any point in the semester if you cannot come to class because you have symptoms, have had a potential COVID exposure, etc., you should contact me and we will work together to ensure you can still meet class requirements.

Course Blackboard Site: lms.gvsu.edu

All relevant content can be accessed through the course website on Blackboard. When you first access the site, click on the "Start Here" link in the course menu for an overview of the site. Links to course content, course tools, and other relevant information can be found in the course menu. A detailed weekly course schedule can be found at the end of the syllabus.

Technology Needs:

Although this course is being taught in a traditional face to face format, there are some basic technology requirements for the course.

High-speed internet access.

Laptop, tablet, and/or smartphone. A video camera and microphone are only required if you would like to meet with me virtually. If you do not have a laptop, you may be able to apply for financial aid to help cover the cost of one. Please visit the GVSU [Special Circumstance & Financial Hardship Requests](#) site for more information. Laptops may also be checked out from the Library for up to four hours with a photo ID.

Microsoft Office. As a GVSU student, you have access to Microsoft Office 365 for free. You will find the information on how to access this at <http://www.gvsu.edu/it/softwarehardware-discounts-31.htm>.

Zoom. I will be holding virtual appointments through Zoom. All current term enrolled students are eligible to use the GVSU Zoom Business license. You can find more information at <https://www.gvsu.edu/it/gvsu-zoom-business-plan-247.htm>



Flip. We will be using Flip (<https://info.flip.com/>) for online video discussions.



Communication:

I will be sending emails regularly (at least once a week) through Blackboard. You are expected to check your GVSU email regularly for course announcements and updates. The best way to contact me is by email. Monday through Friday, I will check my email regularly between the hours of 9:00 AM-5:00 PM. I will generally respond to emails within 24 hours. If you do not receive a response after 24 hours, please feel free to follow up on the original email. I check my email occasionally during the weekend. However, I do reserve the right to limit my email access over the weekend so please do not expect a response until the following Monday unless it is something urgent. If your email is regarding an urgent matter (i.e. illness, family emergency, etc.), please include the word "URGENT" in the subject line, and I will do my best to respond to your email as soon as possible.

Office Hours:

My regularly scheduled office hours will be held face to face in my office (1313 AuSable Hall) on Mondays, Wednesdays, and Fridays from 11:00 AM -12:00 PM. I also keep an "Open Door Policy" so please feel free to drop in any time I am in my office and the door is open or knock if the door is closed. I am also available to meet in person or online outside of my regularly scheduled office hours by appointment. Appointments can be scheduled through the "Book an Appointment" link on Blackboard or through the link above.

Texts:

Carlson, N.R., Birkett, M. (2020) Foundations of Behavioral Neuroscience (10th edition).

This text is available as an eBook in the Course Blackboard site as part of the GVSU Save program. You can also rent or purchase an electronic version of the text online via the websites below.

Neuroscience Online <https://nba.uth.tmc.edu/neuroscience/>

This is an open-access (free) textbook for the study of neuroscience is provided by current and former faculty of the Department of Neurobiology and Anatomy at The University of Texas Health Science Center at Houston, McGovern Medical School. The Neuroscience Online readings are not required but may be helpful in reviewing the material or for additional reading.

Research Articles (available on Blackboard):

LeVay S. A difference in hypothalamic structure between heterosexual and homosexual men. *Science*. 1991;253(5023):1034-1037. doi:10.1126/science.1887219

Kraehenmann R, Preller KH, Scheidegger M, et al. Psilocybin-Induced Decrease in Amygdala Reactivity Correlates with Enhanced Positive Mood in Healthy Volunteers. *Biol Psychiatry*. 2015;78(8):572-581. doi:10.1016/j.biopsych.2014.04.010

Course Topics:

The course Blackboard site is organized by course topic. PowerPoint slides with additional notes can be found in each course topic folder. Links to quizzes, readings, online discussions, and other relevant materials will also be found in these modules.

Exams:

There will be three in class exams that will be worth 100 points each. The exam format will be fill in the blank, short answer, and short essays. **The goal of the exams is to gauge your ability to integrate and explain concepts in a manner that goes**

beyond a simple repetition of facts and definitions. You will be required to answer all questions on the exam. You do not need to answer the short essay questions in strict essay format, and you may include diagrams, bullet points, etc. to clarify your answers. Your exams will be graded mainly on the content of your answers. Minor grammatical errors will not be penalized. However, grammatical errors that make your answers difficult to understand and/or spelling errors that change the meaning of the answer will result in point deductions. **See the weekly schedule for specific exam dates.**

Quizzes:

There will be 10 online quizzes based on the topics covered in the course. **The goal of these quizzes is to evaluate your basic understanding of the material.** These quizzes will consist of 10 multiple choice questions worth one point each, for a total of 10 points per quiz. **You will only have one attempt to submit the quiz.** Once you submit the quiz, you will no longer be able to revise your answers. You are free to use your notes, readings, and other supplemental materials to complete the quizzes. If a technical error occurs and your quiz is not submitted properly, please email me as soon as possible. **All quizzes will be due on a Friday by 11:59 PM** (see specific dates in the weekly course schedule). Your score will be available upon submission of the quiz. Correct answers will be available for you to review after the due date for the quiz. See the video tutorial on Blackboard for instructions on how to review your quizzes.

Research Article Assignments:

There will be two assignments based specifically on the required research articles listed above. **The goal of these articles is to expose you to some of the classic and current research in the field of behavioral neuroscience, and assess your ability to critically examine them.** These assignments will consist of short answer questions. These assignments will be worth 25 points each.

Assignment sheets will be made available in the Article Assignment folder in Blackboard as Word Documents. They must be completed and uploaded to the same folder by the due dates listed below. **I will only accept assignments that are uploaded as Word Documents or PDF files. If you are using another program to complete the assignment (Pages, Google Docs, etc.), please export the file to a Word Document or PDF file (instructions for how to do so are posted in Blackboard).** You will have two opportunities to submit the assignment in case you have a technical issue. If you are still having technical issues when after your second attempted upload, please contact me so that I can assist you in turning in the exam. **Only the most recent submission will be graded.** Feedback will be provided within the assignment and gradebook using comments through Blackboard's grading tool.



Your answers to the questions will be worth a total of 20 points. The number of questions and points per question will vary for each assignment. The remaining 5 points will be based on the following criteria:

- Formatting: The assignment was uploaded to Blackboard as a Microsoft Word Document or PDF file. The assignment was uploaded to Blackboard as a Microsoft Word Document or PDF file. Questions and instructions were not deleted and answers are single-spaced in standard 12-point font. The assignment does not exceed the 3-page maximum limit.
- Spelling and Grammar: Your assignment should be free of typos, spelling errors, and grammatical errors.

All assignments will be due on a Friday by 11:59 PM (see specific dates in the weekly course schedule). **After the due date, 5 points will be deducted from the overall grade per calendar day that the assignment is submitted late.**

Online Video Discussions:

There will be four graded discussions during the semester, worth 10 points each, using Flip. Flip is a video discussion platform that can be accessed through their website (<https://info.flip.com/>), directly through the link in Blackboard, or by downloading the free app. If you are accessing Flip through the app, make sure you enter the correct join code or scan the correct QR code for your section.

Section	Join Code	QR Code
Section 01	ce718dcf	
Section 02	b08694b0	

The topics for these discussions are:

- Introductions
- Non-Medical Use of Adderall
- Criminal Behavior and Biology

- Stigma and Psychiatric Disorders

The goal of this assignment is to allow us to have more interactive discussions regarding contemporary topics in the field of behavioral neuroscience. For each topic, you will be required to record a post regarding the discussion topic that will be worth 10 points. These posts **will be due on a Friday by 11:59 PM** (see specific dates in the weekly course schedule). **After the due date, 2 points will be deducted from the overall grade per calendar day for late submissions.**

While you are not required to reply to other students' posts, you may earn 5 points towards the Class Participation portion of your grade (see below for more details) by leaving a **substantive video reply** to other students' posts. You may earn a maximum of 15 Class Participation points (three replies) for each discussion topic. Although you are free to post more than three replies, you will not receive additional Class Participation points for the additional replies. **Replies will be due on a Friday by 11:59 PM** (see specific dates in the weekly course schedule).

Discussion Boards:

I will set up a discussion forum regarding the material covered in each topic. While you are not required to post to the discussion board, you may earn points towards the Class Participation portion of your grade (see below for more details) by posting **substantive questions** or leaving a **substantive reply** to other students' questions. In general, posts may address the following questions:

- What did you struggle with this in this topic?
- What questions do you have regarding the materials covered?

If you have a general question about the material, I would encourage you to post them to the discussion board rather than emailing me directly. This will allow others in the class to benefit from your question, and also allow you to earn participation points. Posting a substantive question regarding the material will be worth 2 points towards your Class Participation Grade. Posting a substantive reply to another student's question will be worth 5 points towards your Class Participation Grade. **In order to receive class participation credit, posts must be submitted on the Sunday before the exam on which the topic is covered by 11:59 PM** (see specific dates in the weekly course schedule).

Class Participation:

50 points of your grade will be based on the completion of Class Participation activities. **Class Participation Points are a required part of your grade and NOT extra credit.** You may earn points towards your Class Participation Grade by replying to your classmates' Flip videos or participating the Discussion Boards (see above for more details). You may also earn Class Participation points by meeting with me during my regularly scheduled office hours or virtually outside of my office hours to discuss the course, neuroscience in general, academic or career advice, hockey, cycling (I'm only

partially joking about those last two), or anything else you may want to chat about. Below is a summary of ways to earn points towards your class participation grade. You do not need to complete each activity, only enough activities to earn 50 points.

Activity	Points Value
Replying to Flip posts	5 points
Posting substantive questions to the discussion boards	2 points
Replying to questions posted to the discussion boards with a substantive answer	5 points
Meeting with me during office hours or a scheduled appointment	5 points

Some examples of how to earn full Class Participation Points:

- Reply to 3 Flip Introduction posts (15 points), reply to 3 Flip posts on Non-Medical Use of Adderall (15 points), answer two Discussion Board questions (10 points), meet with me twice (10 points)
- Answer 10 Discussion Board questions (50 points)
- Ask 5 Discussion Board questions (10 points), reply to 3 Flip Introduction posts (15 points), reply to 2 Flip posts on Criminal Behavior and Biology (10 points), answer two Discussion Board questions (10 points), meet with me once (5 points)

Course Grades:

Grades will be based on your performance on examinations, quizzes, research article assignments, discussion assignments, and in-class participation. **EXTRA CREDIT OPPORTUNITIES WILL NOT BE LIKELY.** Grades are calculated based on the following point values.

Exam 1	100 points
Exam 2	100 points
Exam 3	100 points
Quizzes	100 points
Research Article Assignments	50 points
Flip Discussions	40 points
Class Participation	50 points
Total Available Points	540 points

Letter grades will be assigned according to the following scale. Final grades are calculated as the percentage of points based on the of the total points available and are rounded to the nearest whole number.

A-	90-92%
B+	87-89%
B	83-86%
B-	80-82%
C+	77-79%
C	73-76%
C-	70-72%
D+	67-69%
D	60-66%
F	≤ 59

Please consider this general description of what each grade means.

F/D/D+: Despite your best efforts, you are struggling with the material and need help to understand why you are having difficulty. **Please set up an appointment so that we can determine the best course of action for you if you fall in this range.**

C-/C/C+: You did all the necessary work. You learned all the basic material and **know the correct answers.**

B-/B/B+: You did all the necessary work. You learned all the basic material, and you know the correct answers. Plus you really get the material. You **understand the correct answers** and could teach it to a friend.

A-/A: You did all the necessary work. You learned all the basic material, and you know the correct answers. You really get the material. You understand the correct answers and could teach it to a friend. Plus you can use it flexibly and adaptively. You **understand WHY the answers are what they are, and how this material can be applied to different situations.**

Academic Integrity:

The principles of truth and honesty are recognized as fundamental to a community of teachers and scholars. The university expects that both faculty members and students will honor these principles and in so doing protect the validity of university grades. This means that **all academic work will be done by the student to whom it is assigned without unauthorized aid of any kind.** Compliance shall include compliance with the following specific rules:

1. No student shall knowingly, without authorization, procure, provide, or accept any materials which contain questions or answers to any examination or assignment.
2. No student shall, without authorization, complete, in part or in total, any examination or assignment for another person.
3. No student shall, without authorization, allow any examination or assignment to be completed, in part or in total, by another person.
4. No student shall knowingly plagiarize or copy the work of another person and submit it as their own.
5. No student shall submit work that has been previously graded or is being submitted concurrently to more than one course without authorization from the instructor(s) of the class(es) to which the student wishes to submit it.

Accommodation for disability:

If you are in need of accommodations due to a learning, physical, or other disability you must present a memo to me from Disability Support Resources (DSR), indicating the existence of a disability and the suggested reasonable accommodations. If you have not already done so, please contact the Disability Support Resources office (215 CON) by calling 331-2490 or email to dsrgvsu@gvsu.edu. Please note that I cannot provide accommodations based upon disability until I have received a copy of the DSR issued memo. All discussions will remain confidential.

Weekly Course Schedule (Subject to change)

Week	Date	Readings	Assignments
Week 1	1/8 Course Introduction	Required Readings: - Syllabus	Due Friday, 1/12 by 11:59 PM Required - Flip: Introductions
	1/9, 1/12 Neurons and Neurotransmission	Required Video Lecture - Action Potentials - Synapses Recommended Readings - Carlson & Birkett: Chapter 2 Optional Readings - Neuroscience Online: Section 1, Chapter 1, 1.1-1.4 - Neuroscience Online: Section 1, Ch 6, 6.1, 6.2, 6.5, 6.6	Participation Credit - Neurons and Neurotransmission Discussion Board Posts
1/15 Martin Luther King Jr. Day Recess No Class			
Week 2	1/17, 1/19 Neurons and Neurotransmission continued	Required Video Lecture - Neurotransmission Recommended Readings - Carlson & Birkett: Chapter 2 Optional Readings - Neuroscience Online: Section 1, Chapter 1, 1.1-1.4 - Neuroscience Online: Section 1, Ch 6, 6.1, 6.2, 6.5, 6.6	Due Friday, 1/19 by 11:59 PM Required - Neurons and Neurotransmission Quiz Participation Credit - Flip: Replies to Introductions
			Participation Credit - Neurons and Neurotransmission Discussion Board Posts

Week	Date	Readings	Assignments
Week 3	1/22, 1/24, 1/26 Neuroanatomy	Required Video Lectures <ul style="list-style-type: none"> - Basal Ganglia - Thalamus and Hypothalamus - Midbrain and Hindbrain - Peripheral Nervous System Recommended Readings <ul style="list-style-type: none"> - Carlson & Birkett: Chapter 3 Optional Readings <ul style="list-style-type: none"> Neuroscience Online: Section 2, Chapter 1 	Due Friday, 1/26 by 11:59 PM Required <ul style="list-style-type: none"> - Neuroanatomy Quiz
			Participation Credit <ul style="list-style-type: none"> - Neurons and Neurotransmission Discussion Board Posts - Neuroanatomy Discussion Board Posts
Week 4	1/29, 1/31, 2/2 Psychopharmacology	Recommended Readings <ul style="list-style-type: none"> - Carlson & Birkett: Chapter 4 	Due Friday, 2/2 by 11:59 PM Required <ul style="list-style-type: none"> - Psychopharmacology Quiz - Flip: Non-Medical Adderall Use
			Participation Credit <ul style="list-style-type: none"> - Neurons and Neurotransmission Discussion Board Posts - Neuroanatomy Discussion Board Posts - Psychopharmacology Discussion Board Posts

Week	Date	Readings	Assignments
Week 5	2/5, 2/7, 2/9 Neurotransmitter Systems	Required Video Lecture - Psychostimulant Use Recommended Readings - Carlson & Birkett: Chapter 4 Optional Readings - Neuroscience Online: Section 1, Chapter 11, 11.1, 11.4, 11.14, 11.16 - Neuroscience Online: Section 1, Chapter 12, 12.1, 12.5, 12.11 (only the subsections on DA, NE, and 5-HT), 12.27-12.33 - Neuroscience Online: Section 1, Chapter 13, 13.5, 13.7, 13.10, 13.13, 13.17, 13.18 - Neuroscience Online: Section 2, Chapter 8, 8.1	Due Friday, 2/9 by 11:59 PM Required - Neurotransmitter Systems Quiz Participation Credit - Flip: Replies to Non-Medical Adderall Use
	2/9 Exam 1 Review		Due Sunday, 2/11 by 11:59 PM Participation Credit - Neurons and Neurotransmission Discussion Board Posts - Neuroanatomy Discussion Board Posts - Psychopharmacology Discussion Board Posts - Neurotransmitter Systems Discussion Board Posts
Week 6	2/12 EXAM 1 - Neurons and Neurotransmission, Neuroanatomy, Psychopharmacology, Neurotransmitter Systems		
	2/14, 2/16 Sensory Perception	Recommended Readings - Carlson & Birkett: Chapter 6 Optional Readings - Neuroscience Online: Section 2, Chapter 14, 14.3-14.5 - Neuroscience Online: Section 2, Chapter 15	Participation Credit - Sensory Perception Discussion Board Posts

Week	Date	Readings	Assignments
Week 7	2/19, 2/21, 2/23 Sensory Perception continued	Recommended Readings <ul style="list-style-type: none"> - Carlson & Birkett: Chapter 6 - Carlson & Birkett: Chapter 6 Optional Readings <ul style="list-style-type: none"> - Neuroscience Online: Section 2, Chapter 14, 14.3-14.5 - Neuroscience Online: Section 2, Chapter 15 - Neuroscience Online: Section 2, Chapter 12 - Neuroscience Online: Section 2, Chapter 13 	Due Friday, 2/23 by 11:59 PM Required <ul style="list-style-type: none"> - Sensory Perception Quiz
			Participation Credit <ul style="list-style-type: none"> - Sensory Perception Discussion Board Posts
Week 8	2/26, 2/28, 3/1 Sex and Sex Differences	Required Video Lecture <ul style="list-style-type: none"> - Activational Effects Required Readings <ul style="list-style-type: none"> - LeVay, 1991 Recommended Readings <ul style="list-style-type: none"> - Carlson & Birkett: Chapter 10 	Due Friday, 3/1 by 11:59 PM Required <ul style="list-style-type: none"> - LeVay Article Assignment - Sex and Sex Differences Quiz
			Participation Credit <ul style="list-style-type: none"> - Sensory Perception Discussion Board Posts - Sex and Sex Differences Discussion Board Posts
Week 9	3/3-3/10 Spring Break No Classes		
Week 10	3/11, 3/13 Fear and Aggression	Recommended Readings <ul style="list-style-type: none"> - Carlson & Birkett: Chapter 11 Optional Readings <ul style="list-style-type: none"> - Neuroscience Online: Section 4, Chapter 6, 6.5, 6.6 	Due Friday, 3/15 by 11:59 PM Required <ul style="list-style-type: none"> - Flip: Criminal Behavior and Biology - Fear and Aggression Quiz
	3/15 Exam 2 Review		Due Sunday, 3/17 by 11:59 PM Participation Credit <ul style="list-style-type: none"> - Sensory Perception Discussion Board Posts - Sex and Sex Differences Discussion Board Posts

		- Fear and Aggression Discussion Board Posts
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Week	Date	Readings	Assignments
Week 11	3/18 EXAM 2		
	- Sensory Perception, Sex and Sex Differences, Fear and Aggression		
	3/20, 3/22 Learning and Memory	Required Video Lecture - Synaptic Strengthening Recommended Readings - Carlson & Birkett: Chapter 13 Optional Readings - Neuroscience Online: Section 4, Chapter 5, 5.6 - Neuroscience Online: Section 4, Chapter 7, 7.3, 7.4 (only the subsection on long-term potentiation)	Due Friday, 3/22 by 11:59 PM Participation Credit - Flip: Replies to Criminal Behavior and Biology Participation Credit - Learning and Memory Discussion Board Posts
Week 12	3/25, 3/27, 3/29 Learning and Memory continued	Required Video Lecture - Synaptic Strengthening Recommended Readings - Carlson & Birkett: Chapter 13 Optional Readings - Neuroscience Online: Section 4, Chapter 5, 5.6 - Neuroscience Online: Section 4, Chapter 7, 7.3, 7.4 (only the subsection on long-term potentiation)	Due Friday, 3/29 by 11:59 PM Required - Learning and Memory Quiz Participation Credit - Learning and Memory Discussion Board Posts

Week	Date	Readings	Assignments
Week 13	4/1, 4/3, 4/5 Neurological Disorders	Recommended Readings <ul style="list-style-type: none"> - Carlson & Birkett: Chapter 14, Disorders of Language Production and Comprehension Section - Carlson & Birkett: Chapter 15, Dementia and Parkinson's Disease Sections Optional Readings <ul style="list-style-type: none"> - Neuroscience Online: Section 3, Chapter 6, 6.3 - Neuroscience Online: Section 4, Chapter 10 	Due Friday, 4/5 by 11:59 PM Required <ul style="list-style-type: none"> - Neurological Disorders Quiz
			Participation Credit <ul style="list-style-type: none"> - Learning and Memory Discussion Board Posts - Neurological Disorders Discussion Board Posts
Week 14	4/8, 4/10, 4/12 Psychiatric Disorders	Required Reading <ul style="list-style-type: none"> - Kraehenmann et al., 2015 Recommended Readings <ul style="list-style-type: none"> - Carlson & Birkett: Chapter 16 	Due Friday, 4/12 by 11:59 PM Required <ul style="list-style-type: none"> - Kraehenmann et al. Article Assignment - Flip: Stigma and Psychiatric Disorders
			Participation Credit <ul style="list-style-type: none"> - Learning and Memory Discussion Board Posts - Neurological Disorders Discussion Board Posts - Psychiatric Disorders Discussion Board Posts

Week	Date	Readings	Assignments
Week 15	4/15, 4/17, 4/19 Psychiatric Disorders continued	Recommended Readings - Carlson & Birkett: Chapter 16	<p>Friday, 4/19 by 11:59 PM</p> <p>Required</p> <ul style="list-style-type: none"> - Psychiatric Disorders Quiz <p>Participation Credit</p> <ul style="list-style-type: none"> - Flip: Replies to Stigma and Psychiatric Disorders <hr/> <p>Due Sunday, 4/21 by 11:59 PM</p> <p>Participation Credit</p> <ul style="list-style-type: none"> - Learning and Memory Discussion Board Posts - Neurological Disorders Discussion Board Posts - Psychiatric Disorders Discussion Board Posts
Finals Week	<p>Section 02: Monday 4/22 10:00-11:50 AM</p> <hr/> <p>Section 01: Wednesday 4/24 8:00-9:50 AM</p>	<p>EXAM 3</p> <ul style="list-style-type: none"> - Learning and Memory, Neurological Disorders, Psychiatric Disorders 	