

PSY 330-07: FOUNDATIONS OF BEHAVIORAL NEUROSCIENCE, Winter 2024

Instructor: Glenn R. Valdez, Ph.D.

Office: 1313 AuSable Hall

Office hours: Available by appointment. Schedule through Navigate below

<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 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 a video tour 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:

[Basic Technology Requirements](#) for Online and Hybrid courses can be found on the GVSU IT Online Education website. Also, please complete the [Four Steps for Readiness for Online Learning](#).

High-speed internet access.

Laptop, tablet, and/or smartphone with a video camera and microphone. 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 online office hours and 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 twice 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:

Office hour meetings are available by appointment, and be scheduled through my Navigate link <https://gvsu.campus.eab.com/pal/SJc6c1-HHk>. All meetings will be held on Zoom. Once you schedule an appointment, you will receive the Zoom link for the meeting. If the available times do not work for your schedule, I am happy to find a time to meet outside of those times in needed. **If there are no available times that fit your schedule, please do not hesitate to email me so that we can figure out another time to meet.**

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.

Pearson (do not purchase the Revel Access code):

<https://www.pearson.com/store/p/foundations-of-behavioral-neuroscience/P100002609225>

RedShelf: <https://redshelf.com/book/1179636/foundations-of-behavioral-neuroscience-subscription-1179636-9780134641379-neil-r-carlson-melissa-birkett>

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

Learning Modules:

The course will be divided into learning modules based on each course topic. Video lectures and the accompanying PowerPoint slides with additional notes can be found in each module. You will be responsible for all material covered in these videos and on the PowerPoint slides (including any additional notes in the slides). Links to quizzes, readings, online discussions, and other relevant materials will also be found in these modules.

Exams:

There will be three exams that will be worth 100 points each. The exam format will be short essays and will be based on **what is covered in the video lectures, PowerPoint slides, face-to-face class sessions, and readings.** 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. The number of questions and the point total for each question will vary between exams (6-7 questions). You will be required to answer all questions on the exam. Exams will be made available in an Exam folder on Blackboard as Word Documents on the dates listed in the schedule. The only time limit to the exams is that they must be completed and uploaded to the same folder by the due dates listed. **After the due date, 20 points will be deducted from the overall grade per calendar day that the exam is turned in late.**

I will only accept exams that are uploaded as Word Documents or PDF files. If you are using another program to complete the exam (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 one opportunity to submit the exam. If you have a technical issue when you submit the exam, please contact me right away 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 exam and gradebook using comments through Blackboard's grading tool.

All exams are open book/open note. You are free to use the video modules, notes, and readings to complete the exams. The only time limitation for the exam is that it must be submitted by the due date. Due to this format, I will have higher expectations regarding accuracy and clarity of your answers than I would if these were in class, closed book exams. Minor grammatical errors will not be penalized. However, grammatical errors that make your answers difficult to understand and/or typos/spelling errors that change the meaning of the answer will result in point deductions. Obvious typos and errors will also be penalized. **See the weekly schedule for specific availability dates and due dates.**

Quizzes:

Each learning module contains an online quiz based on the topics covered in the video lectures, face-to-face class sessions, and readings. **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 the video modules, notes, and readings 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.

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 handed in late.**

Flip 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, you can access the course using the following join code: **ce718dfc**. If you have not previously registered for Flip, make sure you use your GVSU email (username@mail.gvsu.edu) to sign up.

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, and to help create more of a sense of community within the class. 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).

Class Participation:

50 points of your grade will be based on the completion of Class Participation activities. You may earn points towards your Class Participation Grade by replying to your classmates' Flip videos. You may also earn Class Participation points by scheduling an appointment or meeting with me during my regularly scheduled office hours to discuss the course, neuroscience in general, academic or career advice, 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
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), meet with me four times (20 points)
- Reply to 3 Flip Introduction posts (15 points), reply to 3 Flip posts on Non-Medical Use of Adderall (15 points), reply to 2 Flip posts on Criminal Behavior and Biology (10 points), reply to 2 Flip posts on Stigma and Psychiatric Disorders (10 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	110 points
Research Article Assignments	50 points
Flip Discussions	40 points
Class Participation	50 points
Total Available Points	550 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	93-100%
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	Readings and Online Video Lectures	Assignments
Week 1 1/8-1/12	Learning Module: Neurons and Neurotransmission <u>Required Videos</u> <ul style="list-style-type: none"> - Neurons and Neurotransmission (videos 1-5) <u>Recommended Readings</u> <ul style="list-style-type: none"> - Neuroscience Online: Section 1, Chapter 1, 1.1-1.4 - Neuroscience Online: Section 1, Ch 6, 6.1, 6.2, 6.5, 6.6 - Carlson & Birkett: Chapter 2 	Due Friday, 1/12 by 11:59 PM <u>Required</u> <ul style="list-style-type: none"> - Flip: Introductions
Week 2 1/13-1/19	Learning Module: Neurons and Neurotransmission (continued) <u>Required Videos</u> <ul style="list-style-type: none"> - Neurons and Neurotransmission (videos 6-11) <u>Recommended Readings</u> <ul style="list-style-type: none"> - Neuroscience Online: Section 1, Chapter 1, 1.1-1.4 - Neuroscience Online: Section 1, Ch 6, 6.1, 6.2, 6.5, 6.6 - Carlson & Birkett: Chapter 2 	Due Friday 1/19 by 11:59 PM <u>Required</u> <ul style="list-style-type: none"> - Neurons and Neurotransmission Quiz <u>Participation Credit</u> <ul style="list-style-type: none"> - Flip: Replies to Introductions
Week 3 1/20-1/26	Learning Module: Neuroanatomy <u>Required Videos</u> <ul style="list-style-type: none"> - Neuroanatomy (all videos) <u>Recommended Readings</u> <ul style="list-style-type: none"> - Neuroscience Online: Section 2, Chapter 1 - Carlson & Birkett: Chapter 3 	Due Friday 1/26 by 11:59 PM <u>Required</u> <ul style="list-style-type: none"> - Neuroanatomy Quiz
Week 4 1/27-2/2	Learning Module: Psychopharmacology <u>Required Videos</u> <ul style="list-style-type: none"> - Psychopharmacology (all videos) <u>Recommended Readings</u> <ul style="list-style-type: none"> - Carlson & Birkett: Chapter 4 	Due Friday 2/2 by 11:59 PM <u>Required</u> <ul style="list-style-type: none"> - Flip: Non-Medical Adderall Use - Psychopharmacology Quiz
Week 5 2/3-2/9	Learning Module: Neurotransmitter Systems <u>Required Videos</u> <ul style="list-style-type: none"> - Neurotransmitter Systems (all videos) <u>Recommended Readings</u> <ul style="list-style-type: none"> - 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 - Carlson & Birkett: Chapter 4 	Due Friday 2/9 by 11:59 PM <u>Required</u> <ul style="list-style-type: none"> - Neurotransmitter Systems Quiz <u>Participation Credit</u> <ul style="list-style-type: none"> - Flip: Non-Medical Adderall Use Replies

Week	Readings and Online Video Lectures	Assignments
Exam 1 2/12-2/13	Exam 1 - Neurons and Neurotransmission - Neuroanatomy - Psychopharmacology - Neurotransmitter Systems	Monday, 2/12 at 12:01 AM - Exam 1 Available Tuesday, 2/13 by 11:59 PM - Exam 1 Due
Week 6 2/10-2/16	Learning Module: Visual Perception <u>Required Videos</u> - Visual Perception (all videos) <u>Recommended Readings</u> - Neuroscience Online: Section 2, Chapter 14, 14.3-14.5 - Neuroscience Online: Section 2, Chapter 15 - Carlson & Birkett: Chapter 6	Due Friday 2/16 by 11:59 PM <u>Required</u> - Visual Perception Quiz
Week 7 2/17-2/23	Learning Module: Auditory Perception and Somatosenses <u>Required Videos</u> - Auditory Perception (all videos) - Somatosenses (all videos) <u>Recommended Readings</u> - Neuroscience Online: Section 2, Chapter 12 - Neuroscience Online: Section 2, Chapter 13 - Carlson & Birkett: Chapter 7	Due Friday 2/23 by 11:59 PM <u>Required</u> - Auditory Perception and Somatosenses Quiz
Week 8 2/24-3/1	Learning Module: Sex and Sex Differences <u>Required Videos</u> - Sex and Sex Differences (all videos) <u>Required Reading</u> - LeVay, 1991 <u>Recommended Readings</u> - Carlson & Birkett: Chapter 11	Due Friday 3/1 by 11:59 PM <u>Required</u> - Sex and Sex Differences Quiz - LeVay Article Assignment
Week 9 3/2-3/10	Spring Break	
Week 10 3/11-3/15	Learning Module: Fear and Aggression <u>Required Videos</u> - Fear and Aggression (all videos) <u>Recommended Readings</u> - Neuroscience Online: Section 4, Chapter 6, 6.5, 6.6 - Carlson & Birkett: Chapter 11	Due Friday 3/15 by 11:59 PM <u>Required</u> - Flip: Criminal Behavior and Biology - Fear and Aggression Quiz

Week	Readings and Online Video Lectures	Assignments
Exam 2	Exam 2	Monday, 3/18 at 12:01 AM

3/18-3/19	<ul style="list-style-type: none"> - Visual Perception - Auditory Perception and Somatosenses - Fear and Aggression - Sex and Sex Differences 	<ul style="list-style-type: none"> - Exam 2 Available Tuesday, 3/19 by 11:59 PM - Exam 2 Due
Week 11 3/16-3/22	<p>Learning Module: Learning and Memory</p> <p><u>Required Videos</u></p> <ul style="list-style-type: none"> - Learning and Memory (videos 1-4) <p><u>Recommended Readings</u></p> <ul style="list-style-type: none"> - 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) - Carlson & Birkett: Chapter 13 	<p>Due Friday 3/22 by 11:59 PM</p> <p><u>Participation Credit</u></p> <ul style="list-style-type: none"> - Flip: Criminal Behavior and Biology Replies
Week 12 3/23-3/29	<p>Learning Module: Learning and Memory (continued)</p> <p><u>Required Videos</u></p> <ul style="list-style-type: none"> - Learning and Memory (videos 5-8) <p><u>Recommended Readings</u></p> <ul style="list-style-type: none"> - 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) - Carlson & Birkett: Chapter 13 	<p>Due Friday 3/29 by 11:59 PM</p> <p><u>Required</u></p> <ul style="list-style-type: none"> - Learning and Memory Quiz
Week 13 3/30-4/5	<p>Learning Modules: Neurological Disorders</p> <p><u>Required Videos</u></p> <ul style="list-style-type: none"> - Alzheimer's Disease (all videos) - Parkinson's Disease (all videos) <p><u>Recommended Readings</u></p> <ul style="list-style-type: none"> - Neuroscience Online: Section 3, Chapter 6, 6.3 - Neuroscience Online: Section 4, Chapter 10 - Carlson & Birkett: Chapter 15 (only the subsections on Dementia and Parkinson's Disease) 	<p>Due Friday 4/5 by 11:59 PM</p> <p><u>Required</u></p> <ul style="list-style-type: none"> - Neurological Disorders Quiz

Week	Readings and Online Video Lectures	Assignments
Week 14	Learning Module: Psychiatric Disorders	Due Friday 4/12 by 11:59 PM

<p>4/6-4/12</p>	<p><u>Required Videos</u></p> <ul style="list-style-type: none"> - Mood Disorders (all videos) - Anxiety Disorders (all videos) <p><u>Required Reading</u></p> <ul style="list-style-type: none"> - Kraehenmann et al., 2015 <p><u>Recommended Readings</u></p> <ul style="list-style-type: none"> - Carlson & Birkett: Chapter 16 	<p><u>Required</u></p> <ul style="list-style-type: none"> - Flip: Stigma and Psychiatric Disorders - Kraehenmann et al. Article Assignment
<p>Week 15 4/13-4/19</p>	<p>Learning Module: Psychiatric Disorders (continued)</p> <p><u>Required Videos</u></p> <ul style="list-style-type: none"> - Schizophrenia (all videos) <p><u>Recommended Readings</u></p> <ul style="list-style-type: none"> - Carlson & Birkett: Chapter 16 	<p>Due Friday 4/19 by 11:59 PM</p> <p><u>Required</u></p> <ul style="list-style-type: none"> - Psychiatric Disorders Quiz <p><u>Participation Credit</u></p> <ul style="list-style-type: none"> - Flip: Stigma and Psychiatric Disorders Replies
<p>Exam 3 4/22-4/23</p>	<p>Exam 3</p> <ul style="list-style-type: none"> - Learning and Memory - Neurological Disorders - Psychiatric Disorders 	<p><u>Monday, 4/22 at 12:01 AM</u></p> <ul style="list-style-type: none"> - Exam 3 Available <p><u>Tuesday, 4/23 by 11:59 PM</u></p> <ul style="list-style-type: none"> - Exam 3 Due