

PSY 435 Advanced Neuroscience and Behavior

Course Syllabus, Sections 01, 02, 03 Fall 2025

Course Information

Course Title: Advanced Neuroscience and Behavior

Course Code: PSY 435

Credits: 3

Prerequisites: PSY 101 (Introductory Psychology), PSY 330 (Foundations of Behavioral Neuroscience)

Course Format: Traditional (face-to-face)

Class Schedule:

- **PSY 435-01:** Tues/Thurs, 8:30–9:45 AM, MAK-A2165
- **PSY 435-02:** Tues/Thurs, 11:30 AM–12:45 PM, HRY-113
- **PSY 435-03:** Tues/Thurs, 10:00–11:15 AM, MAK-A2165

Instructor Information

Instructor: Dr. Paolo Campus

Office: 2115 Au Sable Hall

Office Hours: Tuesdays and Thursdays, 1:00 PM - 03:00 PM (or by appointment)

Email: campusp@gvsu.edu

Phone: (616) 331-2421

Zoom: [Personal Meeting ID](#) (use this link for personal meetings)

Best way to contact me: Email is preferred. I will respond within 24 hours to messages received Mon–Thurs, 9:00 AM–5:00 PM. Emails sent over the weekend may not receive a reply until Monday. For urgent matters, include “URGENT” in the subject line.

Course Description

This course provides an advanced examination of behavioral neuroscience, with emphasis on neuroplasticity, neuropharmacology, epigenetics, neuroendocrinology, and circuit dynamics underlying adaptive and maladaptive behaviors. Students will engage with cutting-edge research methods and apply neuroscientific principles to real-world behavioral and clinical contexts.

The course will be divided into four learning modules:

Module 1: Neural Circuits and Behavioral Control.

- Tools for studying brain and behavior.
- Neural communication, synaptic plasticity, and Hebbian learning.
- Organization of cortical and subcortical circuits.

Module 2: Cognitive Neuroscience.

- Attention networks and neural oscillations.
- Working memory & prefrontal–parietal interactions.
- Decision-making under uncertainty.
- Social cognition & theory of mind networks.
- Metacognition & self-awareness.

Module 3: Neuroendocrinology of Emotion and Motivation.

- Hormonal regulation of fear, aggression, and reward.
- Stress and its impact on brain function.
- Sex differences and hormonal influences on cognition & behavior.

Module 4: Genes, Epigenetics, and Behavior.

- Heritability of behavior (twin studies, GWAS).

- Epigenetic regulation and neural adaptation.
- Trauma, resilience, and brain disorders.
- Emerging topics: connectomics, brain–machine interfaces, psychedelics, AI in neuroscience.

Course Objectives

By the end of this course, you will be able to:

- Explain mechanisms of synaptic strengthening and weakening.
- Evaluate the role of epigenetic factors in shaping behavior.
- Describe cutting-edge techniques for studying brain circuits in vivo.
- Identify neural correlates of cognitive, emotional, and motivational processes.
- Analyze interactions between the nervous and endocrine systems.
- Demonstrate critical understanding of brain disorders, symptoms, and current treatment approaches.

Materials

Internet Access: All course materials/contents, including, readings, lecture slides, articles, study guides, announcements, exams, and grades, will be posted on the course Blackboard page, available at <https://lms.gvsu.edu/>.

Computer/Tablet/Smartphone: Blackboard runs on Windows, Linux, iOS, Android, or any other electronic device with an up-to-date web browser.

PDF Reader: Some materials in this course will be presented in PDFs. To view these materials, you need a [PDF reader](#).

Word Processor: You will need a word processing software (e.g., Microsoft Office, Google Docs, etc.) to complete some course assignments. [Office 365](#) is available for free for personal computers/devices for qualifying GVSU students.

Evaluation and Grading

Grades will be determined by your scores on three types of assessment:

1. **Exams** (240 points, or 60% of the final grade). The course will have a total of four exams (three midterm and one final). Each exam consists of 60 multiple choices or fill in the blank questions. The exams will be available on Blackboard, at least seven days prior to the due date. You can take the exam anytime during this window. Once you start, the exam can't be stopped and resumed, and must be completed within 70 minutes. During each exam, you may access slides, study guides, class notes, and the Blackboard page of the course. Use these resources sparingly: because of the time constraints, you won't be able to look up every answer. Therefore, the best strategy for doing well is reading the material in advance.
2. **Discussion Board** (80 points, or 20% of the final grade). Every week I will post one or more discussion board questions exploring some of the concepts discussed in class over the course of the week. You will have to choose one of the available discussions and write a ~150 words response. The purpose of this assignment is to encourage class attendance and stimulate critical thinking applied to the neuroscience concepts covered in class. While your subjective perspective on a given topic will be welcomed and appreciated, do not base your answers solely on your personal opinion. Make sure to explain your answers referring to concepts and/or theories discussed in class. If necessary, provide empirical evidence to support your claims, and cite any referenced source. Always keep in mind that the Discussion Board is not an informal chat room. Your contribution should be thoughtful, considerate, professional, and respectful of others' opinions/beliefs. There will be a total of 4 discussion board assignments. Each discussion is worth 20 points, for a total of 80 points available (20% of the final grade).
3. **Journal Club** (80 points, or 20% of the final grade). In this assignment, you will work in small groups to lead the class in a journal club-style discussion of a recent neuroscience research article. The purpose is to engage critically with current

scientific literature, improve your ability to read and interpret primary research, and practice communicating complex scientific ideas clearly. Each group will select a peer-reviewed research article published within the last 5 years in a neuroscience journal (e.g., Nature Neuroscience, Neuron, Journal of Neuroscience, Biological Psychiatry, Psychopharmacology, etc.). Your group will present the article to the class, summarizing its background, research question, methods, key findings, and broader implications. You will also prepare discussion questions to engage your classmates.

Further instructions, including due dates, grading rubrics, and specific guidelines will be provided on the Blackboard page of the course.

Final grades will be determined at the end of the semester by calculating the total points accumulated. Grading cutoff is as follows:

- 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+: 65–69%
- D: 60–64%
- F: <60%

Class Policies

GVSU Email and Course Communications. Students are responsible for all communications sent via Blackboard or via their GVSU email accounts. GVSU student email can be accessed by visiting: mail.gvsu.edu and Blackboard at: mybb.gvsu.edu.

Assignments and Assessments. Each student is required to complete all learning activities by the due date deadline, as indicated in Blackboard. All assignments, graded discussions, quizzes, exams etc. are submitted electronically to Blackboard. There are several available computer labs (gvsu.edu/it/lab-hours-66.htm) available for you to complete course work.

Late/make-up policy. No late or make-up assignments or exams will be permitted. Students who do not complete requirements on schedule due to personal illness, accidents, family affliction, official university activities or religious holidays must provide documentation of the circumstances. I recognize there may be other special circumstances and students should reach out to me as soon as possible if this is the case. Extensions or late assignments will be accepted at my discretion.

Participation. A large part of the learning in this course comes not only from reading, but also from participating in class activities. Therefore, it is to your benefit to take advantage of these learning opportunities. While I will not formally mark student attendance, it is strongly recommended that you attend all classes to succeed in this course. In class we will cover some topics that are not discussed in the textbook, and some quiz and exam questions may refer to material only covered in class. You are responsible for material, announcements, and learning activities covered in class. If you miss a lecture, I recommend you obtain notes from at least two different classmates. In case of illness and/or special circumstances, please talk to me. I want everyone to be successful in the class and will support you to help that happen, but I do expect regular attendance in class and participation with course material throughout the semester. Please come to all

classes ready to engage as an active learner in class discussions and activities. Please treat everyone in the classroom with respect. Please limit electronic devices to classroom needs unless absolutely necessary. If conflicts for the class occur, please communicate with me as soon as possible. See the university's attendance policy in the online catalog for more information.

Accommodations. Students requiring accommodations should contact the instructor and accessibility services.

University Policies

Last Day to Drop. For Fall 2025 semester, the last day to drop a course with a 100% tuition refund is August 29, 2025, by 5:00 p.m. After this deadline, students can still drop courses but will receive a "W" (withdrawal) grade. (gvsu.edu/registrar/course-withdrawals-6.htm).

Student Code of Conduct. Standards of conduct are established in order to generate an atmosphere in which the goals and objectives of the institution can flourish. Individual rights can only be ensured with acceptance of individual and group responsibilities and respect for the rights of others. Individuals attending GVSU automatically place themselves under the applicable rules and regulations of the institution.

Academic Integrity. All course assignments, learning activities, and assessments, are to be authored and completed individually, by the student themselves. Failure to be able to correctly cite, explain and defend your submissions is an indication that it is not your work. While assisting another student in learning is part of the academic process, completing the assigned work as a team or group effort (with the exception of group projects as assigned by the instructor) is not allowed and will be considered Academic Dishonesty. No Academic Dishonesty will be tolerated, and such activity may result in failure of a specific assignment, an entire course, or, if flagrant, dismissal from Grand Valley. 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 his or her 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.

For further information see the Student Code, and the consequences include penalties established by GVSU's Academic Integrity policy (<https://www.gvsu.edu/conduct/academic-integrity-14.htm>).

Plagiarism. Any ideas or material taken from another source for either written or oral presentation must be fully acknowledged. Offering the work of someone else as one's own is plagiarism. The language or ideas taken from another may range from isolated formulas, sentences, or paragraphs to entire articles copied from books, periodicals, speeches, or the writing of other students. The offering of materials assembled or collected by others in the form of projects or collections without acknowledgment is also considered plagiarism. Any student who fails to give credit in written or oral work for the ideas or materials that have been taken from another is guilty of plagiarism. Such activity may result in failure of a specific assignment, an entire course, or, if flagrant, dismissal from Grand Valley. For further information see the Student Code.

AI Policy Statement. [by David A. Joyner @davidjoyner@fediscience.org] We treat AI-based assistance, such as ChatGPT and Copilot, the same way we treat collaboration with other people: you are welcome to talk about your ideas and work with other people, both

inside and outside the class, as well as with AI-based assistants. However, all work you submit must be your own. You should never include in your assignment anything that was not written directly by you without proper citation (including quotation marks and in-line citation for direct quotes). Including anything you did not write in your assignment without proper citation will be treated as an academic misconduct case. If you are unsure where the line is between collaborating with AI and copying from AI, we recommend the following:

1. Never hit “Copy” within your conversation with an AI assistant. You can copy your own work into your conversation, but do not copy anything from the conversation back into your assignment. Instead, use your interaction with the AI assistant as a learning experience, then let your assignment reflect your improved understanding.
2. Do not have your assignment and the AI agent open at the same time. Similar to above, use your conversation with the AI as a learning experience, then close the interaction down, open your assignment, and let your assignment reflect your revised knowledge. This includes avoiding using AI directly integrated into your composition environment: just as you should not let a classmate write content directly into your submission, so also avoid using tools that directly add content to your submission.

Campus Emergencies. In case of fire, immediately proceed to the nearest exit during a fire alarm. Use a staircase, not an elevator. To sign up for campus emergency alerts and to access more information, please visit the GVSU Emergency website (<https://www.gvsu.edu/emergency>).

Learning Resources. See the “Help & Support” section of Blackboard for help with using Blackboard; a link to the Blackboard Student Mobile App and Blackboard IM; GVSU computer lab hours and locations; GVSU IT Help Desk (<https://www.gvsu.edu/it/helpdesk/>); accessibility and Disability Support Resources (<https://www.gvsu.edu/dsr/>).

Writing Center. The Fred Meijer Center for Writing, with locations at the Allendale and Pew/Downtown Grand Rapids campuses, is available to assist you with writing for any of your classes. Writing consultants, who are fellow GVSU students, are trained to help you with all stages of your writing process, from brainstorming to organizing to editing your papers. Simply bring a draft of your paper, the assignment sheet, and your questions/concerns to any of the Center's locations. Also, through your Gmail account, you have access to online consultations through Google Docs. The Center's services are free, and you can drop in and work with a consultant or make an appointment, either through our website or by calling the Center (331-2922). For more information about our services and locations, please visit the Writing Center website.

Psych Friends. If you feel you could use some extra help/guidance/support in any academic domain or for your well-being, please consider scheduling an appointment with a mentor through Psych Friends. Psych Friends mentors are upper-level undergraduate peer mentors who are trained to provide support in many areas including: effective study and time management techniques, exam preparation and reflection skills, comprehension of the psychology and behavioral neuroscience major requirements, tips for engaging in the field, strategies for education continuation, methods for maintaining physical and mental health. Schedule an appointment here: <https://www.gvsu.edu/navigate> and Questions? Email psychfriends@gvsu.edu

Disability Support Resources. If you need accommodations because of a learning, physical, or other disability, please contact your instructor and Disability Support Resources (<https://www.gvsu.edu/dsr/>). Furthermore, if you have a physical disability and think you will need assistance evacuating this classroom and/or building in an emergency situation, please make me aware so I can develop a plan to assist you. Assistive technology computers are available in many GVSU computer labs (<https://www.gvsu.edu/dsr/accessible-computer-labs-68.htm>). Also, Blackboard has a commitment to accessibility statement (blackboard.com/accessibility.aspx) providing information about accessibility in all of their products.

Mental health. Mental health concerns, including overwhelming stress, excessive worry, difficulty participating in daily activities, and changes in mood, appetite, or sleep patterns can interfere with your academic performance. College student surveys report that roughly 1 out of 3 students screen positive for a current mental health concern (Healthy Minds Study). GVSU values your health and wellness and provides services to support your mental health. If you would like mental health support or are concerned for another member of our campus community, reach out to the University Counseling Center for free resources, self-help options, and services. Also, visit Campus Recreation & Wellness for additional health and wellness programming.

Changes to the Syllabus. The instructor reserves the right to change the contents of this syllabus. Students will be given notice of relevant changes in class, through a Blackboard announcement, or through GVSU e-mail.

This course is subject to the GVSU policies listed at <http://www.gvsu.edu/coursepolicies/>.