

San José State University
Department of Psychology
PSYC/BIO 129, Neuroscience, Sec. 80
Summer 2026

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Office Hours: Thursdays 9:00- 10:00 AM and by appointment
<https://sjsu.zoom.us/j/84944772266>
Class Days/Time: Tuesday - Thursday 10:00 AM – 2:30 PM
Classroom: <https://sjsu.zoom.us/j/88920846755>
Prerequisites: Either PSYC 030 and 3 units of biology, or 9 units of biology

CANVAS and MYSJSU Messaging

Copies of some course materials such as the syllabus, major assignment handouts, etc. may be found on your Canvas course page. Messages to the class may be sent through Canvas or SJSU email.

Course Description

Neuroscience is defined as the study of the nervous system. This field comprises several related disciplines including: neuroanatomy, neurochemistry, neuroendocrinology, neuropathology, pharmacology, physiology, and immunology. The united efforts of such disciplines have produced a better understanding of the ultimate function of the nervous system and behavior. This course will examine findings produced by these efforts. It will involve examining specific topics and research methods in detail.

Course Goals and Student Learning Objectives

Learning Outcomes

More specific course outcomes have been outlined in the *Summary of Events* following each quiz and exam (see below). Course and program learning objectives are as follows.

Course Learning Outcomes (CLOs)

Upon successful completion of this course, Psych/Bio 129 students will be able to:

CLO1 – *Students will be able to* –identify, describe, and communicate the major concepts related to basic neuroanatomy, neurophysiology and psychopharmacology. Assessment for this will be in quiz 1, midterm I, and in parts of quiz 2 and midterm II.

CLO2 – *Students will be able to* –describe, and communicate the major transduction mechanisms, neuroanatomical pathways and theoretical perspectives associated with vision and nonvisual sensory systems, motivational systems and learning processes. Assessment for this CLO will be conducted in quizzes 2 and 3, and midterms I and II.

CLO3 – *Students will be able to* –identify, describe, and communicate experimental approaches and associated empirical findings for various methodological approaches in neuroscience. Assessment for this CLO will be conducted primarily in Midterm I, but also in quizzes 1 - 3, and midterms II and III.

CLO4 – *Students will be able to* – think critically and creatively about neuroscience approaches to address issues related to behavioral and mental health processes. This CLO will be assessed in essay-type questions on primarily on the final exam.

CLO5 – *Students will be able to* – apply neuroscience principles to individual, interpersonal and group behavioral and mental health issues. This will be assessed on the final exam.

Program Learning Outcomes (PLO)

Upon successful completion of the psychology major requirements...

PLO1 – Knowledge Base of Psychology – Students will be able to identify, describe, and communicate the major concepts, theoretical perspectives, empirical findings, and historical trends in psychology.

PLO2 – Research Methods in Psychology – Students will be able to design, implement, and communicate basic research methods in psychology, including research design, data analysis, and interpretations.

PLO3 – Critical Thinking Skills in Psychology – Students will be able to use critical and creative thinking, skeptical inquiry, and a scientific approach to address issues related to behavior and mental processes.

PLO4 – Application of Psychology – Students will be able to apply psychological principles to individual, interpersonal, group, and societal issues.

PLO5 – Values in Psychology – Students will value empirical evidence, tolerate ambiguity, act ethically, and recognize their role and responsibility as a member of society.

Goals for this course fall into three broad categories. Learning outcomes for the first part of the course are a general understanding of the philosophical issues driving much of contemporary neuroscience research; an understanding of mechanisms used during brain development, and students are expected to develop a firm hold on biological foundational knowledge as it relates to the central nervous system. The second part of the course will provide students with a detailed understanding of the sensory systems. Following the final section of the course, students should have an understanding of how neural systems contribute to various behaviors ranging from motivation to learning.

Required Texts/Readings

Text: Bear, M. F., Connors, B. W., and Paradiso, M. A. (2016). Neuroscience: Exploring the Brain (4th ed.). Philadelphia, PA: Wolters Kluver.

Additional Reading and Writing Resources: Handouts will be provided to supplement reading. Check the website or Canvas when directed to do so.

Writing Assistance: http://psychology.about.com/science/psychology/msub_writing.htm

Writing tips: <https://www.sjsu.edu/writingcenter/handouts/>

Literature review tips and full

instruction: <https://sites.google.com/sjsu.edu/gradwritertoolbox/research-papers/literature-reviews>

Research and plagiarism assistance: <http://tutorials.sjlibrary.org/tutorial/index.html>

Library Liaison

The SJSU librarian specializes in social sciences and may serve as a resource for the

development of research ideas and for finding the most appropriate research materials.

Classroom Protocol

To succeed in this course, attendance is critical, particularly on Tuesdays and Thursdays. You should come prepared for class discussions with a completion of course readings. Students are responsible for keeping current on changes that may occur on the tentative schedule of events in the syllabus. Students are expected to **maintain a level of professional and courteous behavior at all times.**

Cell phones and other electronic devices

You are to turn off cell phones and other electronic devices before the beginning of class.

Communication with instructor

Use email, office hours, or class time. I will respond to emails M-F 9:00 – 5:00. Please allow 1-2 business days for a response, and be certain to be specific about the topic. For example, the subject line should include the course (129) and brief topic (e.g., appointment). Please note, email is not a mechanism to get extensive help with course content or with papers. Please come to my office hours for these and other issues that require more discussion. Also note that lecture notes (or a lecture recap) will not be emailed to students. When a lecture is missed, it is your responsibility to get notes from a classmate.

Consent for Recording of Class and Public Sharing of Instructor Material

University Policy s12-7, <http://www.sjsu.edu/senate/docs/S12-7.pdf>, requires students to obtain instructor's permission to record the course.

- “Common courtesy and professional behavior dictates that you notify someone when you are recording him/her. You must obtain the instructor's permission to make audio or video recordings in this class. This permission allows the recordings to be used for your private, study purposes only. The recordings are the intellectual property of the instructor; you have not been given any rights to reproduce or distribute the material.”
- If you would like to record course lectures, please obtain permission from your instructor in writing (via email is ok) or orally and indicate whether you will record for the whole semester or on a class by class basis.
- “Course material developed by the instructor is the intellectual property of the instructor and cannot be shared publicly without his/her approval. You may not publicly share or upload instructor-generated material for this course such as exam questions, lecture notes, or homework solutions without instructor consent”.

Dropping and Adding

Students are responsible for understanding the policies and procedures about add/drop, grade forgiveness, etc. Refer to the current semester's [Catalog Policies](http://info.sjsu.edu/static/catalog/policies.html) section at <http://info.sjsu.edu/static/catalog/policies.html>. Add/drop deadlines can be found on the [current academic calendar](http://www.sjsu.edu/academic_programs/calendars/academic_calendar/) web page located at http://www.sjsu.edu/academic_programs/calendars/academic_calendar/. The [Late Drop Policy](http://www.sjsu.edu/aars/policies/latedrops/policy/) is available at <http://www.sjsu.edu/aars/policies/latedrops/policy/>. Students should be aware of the current deadlines and penalties for dropping classes.

Assignments and Grading Policy

The requirements for this class include 4 quizzes, 4 examinations (3 midterms and a final exam). Each quiz is worth approximately 8% of your grade. The midterms count 15% toward your final grade. The final exam will also be worth a total of 23%.

Quiz format is objective (i.e., multiple choice, true/false, fill-in, identify, and match), and short answer. The objective portion will be provided on Canvas. Examination format is objective and essay. The final exam is scheduled to be due Friday 7/3.

Definition of a Credit Hour

Success in this course is based on the expectation that students will spend, for each unit of credit, a minimum of forty-five hours over the length of the course (normally 3 hours per unit per week with 1 of the hours used for lecture) for instruction or preparation/studying or course related activities. As an example, the expectation of work for a 3-credit course is 150 minutes of direct faculty instruction and six hours of out-of-class student work each week.

Make-up Exams

Due to the rapid pace of the class, there can be **no early, late or make-up exams or work** (with the exception of a written medical excuse other extraordinary situations, which does not include a work conflict). Please check your schedule to ensure that you have no conflicts with the due dates. You may also review exams during office hours and by appointment.

Late Assignments

Again, no extensions for assignments will be given except in cases of documented emergencies or serious illness.

Extra Credit

A maximum of 8 final extra credit points may be earned by attending research presentations, either professional conferences or departmental (Psychology or Biology Departmental sponsored). You may also review select movies. To receive credit, you must write a brief summary (1 page) of each presentation or film (Due 7/2). All summaries are to be typed (double-spaced) with a reference to extra credit event. Point value per activity will be determined by the professor. There will be additional extra credit opportunities in class throughout the summer sessions. These extra credit opportunities have specific deadlines, and late assignments cannot be accepted.

University Policies

Academic integrity

Academic integrity is essential to the mission of San José State University. *As such, students are expected to perform their own work (except when collaboration is expressly permitted by the course instructor) without the use of any outside resources. Students are not permitted to use old tests, quizzes when preparing for exams, nor may they consult with students who have already taken the exam. When practiced, academic integrity ensures that all students are fairly graded. Violations to the Academic Integrity Policy undermine the educational process and will not be tolerated. It also demonstrates a lack of respect for oneself, fellow students and the course instructor and can ruin the university's reputation and the value of the degrees it offers. The [Student Conduct and Ethical Development website](http://www.sa.sjsu.edu/judicial_affairs/index.html) is available at http://www.sa.sjsu.edu/judicial_affairs/index.html.*

Violators of the Academic Integrity Policy will be subject to failing this course and being reported to the Office of Judicial Affairs for disciplinary action which could result in suspension or expulsion from San José State University.

The following URL will take you to the SJSU library's plagiarism tutorial. If you have not yet completed this, it is worth your while to do so:
<http://tutorials.sjlibrary.org/plagiarism/index.htm>

Campus Policy in Compliance with the American Disabilities Act

If you need course adaptations or accommodations because of a disability, or if you need to make special arrangements in case the building must be evacuated, please make an appointment with me as soon as possible, or see me during office hours. Presidential Directive 97-03 requires that students with disabilities requesting accommodations must register with the Accessible Education Center (AEC) at <http://www.sjsu.edu/aec/> to establish a record of their special needs.

Student Technology Resources (Check availability during COVID-19 SIP)

Computer labs for student use are available in the Academic Success Center located on the 1st floor of Clark Hall and on the 2nd floor of the Student Union. Additional computer labs may be available in your department/college. Computers are also available in the Martin Luther King Library.

A wide variety of audio-visual equipment is available for student checkout from Media Services located in IRC 112. These items include digital and VHS camcorders, VHS and Beta video players, 16 mm, slide, overhead, DVD, CD, and audiotape players, sound systems, wireless microphones, projection screens and monitors.

Learning Assistance Resource Center

The Learning Assistance Resource Center (LARC) is designed to assist students in the development of their full academic potential and to motivate them to become self-directed learners. The center provides support services, such as skills assessment,

individual or group tutorials, subject advising, learning assistance, summer academic preparation and basic skills development. The [LARC website](http://www.sjsu.edu/larc/) is located at <http://www.sjsu.edu/larc/>.

SJSU Writing Center (Check availability during the summer session)

The SJSU Writing Center is staffed by professional instructors and upper-division or graduate-level writing specialists from each of the seven SJSU colleges. Our writing specialists have met a rigorous GPA requirement, and they are well trained to assist all students at all levels within all disciplines to become better writers. The [Writing Center website](http://www.sjsu.edu/writingcenter/about/staff/) is located at <http://www.sjsu.edu/writingcenter/about/staff/>.

Below is to provide a quick summary of important course events. I have also included a brief description of somewhat broad learning outcomes for each section. You may find this, along with the study guides, useful when preparing for quizzes and exams. A detailed schedule of events is also provided, but this may be subject to modification as the instructor deems necessary. You are responsible for recording any changes that may occur throughout the semester.

Summary of Events

Quiz 1

Date: Thursday June 4th (Due June 9th)
Lectures: June 2nd – June 4th
Outcomes: Demonstrate a clear understanding of structure and function of the CNS.
Describe and compare neurons, glia and intraneuronal communication and the electrophysiology, with a particular focus on action potentials. Understand the Neuron Doctrine.

Midterm I

Date: Thursday, June 11th Time TBA
Lectures: June 2nd – June 11th
Chapters: Chapters 1-6; Handout (TBD)
Outcomes: Describe interneuronal communication
Demonstrate a complete understanding neuron function, including pre- and post-synaptic mechanisms (G protein-coupled receptor)
Describe the biosynthetic pathway for neurotransmitters.
Describe specific drug and neurotransmitter–receptor interactions, and some brain systems involved.

Quiz 2

Date: Thursday, June 11th (Due June 16th)
Lectures: June 11th
Outcomes: More psychopharmacology if needed. Describe ontogenetic nervous system develop.
Demonstrate an understanding of basic neuroanatomy, and specific cases of brain damage to illustrate brain function.
Understand epigenetics.

Midterm II

Date: Thursday, June 18th (Time TBD)
Lectures: July 16th – July 18th
Chapters: Chapters 7, 8, 9, 10, 12 (handout)
Outcomes: Describe the development of the nervous system, key neuroanatomical structures and functions, epigenetics. Describe electromagnetic wavelengths, transduction of light and primary and secondary neural pathway.

Quiz 3

Date: Thursday June 18th (Due June 23rd)
Lectures: June 18th
Outcomes: Describe tastants and odors, and primary and secondary systems. What are the mechanical senses? How does somatosensory system demonstrate plasticity?

Midterm III

Date: Thursday, June 25th Time TBA
Lectures: July 23rd – June 25th
Chapters: Chapters 15, 16, 17, 18, 19
Outcomes: - How does pain differ from these sensory systems? What causes pain? What are key structures associated with the hypothalamus, and how does it use a negative feedback system? Define diffuse modulatory systems. Where are the reinforcement and reward centers in brain?
-An understanding of specific motivations and the role of the hypothalamus
-Where are the reinforcement and reward centers in brain?

Quiz 4

Date: Thursday June 25th (Due June 30th)
Lectures: June 25th
Outcomes: -Describe sleep. What is its function?
-Understand neuroanatomy of stress
-An understanding of the biological basis and specific brain regions associated with stress, aggression
Fear conditioning, learning and memory, and LTP.

Final Exam

Date: Friday July 3rd, Due date- time to begin the exam will be on a “flex schedule”. More will be discussed in class.
Lectures: All
Chapters: All reading with particular focus on material following Midterm III

Please note: Quizzes will be 5-day take-home tests and can be found on Canvas. Midterm exams will also obviously be on Canvas. This means you are on your honor when taking these tests. Your time is unlimited for quizzes ; however, you may not discuss the questions or responses for either quizzes or midterms with other individuals. Collaborative work will result in a zero for all.

Outcomes and Associated Points

Assignment	Approximate percent	Points
Quizzes (4)	8% each	25 each (100 total)
Midterms (3)	15% each	45 each (135 total)
Final Exam	23%	65
TOTAL	100%	300

Grading Scale (300 points)

Total Points	Percentage	Grade
269 – 300	90 – 100	A- to A+
239 – 268	80 – 89	B- to B+
209 – 238	70 – 79	C- to C+
180 – 208	60 – 69	D- to D+
179	less than 50	F

Tentative Schedule Events

Week	Date	Reading (chapter)	Lecture	Activities
1	6/2	1, Handout (Epigenetics and Beyond the Neuron...)	Intro/Expectations	
		1, 2,3	Neurons and glia: function and structure	
	6/4	4,5	Begin electrophysiology- resting potentials	<i>Beyond the Neuron Doctrine discussion</i> Quiz 1 (Chs. 1-5) Bonus Points: Neuromembrane Lab (Due 6/10)
2	6/9	5,6, 7	* Synaptic Transmission/Receptor Characterization- PSP's Primary neurotransmitters and neurochemicals, Neuropharmacology- transmitter-gated channels and G protein- coupled receptor, Drugs (Handout TBD)	Quiz 1 due
	6/11	Epigenetics (handout) 7	*Neuroanatomy continued	Midterm I (Chs. 1-6) Quiz 2
3	6/16	7 continued, 9	Neuroanatomy, Epigenetics, Vision	Quiz 2 due (Ch. 7, Handout)

	6/18	9, 10, 8	Vision, Chemical Senses	Midterm II (Chs. 7, 9,10 & Handout) Quiz 3 (chs. 8, 11, 12)
4	6/23	11,12	Nonvisual sensory systems	Quiz 3 Due
	6/25	15, 16 TBA Handout	Neuroplasticity, Nociception, Hypothalamus, Homeostasis, Diffuse modulatory system, Sleep	Midterm III (Chs. 11, 12, 15, 16 TBA) Quiz 4 (Chs. 16, 19, 18)
5	6/30	19, 18	*Sleep, Emotion	Quiz 4 due
FINAL EXAM	7/2	24, 25, 22	Learning, Memory, Psychopathology	FINAL BONUS POINTS DUE FINAL EXAM (Due 7/3)

Note: Exams follow lecture.