SJSU SAN JOSÉ STATE UNIVERSITY

College of Social Sciences · Psychology

Neuroscience Section 02

PSYC 129

Fall 2023   3 Unit(s)   08/21/2023 to 12/06/2023   Modified 08/19/2023

👤 Contact Information

CLASS INFORMATION

Modality and location	In-person, DMH 348
Schedule	Tu/Th 12:00-1:15pm

INSTRUCTOR INFORMATION

Instructor	Valerie Carr, PhD
Email	valerie.carr@sjsu.edu (mailto:valerie.carr@sjsu.edu)
Office	DMH 318
Office hours	Tu/Th, 1:30-2:30pm in person You can also schedule a Zoom appointment here (https://valerie-carr.youcanbook.me/)
Faculty page	Dr. Carr's faculty page (https://www.sjsu.edu/people/valerie.carr/index.html)
Lab website	CLIMB lab (https://www.carrlabsj.org/)

🖥 Course Description and Requisites

Principles of brain organization and function underlying behavior. Topics include neuroanatomy and physiology of language, vision, sexual behavior, memory and abnormal behavior.

Prerequisite: Either PSYC 030 and 3 units of biology, or 9 units of biology.

Notes: Not acceptable as an elective in the Biology major.

Letter Graded

✳ Classroom Protocols

Course overview

Neuroscience is defined as the study of the nervous system and includes several related disciplines including: Neuroanatomy, neurochemistry, neuropharmacology, neurophysiology, neuroendocrinology, neuroimmunology, neuropathology, and neuropsychology. This course will include elements of each of these areas, with a focus on both the healthy nervous system and disorders of the nervous system including depression, Alzheimer's disease, and schizophrenia.

Course format

The material in this course will be presented through a combination of lectures, in-class videos and demonstrations, partner activities, and assigned readings. Regular attendance will enhance your performance in the course, and so will keeping pace with the reading schedule and being proactive about seeking help. Undergraduate students aren't expected to be experts yet, so it's completely understandable that you may feel lost or in need of help at different times throughout the semester. I encourage you to ask questions when you don't understand information in lecture or in the readings. Never hesitate to interrupt me with a question – I'm confident that your fellow classmates will benefit from hearing the answer!

Classroom environment

I aim to provide an inclusive learning environment in which diverse backgrounds and perspectives are recognized, respected, and seen as a source of strength. It is my intent to present materials and activities that are respectful of diversity with respect to gender, sexuality, disability, age, socioeconomic status, ethnicity, race, and culture. Your suggestions on how I can make this course more equitable and inclusive to all forms of diversity are encouraged and appreciated. In turn, I hope that you will maintain courteous behavior in this course and respect your fellow students.

Technology requirements

To use Canvas, you will need access to the internet and either a computer or mobile device. If you do not have access to these resources, please reach out to me and I can point you to university resources. An excellent place to start is the Technology page (https://www.sjsu.edu/learnanywhere/equipment/index.php) on SJSU's Learn Anywhere website. It includes resources relating to low-cost or free Wi-Fi, as well as computer loans from the university.

Additionally, many in-class activities will involve performing Google searches on your phone or laptop. You are *not* required to have such a device, however, and can instead partner with another student as needed. Nonetheless, I do think students will benefit from having access to a laptop, to which end I encourage you to investigate the resources listed above.

Course Canvas page

Course materials such as the syllabus, assignments, announcements, grades, etc. can be found on the Canvas learning management system (http://sjsu.instructure.com/). You are responsible for regularly checking Canvas to learn of any updates. Please ensure that you adjust your Canvas notification settings so that you receive all course announcements as soon as they are posted. For help with using Canvas see SJSU's Canvas Student Resources page (https://www.sjsu.edu/ecampus/software-tools/teaching-tools/canvas/student-resources/index.php).

Office hours

Office hours are a dedicated time each week that I am available to answer your questions, discuss course content, and generally support you in your educational and career goals. Office hours aren't limited to discussing the course, but rather can include questions about topics such as: "How can I get experience with neuroscience research? What kind of research is the Carr lab doing? What kind of graduate school and career paths are available for students interested in neuroscience? I'm struggling with my mental health and I'm wondering if you know anything about CAPS? I'm struggling with food insecurity, do you know if there is a food pantry on campus" and more! Chatting with students is one of the highlights of my day, and I look forward to speaking with you!

🔢 Program Information

Program learning outcomes (PLOs) are skills and knowledge that students will have achieved upon completion of the Psychology BA degree. Each course in our curriculum contributes to one or more of these PLOs. The PLOs for the Psychology BA degree are:

1. Knowledge Base of Psychology. Students will be able to demonstrate familiarity with the major concepts, theoretical perspectives, empirical findings, and historical trends in psychology.
2. 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.
3. Critical Thinking Skills. 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.
4. Applications of Psychology. Students will be able to apply psychological principles to individual, interpersonal, group, and societal issues.
   Values in Psychology. Students will value empirical evidence, tolerate ambiguity, act ethically, and recognize their role and responsibility as a member of society.

📊 Course Learning Outcomes (CLOs)

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

- CLO1: Demonstrate knowledge of major concepts relating to neuronal structure, neurophysiology, neurochemistry, neuroanatomy, and neurodevelopment.
- CLO2: Compare research methods used to study the nervous systems of humans and animals and identify the types of research questions for which these methods are most appropriate.
- CLO3: Describe the major transduction mechanisms, neuroanatomical pathways and theoretical perspectives associated with our sensorimotor systems.
- CLO4: Explain the role of the nervous system in regulating hormones and sleep, producing emotional states, and supporting cognition.
- CLO5: Evaluate how dysfunction of the nervous system in both aging and disease can lead to impairments in perception, movement, development, mental health, sleep, and cognition.
- CLO6: Investigate how course concepts apply to a wide range of medical conditions and behavioral phenomena relevant to daily life.
- CLO7: Critically analyze media coverage of a neuroscience topic and compare it to empirical findings from the scientific literature.
- CLO8: Communicate neuroscientific findings to a lay audience that is both accurate and easily understandable by non-experts.

📘 Course Materials

Neuroscience: Exploring the Brain, Enhanced Edition

Author: Bear, M. F., Connors, B. W., and Paradiso, M.A.
Publisher: Jones & Bartlett Learning
Edition: 4th edition
ISBN: 9781284211283 (print + eBook) or 9781284211276 (eBook only)

- If purchasing the book directly from the publisher, use coupon code: **STUDY23***
- When accessing online resources for the book, use the following course code: **C78292**

Student resources

I encourage you to take advantage of the following resources:

- [SJSU Learn Anywhere (https://www.sjsu.edu/learnanywhere/)](https://www.sjsu.edu/learnanywhere/) has a number of helpful resources for learning in an online environment, including help with Zoom and Canvas, finding free or affordable internet and computer resources, FAQs, workshops, and more.
- The [Academic Counseling Center for Excellence in Social Sciences (ACCESS) Success Center (http://www.sjsu.edu/access/)](http://www.sjsu.edu/access/) provides general education (GE) advising for undergraduate students majoring or intending to major in any of the departments in The College of Social Sciences.
- [SJSU Peer Connections (https://peerconnections.sjsu.edu/)](https://peerconnections.sjsu.edu/) offers free mentoring, tutoring, and supplemental instruction services for students at SJSU. Peer Educators are students just like you; they understand the triumphs and challenges of being a student at SJSU.
- [The SJSU Writing Center (http://www.sjsu.edu/writingcenter/)](http://www.sjsu.edu/writingcenter/) offers a variety of resources to help students become better writers. All of their services are free for SJSU students.
- [SJSU Counseling and Psychological Services (http://www.sjsu.edu/counseling/)](http://www.sjsu.edu/counseling/) provides free counseling services and a 24/7 crisis line for SJSU students. To get connected, call (408) 924-5910 or email counseling.services@sjsu.edu
- [SJSU Cares (https://www.sjsu.edu/sjsucares/)](https://www.sjsu.edu/sjsucares/) provides resources and services for students facing a financial crisis, including trouble paying for food or housing, trouble paying bills (including medical), and housing and food insecurity.
- [Career Center (https://www.sjsu.edu/careercenter/)](https://www.sjsu.edu/careercenter/): Resources for students, including help with resumes and cover letters, interviewing, networking, and job-search strategies; hosts internships and career fairs which can be found on [SJSU Handshake (https://sjsu.joinhandshake.com/login)](https://sjsu.joinhandshake.com/login).

📋 Course Requirements and Assignments

Assignments in this class will be grouped into several categories: In-class partner activities, homework, quizzes, and a final project.

Category	Number of assignments	Points per assignment	Total points
In-class activities	12	1	12
Homework	6	3	18
Quizzes	6	6	36
Final project	1	34	34
Total			100

Assignment categories

See details below regarding each type of assignment, and please also see "Grading Information" and "Schedule."

In-class group activities (CLO 5, 6, 8)

Throughout the semester, you will complete 14 in-class activities, each worth 1 point. I will drop your two lowest scores, such that you can earn a max of 12 points for the remaining 12 in-class activities.

Homework (CLO 1-8)

You will complete 7 homework assignments, each worth 3 points and due at the **beginning of class** (i.e., 12:00pm) on the specified due date. I will drop your lowest score, such that you can earn a max of 18 points for the remaining 6 homework assignments.

Quizzes (CLO 1-6)

You will take 7 in-class quizzes, each worth 6 points. I will drop your lowest score, such that you can earn a max of 36 points for the remaining 6 quizzes.

Final project (CLO 6-8)

A goal in this class is for you to acquire the skills to be a critical consumer of media coverage of neuroscience. This project has two components: a paper (24 pts) and a mock CNN article (10 pts). The aim of the paper is to critically analyze a click-bait article that covers a recent neuroscience study and to compare this click-bait coverage to the study itself. The aim of the mock CNN article is to write a more accurate but nonetheless easy to understand article that describes the scientific study. Each element of the project and associated grading rubrics will be discussed in greater detail later in the semester.

Extra credit

You can earn a maximum of 3 extra credit points by completing any combination of the following activities, each worth 1 extra credit point (further details of each will be provided on Canvas):

- Diversity: Choose a neuroscientist from the list provided on Canvas and write a 1-page (single spaced) summary of their educational background, career, and research.
- Movie: Choose a movie from the list provided on Canvas and write a 1-page (single spaced) analysis on the accuracy of the movie.
- TED talk: Choose a talk from the list provided on Canvas and write a 1-page (single spaced) summary of the talk.
- Podcast: Choose a podcast episode from the list provided on Canvas and write a 1-page (single spaced) summary of the episode.
- Brain Awareness week: Use Canva (not Canvas!) to create a flyer to raise awareness of lesser known neurological disorders, promote brain health, or debunk brain myths.
- Sleep journal: Keep a sleep journal over the course of several nights and respond to the prompts provided.
- Interview: Conduct an interview with an older family member or friend (age 65+) in which you ask them to reflect on changes in

cognition across their lifespan. Write a 1-page (single spaced) summary of the interview.

- Note that additional extra credit options may be offered throughout the semester

Submitting assignments, late work, and extensions

All homework is due by the **beginning of class** (i.e., at 12:00pm) on the specified due date. All assignments will be submitted via Canvas with the exception of in-class activities. Please ensure that submissions are complete and fully uploaded by the due date. I suggest beginning the submission process at least 30 mins in advance of each deadline to ensure sufficient time to correctly upload your files and address any Canvas or internet-related difficulties.

Late homework as well as make-up activities and quizzes will only be allowed if you request an extension and are in turn granted an extension. If you encounter an unexpected emergency outside of your control (e.g., Covid, loss of housing, daycare closure, etc.) and you would like to request extension on an assignment, please fill out this Google Form (https://forms.gle/ZWA9G7d2r2s9TuwN6) in advance of the assignment deadline. Although filling out this form is not a guarantee that your request will be approved, I take all requests seriously and will work with you to find appropriate resources and a path forward for completing your coursework.

Please note that my flexibility with respect to deadlines relates to situations beyond your control, and that this flexibility does not apply to vacation travel, conflicts with your work schedule, or other foreseeable circumstances that are within your control. I expect you to act ethically and honorably, and not to take advantage of extension policy.

Finally, partial credit will be given for late final projects as follows: For each 24-hr period your project is late, your score will drop 10%. I.e., if you submit your project three hours late (within the first 24-hr period), your grade will drop by 10%; if you submit it 27 hours late (within the second 24-hr period), it will drop by 20%, and so on.

Expected effort

Success in this course is based on the expectation that students will spend, for each unit of credit, a minimum of 45 hours over the length of the course (normally three hours per unit per week) for instruction, preparation/studying, or course related activities, including but not limited to internships, labs, and clinical practica. Other course structures will have equivalent workload expectations as described in the syllabus.

Please review the following sources and policies, as well:

- University Syllabus Policy S16-9 (http://www.sjsu.edu/senate/docs/S16-9.pdf)
- The university's syllabus Information web page (https://www.sjsu.edu/curriculum/courses/syllabus-info.php)

✔ Grading Information

As described above, grades will be based on in-class activities (12 pts), homework (18 pts), quizzes (36 pts), and a final paper (34 pts). Letter grades will be assigned as follows:

Grade	Points
A plus	97 - 100
A	93 - 96
A minus	90 - 92
B plus	87 - 89
B	83 - 86
B minus	80 - 82

C plus	77 - 79	
C	73 - 76	
C minus	70 - 72	
D plus	67 - 69	
D	63 - 66	
D minus	60 - 62	
F	0 - 59	

Attendance and grading

As per the [University Attendance and Participation Policy F15-12 (http://www.sjsu.edu/senate/docs/F15-12.pdf)](http://www.sjsu.edu/senate/docs/F15-12.pdf), "Students should attend all meetings of their classes, not only because they are responsible for material discussed therein, but because active participation is frequently essential to insure maximum benefit for all members of the class. Attendance per se shall not be used as a criterion for grading." Thus, although attendance will not be used in determining your grade, regularly participating in class and in partner activities is essential for success in the course.

Academic integrity

Cheating, plagiarism, or other forms of academic dishonesty that are intended to gain unfair academic advantage will not be tolerated. Plagiarism refers to using materials that you did not create (i.e., published works, work of other students, material created by artificial intelligence tools such as Chat GPT) and submitting it as your own creation without proper citation/attribution. When in doubt, remember this rule: All assignments in this course must be your own work and you must properly cite any resources that were used.

Academic dishonesty also includes helping other students gain unfair academic advantage, such as posting or distributing homework and quiz answers. Any students who share such materials (e.g., via Discord or sites like Course Hero, Uloop, etc.) or who otherwise distribute such materials will be referred to the Student Conduct and Ethical Development office.

If evidence of academic misconduct is found, you will receive a zero on the assignment(s) in question, and I will file a report with the Office of Student Conduct & Ethical Development. See the [office's website (http://www.sjsu.edu/studentconduct/policies/)](http://www.sjsu.edu/studentconduct/policies/) for more information.

🏛 University Policies

Per [University Policy S16-9 (PDF) (http://www.sjsu.edu/senate/docs/S16-9.pdf)](http://www.sjsu.edu/senate/docs/S16-9.pdf), relevant university policy concerning all courses, such as student responsibilities, academic integrity, accommodations, dropping and adding, consent for recording of class, etc. and available student services (e.g. learning assistance, counseling, and other resources) are listed on the [Syllabus Information (https://www.sjsu.edu/curriculum/courses/syllabus-info.php)](https://www.sjsu.edu/curriculum/courses/syllabus-info.php) web page. Make sure to visit this page to review and be aware of these university policies and resources.

📅 Course Schedule

Date	Topic	Reading	Assignment/activity

Aug 22	Welcome and intro	Skim Ch 1	
Aug 24	Neurons and glia	Ch 2	Hmwk 1, In-class 1
Aug 29	Action potential	Skim Ch 3 and 4	In-class 2
Aug 31	Synaptic transmission	Ch 5	Quiz 1
Sep 5	Neurotransmitters and pharmacology I	Ch 6, Ch 15 (538-548)	
Sep 7	Neurotransmitters and pharmacology II	Ch 6, Ch 15 (538-548)	Hmwk 2, In-class 3
Sep 12	Neuroanatomy I	Ch 7	In-class 4
Sep 14	Neuroanatomy II	Ch 7	Quiz 2
Sep 19	Digital neuroanatomy lab	[None]	
Sep 21	Methods: Animal approaches	[None]	Hmwk 3, In-class 5
Sep 26	Methods: Human approaches	[None]	In-class 6
Sep 28	The eye	Ch 9	Quiz 3
Oct 3	Low-level vision	Ch 10	
Oct 5	High-level vision	Ch 10	Hmwk 4, In-class 7
Oct 10	Audition	Ch 11 (skip vestibular)	In-class 8
Oct 12	Motor system	Ch 13, Ch 14	Quiz 4
Oct 17	Movement disorders	Ch 13, Ch 14	
Oct 19	Neurodevelopment	Ch 23 (784-805)	Hmwk 5, In-class 9
Oct 24	Neurodevelopmental disorders	[None]	In-class 10
Oct 26	Sex and hormones	Ch 17	Quiz 5
Oct 31	Emotion	Ch 18	
Nov 2	Depression, PTSD, and stress	Ch 22 (752-771)	Hmwk 6, In-class 11
Nov 7	Sleep	Ch 19	In-class 12

Nov 9	Language	Ch 20	Quiz 6
Nov 14	Attention	Ch 21 (skip consciousness)	
Nov 16	Molecular mechanisms of learning	Ch 23 (814-817), Ch 25	Hmwk 7, In-class 13
Nov 21	Memory systems	Ch 24	In-class 14
Nov 23	*Thanksgiving, no class*		*No class*
Nov 28	Aging and dementia	[None]	
Nov 30	Schizophrenia	Ch 22 (771-779)	Quiz 7
Dec 5	Neuroscience journalism	[None]	
Dec 8	Final project due @ 12pm via Canvas		Final project