

PSY 498, Fall, 2025
Cognitive Neuroscience
Mondays and Wednesdays: 11.00 am – 12.15 am

Classes are in person
Burk Hall 236

Instructor: Gaurav Suri, Ph. D.
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Introducing Myself

I joined SFSU in 2016, and am an Associate Professor researching decision making and neural networks. Our SFSU lab, RADLab, www.SuriRADLab.com, does experiments as well as computational modeling related to decision-making, emotion, and memory. I did my PhD in psychology at Stanford University. Academia is the second innings of my career. Before this, I was a partner at a management consulting firm.

Here's how to pronounce my first name: <https://www.youtube.com/watch?v=rEf9inT9bIM>

You may call me Professor G.

I am the author of ~ 50 research papers (cited ~ 6500 times) and a prior novel *A Certain Ambiguity* (Suri & Bal, 2007, Princeton University Press). My second book, *The Emergent Mind*, cowritten with Jay McClelland, will be published in Fall, 2025 (Basic Books). We will read excerpts from this book in this class.

Some Links

(Book) *The Emergent Mind: How Intelligence Arises in People and Machines*. [Amazon Link: TEM](#)

(Book) *A Certain Ambiguity: A Mathematical Novel*. [Amazon Link: ACA](#)

Papers: [List of my research papers](#)

Lab Website: [RADLab](#)

Professional connect: [LinkedIn Gaurav Suri](#)

X: [@ProfGRS](#) (Follow me for posts about neuroscience)

My Mission in PSY 498

I am lucky enough to make a living grappling with the most interesting questions in the world: Who are we? How do we think? How do our minds emerge from our brains?

A responsibility that comes along with this good luck is that I urgently feel compelled to impart my students with the sense of the wonder, awe, and excitement that permeate my professional life. This is my goal in PSY 498.

What is Cognitive Neuroscience?

Cognition == Related to Thinking, broadly defined (e.g., perceiving, memory attention, understanding, decision making)

Neuroscience == Related to the nervous system (brain, spinal cord, neurons).

Cognitive neuroscience of the neural bases (e.g., anatomical, physiological, pharmacological, genetic) of behavior that have traditionally fallen under the purview of cognitive psychology.

Course Outcomes

After taking this course you should be able to...

...demonstrate familiarity with basic anatomy and physiology of the brain. You should gain familiarity with fundamental terminology and basic knowledge about brain systems and functions. You should be able to recognize and understand these terms when you encounter them in reading literature (both popular press and primary) or listening to lectures about cognitive neuroscience. Chapter reading and quizzes will be used to build this knowledge.

Examples of basic factual knowledge:

What are neurons and glial cells? What functions do they perform?

What is an action potential? Why is it important for cognitive function? How do ionic currents make it possible?

Where is prefrontal cortex? What might happen to someone if they had damage to it? What is dopamine? What it is thought to signal in the brain?

...explain how the brain allows us to do everyday behaviors. Cognitive neuroscience aims to provide explanations for how the brain gives rise to behavior. You should be able to take any behavior that you engage in like walking, talking or deciding whether to drink a cup of coffee or eat cheese and be able to discuss what might be going on inside the brain to allow you to perform that behavior. This is not just knowing what parts of the brain are involved in different functions, but being able to apply conceptual models derived from cognitive neuroscience to new situations. For example:

I decide to swing at a pitch while playing whiffle ball. What might explain my reaction time and choice? I recognize someone I just met, but I can't remember their name. What are the processes in the brain that have and have not worked properly?

I could not detect an object until it moved. What aspect of my visual system might explain this?

I tend to decide differently when I am hungry or tired or feeling emotion? Is this because my brain is different in these states?

Who am I? Why does it feel the way it feels to be me?

...develop a foundational understanding of artificial intelligence (AI) and its relationship to cognitive neuroscience. You should be able to explain, at a conceptual level, what AI is, how neural networks are modeled on principles of brain function, and how AI systems differ from human cognition. This will allow you to critically evaluate claims about AI in popular media and research, and to appreciate how cognitive neuroscience both inspires and contrasts with modern AI approaches. For example:

What is a neural network, and how does it relate (and not relate) to neurons in the brain?

How do machine learning models “learn,” and how is this different from synaptic plasticity?

Can AI systems help us understand perception, memory, or decision-making? Where do they fall short?

Course Organization & Office Hours

The class will meet on **M/W, 11.00 am - 12.15 in person (Burk Hall, 236).**

Office Hours

My office hours will be as follows:

Monday: 2-4 pm, in EP 306.

Please prepare specific questions before coming to office hours. I will also be happy to answer questions via email or by appointment. If you need an appointment, please send me an email at suri@sfsu.edu.

Materials

This course will use the textbook *Essentials of Cognitive Neuroscience, 2nd Edition*, by Bradley R. Postle. You will need this textbook so please plan to procure it. It is available for purchase or rental at the SFSU bookstore and elsewhere.

The course will also use a set of other materials, including slides and papers, that will be provided on Canvas. Most of our lectures will be slide-based and the slides will have material that is not covered in text-book. This material will be featured in the tests.

Academic Policies

Policy on Cheating

All campus rules for plagiarism, cheating, and incomplete grades will be strictly enforced. Definitions and consequences may be found in the SFSU Bulletin Please familiarize yourself with these policies as you are expected to abide by them.

Deadlines

Familiarize yourselves with the *deadlines* for withdrawing from class without a "W" and withdrawing for a serious and compelling reason. ("Serious and compelling" is not your call. The Bulletin explains that you must receive approval from the instructor, department chair, and school dean). COVID-related requirements may give you greater flexibility in dropping the course. Please check with the University Registrar.

Learning Adjustments

Please contact Dr. Suri right away (first week of class) if you have a documented difference in learning ability or if you have some other special needs that may require adjustments for you to learn/understand the material. Students with disabilities should work with Disability Programs and

Resource Center (415-338-2472) and the instructor to arrange appropriate support. Visit this office on the web at <http://www.sfsu.edu/~dprc/>. The DPRC is located in the SSB-110.

Mandatory Title IX Reporting

SFSU policy is that professors (and employees) must report any allegations or instances of sexual violence that they hear about or witness. For more information, about Title IX rights and protections at SFSU, please visit: <http://titleix.sfsu.edu/>

Using Large Language Models

Large Language Models and their conversation agents, such as OpenAI's ChatGPT and Google's BARD, may be helpful to you in beginning to craft answers to some of your homework problems. I encourage you to use these tools. However, please know these tools are not fact repositories and frequently provide incorrect information. They are incapable of novel thinking. Neither are they capable of demonstrating true understanding. So, if you use these tools, please ensure you are not exclusively reliant on them. At best, they can be one input to your answers – along with the class materials, class discussions, the textbook, published academic papers, and the Internet in general.

Grading

<i>HW (Total 4)</i>	See Schedule	<i>Each HW will be 10% of your grade.</i> HWs will be released on Wednesday before midnight and generally due the following Wednesday before midnight. HWs 1-48 hours late will be marked down 10% HWs more than 48 hours late will not be accepted. 40%
<i>Classwork (Several)</i>	Random	Class Reflection 10%
<i>Midterm</i>	October 15, 2025	Multiple Choice, closed book, open notes, in person 20%
<i>Final</i>	December 10, 2025	Multiple Choice/Short Answer, closed book, open notes, in person

I will grade on a curve.

My mission in this course is to help you succeed! I believe that Cognitive Neuroscience is a core course heart in psychology and my aim is to help you make your way through it in a way which promotes your learning while stoking your interest.

This is a difficult course that requires at-home study and serious review. Please do not take this class if you don't expect to put some effort into it.

Class Schedule

Variations on this are certainly possible. But broadly, we will stick with the following schedule. Note in particular the test dates, and the date for the Final. When we get to the textbook, we will in general be covering one chapter a week, but there are some exceptions.

#	Week of...	Topic
1	8/25	Syllabus & Introductions. Emergence, Reading #1 & 2
2	9/1	<i>No class on 9/1 Labor Day</i> Basics of Neural Networks, Reading #3
3	9/8	Memory and Neural Networks, Reading #4
4	9/15	Chapter 2: The Brain
5	9/22	Chapter 2, continued & Chapter 3: Methods for Cognitive Neuroscience (Summary)
6	9/29	Chapter 4: Sensation and Perception of Visual Signals
7	10/6	Chapter 6: The Visual System
8	10/13	Review Midterm (10/15); In class
9	10/20	Chapter 11: Neural Bases of Memory
10	10/27	Chapter 12: Declarative Long-Term Memory <i>Video lecture on 10/29; No In person class</i>
11	11/3	Chapter 13: Semantic Long-Term Memory
12	11/10	Chapter 15: Cognitive Control
13	11/17	Chapter 16: Decision Making
14	11/24	<i>Thanksgiving Week, No Classes</i>
15	12/1	Chapter 18: Emotion & Emotion Regulation
16	12/8	Chapter 20: Consciousness + Review for Final Final Exam: Wednesday, December, 10th, 11 am-12:15pm

Home Work Schedule

All HWs will be released on a Wednesday and generally due the following Wednesday. Check Canvas for specific guidelines

#	Released	Topics
1	9/3	Reading 1 and 2
2	9/10	Reading 3 and 4
3	10/29	Chapter 11 - 13
4	11/19	Chapter 15 and Chapter 16

Calendar Highlights

Monday, August 25, 2025

- Fall '25 Adding Classes | Permission numbers ARE NOT required to add most classes Begins
- Fall '25 First Day of Instruction

Monday, September 1, 2025

- Fall '25 Labor Day; No Classes; Office Closed

Sunday, September 7, 2025

- Fall '25 CSU Fully Online / AB 386 Incoming Registration Ends
- Fall '25 Adding Classes | Permission numbers ARE NOT required to add most classes Ends

Monday, September 8, 2025

- Fall '25 Adding Classes | Permission numbers ARE Required Begins

Wednesday, September 10, 2025

- Fall '25 Last Day for Faculty Drops

Monday, September 15, 2025

- Fall '25 Adding Classes | Permission numbers ARE Required Ends
- Fall '25 Audit Deadline
- Fall '25 Last Day to Drop/Withdraw Classes without a W grade

Tuesday, September 16, 2025

- Fall '25 Withdrawal from Classes or University For Serious and Compelling Reasons Begins

Tuesday, November 11, 2025

- Fall '25 Veterans Day; No Classes; Office Closed

Monday, November 17, 2025

- Fall '25 Withdrawal from Classes or University For Serious and Compelling Reasons Ends

Tuesday, November 18, 2025

- Fall '25 Withdrawal from Classes or University By Exception for Documented Serious and Compelling Reasons Begins

Monday, November 24, 2025

- Fall '25 Recess; No Classes; Campus Open

Saturday, November 29, 2025

- Fall '25 Recess; No Classes; Campus Closed

Friday, December 5, 2025

- Fall '25 Grading Option Deadline (This includes Cr/No CR or Letter Grade)

Friday, December 12, 2025

- Fall '25 Withdrawal from Classes or University By Exception for Documented Serious and Compelling Reasons Ends
- Fall '25 Last Day of Classes

Psychology Department Statement on Inclusion

We VALUE Respect, Civility, and Inclusion

The Psychology Department is committed to providing a multi-cultural academic setting and climate that is respectful, inclusive, civil, and harassment-free for individuals regardless of ability, age, ethnicity, gender identity or expression, indigenous heritage, immigration status, nationality, physical appearance, political affiliation, race, religion or spirituality (or lack thereof), sexual orientation, social class, socioeconomic status, or other cultural, demographic, and social. Examples of language or behaviors in the academic setting that are not respectful include but are not limited to:

- Discriminatory statements that are overt (e.g., hostility) or subtle (e.g., microaggressions)
- Posting discriminatory materials on campus or campus-related forums (iLearn, Zoom)
- Behaviors or statements that interfere with the learning of others
- Marginalizing individuals based on their social or demographic identity, or perceived identity identification*.

We ASK that all members of our department, including undergraduate students, graduate students, faculty, staff, and guests, treat each other with respect and civility. We strive for this in every aspect of our interactions including, for example, in language (e.g., pronouns), verbal and written communication (e.g., thoughtful and active listening), and behaviors in the virtual or real classroom, research laboratory, as well as in any other setting that holds a department function.

- Inappropriate, unwelcome, or non-consensual comments, behaviors, photography or recording
 - o Disability Programs and Resource Center (<https://access.sfsu.edu/>)
 - o Diversity, Student Equity, and Interfaith Programs (<https://equity.sfsu.edu/node/16>)
 - o Mental health at Counseling & Psychological Services (<https://psyservs.sfsu.edu/>)
 - o Physical health at the Health Center (<https://health.sfsu.edu/>)
- Advocating for or encouraging any of the above

We encourage ACCOUNTABILITY and seeking SUPPORT

- To receive support for
 - o Asian American and Pacific Islander Retention and Education (<https://aspire.sfsu.edu/home>)
 - o Sexualized violence at the Safe Place (<https://psyservs.sfsu.edu/content/safe-place>)
 - o Undocumented students at the Dream Resource Center (<https://drc.sfsu.edu>)
- To contact
 - o Professors (<https://psychology.sfsu.edu/>)
 - o The University Police Department (<https://upd.sfsu.edu/>)
- To report
 - o Harassment or discrimination based on sex, gender, or sexual orientation (<https://titleix.sfsu.edu/content/reporting>)
 - o A bias incident (<https://equity.sfsu.edu/content/bias-incident-education-team-sf-state>)
- To learn about the University Code of Conduct
 - o Undergraduate: (<https://conduct.sfsu.edu/standards>)
 - o Graduate: (<http://bulletin.sfsu.edu/graduate-education/academic-policies-procedures/>)

rev 4/21/2021

*We alphabetized identities to avoid implying a preference for a particular identity.