

Attention!

This is a *representative* syllabus.

The syllabus for the course when you enroll may be *different*.

Use the syllabus provided by *your* instructor for the most up-to-date information. Please refer to your instructor for more information for the specific requirements for a given semester.

Feel free to contact the Psychology Advising Office for any questions regarding psychology courses either by email (psychadvising@osu.edu) or phone (614.292.5750).

Thank you!

Introduction to Cognitive Neuroscience

PSYCHOLOGY 5614 - online

Spring 2021

Credit: 3 hours; Class # 22383 (grad) # 22384 (undergrad)

Place: Online - [zoom](#)

Text: Readings will be posted on Carmen

Prerequisites: Psychology 3313 or 3513, or grad standing

Course Web Page: carmen.osu.edu

I. COURSE OBJECTIVES

This course explores the neurobiological mechanisms that underlie cognition. In order to truly understand cognitive function, it is necessary to understand the brain. The *primary course objective* is to introduce terminology and concepts that will allow you to begin to understand how cognitive function could arise from interactions between groups of neurons. My hope is that in this course you will not only become familiar with the how the brain works, but also become fascinated by its complexity and elegance, and its awesome ability to bring into existence all of your thoughts, actions, memories, dreams, and hopes. A *second course objective* is for you to gain an appreciation of the primary literature in cognitive neuroscience by accessing articles from current journals and presenting them to the class. A *third course objective* is for you to actively engage with you classmates and the course material to create a dynamic learning environment in which the responsibility to learn is shared by all.

II. RESOURCES

Textbook: There is no required textbook for this course. The readings will be available through the Carmen website.

Website: The course website can be found at carmen.osu.edu. This site is where all course materials and information are made available.

Assistance: I am available and interested in talking with you about the course, the course material, and strategies to enhance your learning. I'm available on Tuesdays after class, can answer questions by e-mail (givens.7@osu.edu) or phone (292-6695), and/or will gladly set up an appointment at a time that is mutually agreeable for more lengthy discussions.

Course Goals	Learning Objectives
<p>Understand and appreciate the breadth, depth and quality of research findings in the field of cognitive neuroscience.</p>	<ul style="list-style-type: none"> ➤ Describe the basic structure of the human brain, especially the cerebral cortex. ➤ Identify the principal cognitive domains of function and paradigms used to assess them. ➤ Identify the major methodological approaches to studying the human brain. ➤ Identify the components of an impactful research article.
<p>Describe cognitive processes at both the cognitive and neural level, and begin to re-conceptualize cognitive functions as specific brain processes.</p>	<ul style="list-style-type: none"> ➤ Connect cognitive functions with specific brain systems and processes. ➤ Generate experimental designs to test hypotheses about how the brain carries out a particular cognitive functions. ➤ Describe the flow of information that occurs in the brain as sensory signals lead to motor outputs.
<p>Analyze findings that bridge different cognitive domains and synthesize the neural interactions that occur to allow for complex functions.</p>	<ul style="list-style-type: none"> ➤ Articulate the consequences of disruption of brain systems in terms of cognitive symptoms. ➤ Identify constraints on cognitive theories that result from the anatomy or physiology of the neural systems that are known to underlie the cognitive processes. ➤ Construct arguments for how perception, attention, and emotion affect memory, language and decision-making in the brain.
<p>Understand the importance of cognitive neuroscience in society and begin to think and talk like a cognitive neuroscientist</p>	<ul style="list-style-type: none"> ➤ Recognize the importance of new findings from news sources concerning cognitive neuroscience. ➤ Apply cognitive neuroscience concepts to real world situations. ➤ Develop/improve their ability to communicate about core topics in the field of cognitive neuroscience.
<p>Work individually and in teams to take ownership of the learning process</p>	<ul style="list-style-type: none"> ➤ Participate in in-class learning activities ➤ Increase your ability to efficiently learn course material in cognitive neuroscience. ➤ Positively support the learning of cognitive neuroscience in your classmates.

III. SCHEDULE

There are different cognitive themes that we will explore during this course: There will be one theme each week, with our Tuesday class being a time to discuss a review article on the topic and Thursday class to look at some primary research articles that investigates the topic. Both the review article discussions and the primary research presentations will be student-led. This will give you an opportunity to develop a number of important skills. Each class will be a mixture of presentations, discussions and active learning.

<u>Week</u>	<u>Content</u>	<u>Assignment/Exam dates</u>
1	1/12, 1/14	Introduction
2	1/19, 1/21	Methods
3	1/26, 1/28	Sensory Systems
4	2/2, 2/4	Motor Systems
5	2/9, 2/11	Working Memory Experimental Design
6	2/16, 2/18	Episodic Memory Exam 1
7	2/25	Review exam
8	3/2, 3/4	Decision Making
9	3/9, 3/11	Language
10	3/16, 3/18	Emotion
11	3/23, 3/25	Cognitive Control Exam 2
12	3/30	Learning and Development
13	4/6, 4/8	Social Cognition Neurosynth Analysis
14	4/13, 4/15	Music Cognition
15	4/20, 4/22	Consciousness
16	4/29	Final Exam Exam 3

IV. Assignments, Exams, and Grading

1. Question submissions - 10 pts

Submit 10 questions that are suitable for an essay exam question. These are due prior to class on the Tuesday in which the topic will be discussed.

2. In the News Assignment - 10 pts

Write up (and add to course wiki-page) a one paragraph summary of a recent cognitive neuroscience discovery. Share this discovery with the class on a day of your choosing.

3. Experimental Design Assignment - 10 pts

Propose an experiment to test a hypothesis in cognitive neuroscience.

4. Lead Discussion of Review Paper - 10 pts

Work in a group of ~4 to present some of the key points of a review paper, and to lead a classroom discussion of the article. These will occur on Tuesdays, with Dr. Givens selecting the paper and giving a brief introduction to the topic.

5. Research Article Presentation - 10 pts

Work in groups of 2-3 to present primary research articles based on the theme of the week. These presentations will occur on Thursdays with papers selected by the weekly group. Articles must be approved by Dr. Givens, who will assist in finding them.

6. Research Article summary - 10 pts

Each student will write up a 2 page summary of the research article that they present to the class. This assignment is due no later than 3 days after you present.

7. Neurosynth Assignment - 10 pts

Pick a set of key words of interest to you, and run a neuroimaging meta-analysis. Explore the activation patterns and write a 2 page summary of your findings.

8. Class and Group participation - 20 pts

The quality and regularity of engagement in class, online and group activities.

9. Exams - 30 pts each (90 points total)

The exams will be online and in essay format. You will have 2 hours for the exam which can be taken anytime within a 3 day window. The questions on the exam will come from the questions submitted and selected for each topic. You will have the questions in advance.

Grade	Percentage	Points
A	93% - 100%	167
A-	90% - 92%	162
B+	87% - 89%	156
B	83% - 86%	149
B-	80% - 82%	144
C+	77% - 79%	138
C	73% - 76%	131
C-	70% - 72%	126
D+	67% - 69%	120
D	60% - 66%	108

Weekly Theme Organization

Each week a group of ~5 students will be responsible for organizing and presenting course material. Each group facilitate a class discussion of the week's topic, and will select research articles that will be presented on the Thursday. The research article should be significantly related to (support, refute or extend) the point of view taken in the review article.

V. Campus Resources

For online learning see keeplearning.osu.edu

There may be events in your life that can cause barriers to learning in this class, such as strained relationships, increased anxiety, alcohol/drug problems, feeling down, difficulty concentrating and/or lack of motivation. These stressful times and events may lead to diminished academic performance or reduce your ability to participate in daily activities. I am always willing to hear from you about concerns stemming from life events. The University offers services to assist you with addressing these and other concerns you may be experiencing. If you or someone you know are suffering from any of the aforementioned conditions, you can learn more about the broad range of confidential mental health services available on campus via the Office of Student Life's Counseling and Consultation Service (CCS) by visiting ccs.osu.edu or calling 614-292-5766. CCS is located on the 4th Floor of the Younkin Success Center and 10th Floor of Lincoln Tower. You can reach an on-call counselor when CCS is closed at 614-292-5766 and 24 hour emergency help is also available through the 24/7 National Suicide Prevention Hotline at 1-800-273-TALK or at suicidepreventionlifeline.org.

Title IX makes it clear that violence and harassment based on sex and gender are Civil Rights offenses subject to the same kinds of accountability and the same kinds of support applied to offenses against other protected categories (e.g., race). If you or someone you know has been sexually harassed or assaulted, you may find the appropriate resources at <http://titleix.osu.edu> or by contacting the Ohio State Title IX Coordinator, Kellie Brennan, at titleix@osu.edu.

Academic Misconduct:

It is the responsibility of the Committee on Academic Misconduct to investigate or establish procedures for the investigation of all reported cases of student academic misconduct. The term "academic misconduct" includes all forms of student academic misconduct wherever committed; illustrated by, but not limited to, cases of plagiarism and dishonest practices in connection with examinations. Instructors shall report all instances of alleged academic misconduct to the committee (Faculty Rule 3335-5-487). For additional information, see the [Code of Student Conduct](#) at <http://studentconduct.osu.edu>

Disability Services:

The University strives to make all learning experiences as accessible as possible. If you anticipate or experience academic barriers based on your disability (including mental health, chronic or temporary medical conditions), please let me know immediately so that we can privately discuss options. To establish reasonable accommodations, I may request that you register with Student Life Disability Services. After registration, make arrangements with me as soon as possible to discuss your accommodations so that they may be implemented in a timely fashion. **SLDS contact information:** slds@osu.edu; 614-292-3307; slds.osu.edu; 098 Baker Hall, 113 W. 12th Avenue.