

This course explores how cognitive functions are supported by neural activity in the brain. It provides a broad survey of the relatively new field of cognitive neuroscience, with emphasis on major theories and research on the neural basis of cognitive processes as well as the methods that are employed. Cognitive neuroscience has become a “hot” field and there is much enthusiasm about the applications of this research. This is evidenced by the regularity with which articles appear on this topic in the popular press. Understanding the intricacies of cognitive neuroscience research will help you to evaluate claims made by the media and policymakers concerning the applications of this kind of research. After completing this course, you will have a basic understanding of neuroscientific methods and ideas about how the brain gives rise to cognition, action, and emotion. This knowledge will help you interpret how this research should be used and to what extent these findings are applicable to more wide-ranging issues.



Time & Place: Tue & Thurs 10:20-11:40am; Life Sciences Building A133
Except Thur Nov 3; Anthony Hall 1279

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Undergrad Assistant: Advait Rathi (rathiadv@msu.edu)
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Suggested reading: Purves et al., Principles of Cognitive Neuroscience (2nd Edition 2012, Sinauer)
<https://www.amazon.com/Principles-Cognitive-Neuroscience-Dale-Purves/dp/0878935738/>

Course modality and attendance policy.

This course will be offered as a hybrid course (after the first week). The instructor and assistants will be in the classroom, but a zoom webinar will be on broadcast during class time. This is done to accommodate health concerns and perhaps occasional COVID sickness. The webinar will not be recorded. We encourage in-person attendance as the webinar is less interactive for attendants. However, we provide the flexibility to accommodate people’s needs; as a result, there is no mandatory attendance policy. The webinar link will be available on the course page on D2L after the first meeting.

Evaluation scheme:

Exams (4 exams, 20% each)	80%
Quizzes (4 quizzes, 2.5% each)	10%
Reaction paper	10%

- **Exams:** There will be four *non-accumulative* exams. Each exam will be composed of three parts: 1) multiple choice; 2) short answers/definitions; 3) longer answers. *See below for more information..*
- **Quizzes:** There will be four short *non-accumulative* quizzes. These quizzes provide an opportunity to get familiar with the format of the questions on the exam. Only a participation grade is given. *See below for more information.*
- **Reaction paper:** You are to write a short reaction paper for this class. You will read an original research articles and summarize it and provide critical analyses. A detailed description of the assignments is provided in a separate handout.
- **Grade scale:** The final grades will be assigned according to the following scale:

Letter grade:	4.0	3.5	3.0	2.5	2.0	1.5	1.0	0
Raw score:	100-----91-----85-----79-----73-----67-----61-----55							

The upper bound is exclusive and the lower bound is inclusive (e.g., 3.0=79.00%-84.99%).

Information and Policy about the Exams:

Mostly due to public health considerations, we will conduct the exams online via D2L. However, this method has some shortcomings, the most important being integrity. A few measures are adopted to protect the integrity of the exams.

First, exams are only given in the time window on the specific exam dates (see schedule below). If you have a legitimate reason for an alternative day/time, please contact the instructor at least one week before the scheduled exam. All requests should include reasonable documentation, and we reserve the right to verify your claim.

Second, the exam itself is divided into multiple screens, with each screen containing about 3-4 questions. Once you submit your answers to a particular screen, you cannot go back to revisit it. This might be somewhat inconvenient but is done to make it more difficult to exchange information.

Third, it is your responsibility to find an appropriate device and location to take the exam. Computer problems are not considered legitimate reasons. Network problems can be considered if there is appropriate documentation (e.g., your internet service provider experienced an outage in your service area during that time).

Fourth, we offer an alternative to relieve any anxiety caused by the last point. If for any reason you are not confident that you can take the online exam without problems (or you just hate it), we offer an in-person testing option. This will be just like the old days—you can take the exam with a paper-pencil format in the classroom. We will be there to proctor the exam. If you opt to take the in-person exam, please email the instructor at least a week before the exam so we can print out the necessary copies.

Information and Policy about the Quizzes:

Quizzes contain ten or fewer questions that illustrate the type of questions on the exam. They will be available available online via D2L, for a 20 min period in a 72 hr window (9am Monday to 9am Thursday). This is a participation-based assignment; you will get the full credit by taking the quiz. Your answers will not be graded formally, but you should attempt all questions. We reserve the right to withhold full credit if no effort is made to answer the quizzes.

Course schedule (tentative)

Wk	Date	Topic	Reading
1	9/1	Introduction	Ch 1
2	9/6, 9/8	Neural signaling	Appendix
		Human nervous system	Appendix
3	9/13, 9/15	Methods I	Ch 2
		Methods II	Ch 2
4	9/20, 9/22	Vision I	Ch 3
		Vision II	Ch 3
	9/19-9/22	<i>Quiz 1 available (9am to 9am)</i>	
5	9/27	Exam 1	
5	9/29	Audition	Ch 4
6	10/4, 10/6	Mechanical/Chemical senses	Ch 4
6		Motor systems	Ch 5
7	10/11, 10/13	Effects of Attention I	Ch 6
		Effects of Attention II	Ch 6
8	10/18, 10/20	Control of Attention I	Ch 7
		Control of Attention II	Ch 7
	10/17-10/20	<i>Quiz 2 available (9am to 9am)</i>	
	10/24-10/25	<i>No class, Fall break</i>	
9	10/27	Exam 2	
10	11/1, 11/3	Memory I	Ch 8
		Memory II	Ch 9
11	11/8, 11/10	Executive control	Ch 13
		Decision making I	Ch 14
12	11/15	Decision making II	Ch 14
	11/14-11/17	<i>Quiz 3 available (9am to 9am)</i>	
12	11/17	Exam 3	
13	11/22	Emotion	Ch 10
	11/24-11/25	<i>No class, Thanksgiving break</i>	
14	11/28	Social cognition	Ch 11
	11/30	Paper due at midnight	
14	12/1	Language	Ch 12
15	12/6	Evolution	Ch 15
	12/5-12/8	<i>Quiz 4 available (9am to 9am)</i>	
15	12/8	Exam 4	

Academic Honesty: Article 2.3.3 of the Academic Freedom Report states that "The student shares with the faculty the responsibility for maintaining the integrity of scholarship, grades, and professional standards." The Department of Psychology adheres to the policies on academic honesty as specified in General Student Regulations 1.0, Protection of Scholarship and Grades; see <https://www.msu.edu/~ombud/academic-integrity/index.html>). Cheating will be taken very seriously and any student that violates MSU rules (i.e. is caught cheating on any assignment) will be given a failing grade for the class, the incident will appear permanently on the students' record and the case will be brought to the attention of the Psychology Department advisors who may take further action.