

This course explores how cognitive functions are supported by neural activity in the brain. It provides a broad survey of the 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: Monday & Wednesday 10:20-11:40am; Psychology Bldg 118

Instructor: Taosheng Liu PhD (tsliu@msu.edu)
Real office: 289A Psychology Bldg
Zoom office: <https://msu.zoom.us/j/7786539856>
Office hours: Monday, Tuesday 1 – 3pm and by appointment
Office hour sign-up: <https://calendly.com/tsliu-msu/30min>

Teaching Assistant: Brendan Valentine (valen207@msu.edu)
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Office hours: Tuesday & Wednesday, 2 – 3pm and by appointment
Office hour sign-up: <https://calendly.com/valen207-msu/30min>

Undergrad Assistant: Morgan Dodd (doddmorg@msu.edu)
Real office: 298C Psychology Bldg
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Office hours: Friday 1 – 3pm and by appointment

Suggested reading: Gazzaniga et al., Cognitive Neuroscience (6th Edition 2025, W.W. Norton)
E-book access is required, link on D2L.

Evaluation scheme:

Raw grades (total=100%) are calculated based on a weighted average of the following components:

Exams (3 exams, 25% each)	75%
Quizzes (3 quizzes, 4.33% each)	13%
E-book questions	12%
Attendance (bonus)	6%

- **Exams:** There will be three *non-accumulative* exams. Each exam will be composed of two parts: 1) multiple choice; 2) short answers. Exams will be in-person during scheduled class times (see schedule table below).
- **Quizzes:** There will be three short *non-accumulative* quizzes. You will earn points based on your actual performance. Quizzes are available on D2L on the designated dates (see schedule below) for a 48-hr period (0:00 on Day 1 to 23:59 on Day 2). You have 15 min to complete it once you start. Late quiz will incur a 25% deduction per 24 hr period.
- **E-book questions:** The E-book contains questions to check your understanding. You have unlimited opportunities to get the correct answer. We expect you will answer all questions in the assigned chapters.
- **Attendance bonus:** Note attendance provides extra credit (beyond 100%); it will be taken as frequently as possible. While attendance is not mandatory, if you attend a certain number of classes, you will get a bonus to your grade. The conversion from attendance rate to credit is the following:

<i>Attending percentage</i>	<i>Credit</i>
$\geq 80\%$	6%
70 – 79%	5%
60 – 69%	4%
50 – 59%	3%
40 – 49%	2%
30 – 39%	1%
$< 30\%$	0

- **Grade scale:** Final numeric grade is based on a weighted sum of the four components listed above, and the conversion from the raw score to the numeric grade follows the scale below:

<i>Raw percentage</i>	<i>Numeric grade</i>
≥ 91	4.0
85.00 – 90.99	3.5
79.00 – 84.99	3.0
73.00 – 78.99	2.5
67.00 – 72.99	2.0
61.00 – 66.99	1.5
55.00 – 60.99	1.0
< 55	0

Course Policies:

Make-up Exams: Make-up exams can be granted under special circumstances. This can include, for example, 1) a documented medical emergency, 2) a schedule conflict that you know about in advance such as a religious holiday or sports travel, or 3) other life challenges such as accidents/emergencies etc. In all cases, please inform me ASAP and **provide documentation** (e.g., note from a medical professional, grief absence form, see policy at <https://reg.msu.edu/roinfo/notices/griefabsence.aspx>). All claims are subject to verification. In case of a schedule conflict, you must inform me at least a week in advance of exam day. Do not assume I have gotten your email unless I have responded to you.

Dues for Quizzes and Assignments: Both the quizzes and assignments are available online for extended period of time. The 15 min quizzes are available for a 48 hr period, while the E-book assignments are always available until the due date. You have ample time to complete both activities, and hence will not accommodate extensions/exceptions by default. However, in rare occasions, you may make special requests. In these cases, you need to demonstrate a compelling cause ideally with documentation. Technological problems (e.g., computer, network) are not considered legitimate causes because you can always find alternatives for use (e.g., library, computer lab, McDonald's).

Academic Honesty: The Psychology Department adheres to the policies on academic honesty as specified in General Student Regulations 1.0, *Protection of Scholarship and Grades*; the all-University Policy on *Integrity of Scholarship and Grades*; and Ordinance 17.00, Examinations. (See [Spartan Code of Honor Academic Pledge](#) and/or the MSU Web site: splife.studentlife.msu.edu). Therefore, unless authorized by your instructor, you are expected to complete all course assignments, including homework, lab work, quizzes, tests and exams, without assistance from any source. You are expected to develop original work for this course; therefore, you may not submit course work you completed for another course to satisfy the requirements for this course. Contact your instructor if you are unsure about the appropriateness of your course work. (See also <https://www.msu.edu/~ombud/academic-integrity/index.html>).

Accommodations for Students with Disabilities: Michigan State University is committed to providing equal opportunity for participation in all programs, services and activities. Requests for accommodations by persons with disabilities may be made by contacting the Resource Center for Persons with Disabilities at 517-884-RCPD or on the web at rcpd.msu.edu. Once your eligibility for an accommodation has been determined, you will be issued a Verified Individual Services Accommodation ("VISA") form. Please present this form to us at the start of the term and/or two weeks prior to the accommodation date (test, project, etc.). *Requests received without sufficient lead time may not be honored due to logistic issues that can arise.*

Course materials and dissemination: It is important to promote a vibrant exchange of ideas while respecting the privacy of students taking this class. Comments taken out of context are often misleading and undercut the environment of trust and respect that is essential for learning. Given these factors and the importance of supporting one another, recordings of the class, lecture notes, other materials created by the instructor, and screenshots of the class (including online discussions) should not be uploaded to other online environments. Impermissible use of class recordings and lecture notes or other material may violate the rights of other students and the MSU Student Rights and Responsibilities Policy (<https://ossa.msu.edu/srr>).

Course schedule (tentative)

Wk	Date	Topic	Reading	Assignment and due
1	8/25	Introduction	Ch 1	
	8/27	Neural signaling	Ch 2	
2	9/1	<i>No class, Labor Day</i>		
	9/3	Human nervous system	Ch 2	
3	9/8	Methods I	Ch 3	
	9/10	Methods II	Ch 3	
4	9/15	Somatosensory, chemosensory, auditory	Ch 5	
	9/17	Vision I	Ch 5	
5	9/22	Vision II	Ch 5	
	9/24	<i>Catch up and review</i>		
	9/24-25	Quiz 1		
6	9/29	Exam 1		Ch 1,2,3,5 due
	10/1	Object recognition	Ch 6	
7	10/6	Attention I	Ch 7	
	10/8	Attention II	Ch 7	
8	10/13	Action I	Ch 8	
	10/15	Action II	Ch 8	
9	10/20-21	<i>No class, Fall break</i>		
	10/22	Memory I	Ch 9	
10	10/27	Memory II	Ch 9	
	10/29	<i>Catch up and review</i>		
	10/29-30	Quiz 2		
11	11/3	Exam 2		Ch 6,7,8,9 due
	11/5	Emotion I	Ch 10	
12	11/10	Emotion II	Ch 10	
	11/12	Language	Ch 11	
13	11/17	Cognitive control I	Ch 12	
	11/19	Cognitive control II	Ch 12	
14	11/24	Social cognition	Ch 13	
	11/26	<i>No class, Thanksgiving break</i>		
15	12/1	<i>Catch up and review</i>		
	12/1-2	Quiz 3		
	12/3	Exam 3		Ch 10,11,12,13 due
16	12/12	Final Q & A		