SYLLABUS

BCSC 153 / PSYC 153 – Spring 2026 – Cognition

Course Description

An interdisciplinary introductory tour to cognitive science, focusing on behavioral, neuroscientific, and artificial intelligence approaches to understanding how information is encoded, represented, organized, and used by the human mind to interact with the world. Topics explored include concepts, categories, learning, attention, language, memory, and recent computational advances that allow large-scale neural networks to emulate human behavior on cognitive tasks.

Logistics

Meetings: Tuesdays & Thursdays 2:00pm – 3:15pm, Morey 321
Course Blackboard: learn.rochester.edu

Instructor

Coraline Rinn Iordan, Ph.D., *she/her*, cora@rochester.edu
Office Hours: Thursdays 3:15pm–4:00pm & by appointment @ Meliora 308

Teaching Assistants

Graduate TA: **Claire** Sun, *she/her*, csun28@ur.rochester.edu
Office Hours: Tuesdays 12pm–1pm & by appointment @ Meliora 417

Undergraduate TA: **Sonia** Chun, *she/her*, schun8@u.rochester.edu
Office Hours: Wednesdays 4:30pm–5:30pm & by appointment @ Meliora 418

Undergraduate TA: **Alyssa** Horng, *she/her*, ahorng2@u.rochester.edu
Office Hours: Mondays 11am–12pm & by appointment @ Meliora 247

Undergraduate TA: **Juneha** Seo, *she/her*, jseo14@u.rochester.edu
Office Hours: Fridays 11am–12pm & by appointment @ Meliora 247

Additional review sessions will be held the week before the first Quiz and the week before each Exam. Dates / times will be announced in advance in class and on Blackboard.

Course Communication

The main channel of communication between you and the instruction team are **Blackboard** and **email**. Please ensure that you have access to the class Blackboard page, which is available at learn.rochester.edu.

All course materials (e.g., readings, slides) and grades will be posted on Blackboard.

For any questions about logistics or content, please email the TAs first. When you contact someone on the instruction team, we will strive to provide an answer within 24 hours (unless you post your question on a weekend or holiday, which may incur a longer response time). To ensure we'll be able to get back to you quickly, please use the following guide when contacting the TAs:

If your last name starts with A–E: email **Claire** Sun, csun28@ur.rochester.edu
If your last name starts with F–L: email **Sonia** Chun, schun8@u.rochester.edu
If your last name starts with M–S: email **Alyssa** Horng, ahorng2@u.rochester.edu
If your last name starts with T–Z: email **Juneha** Seo, jseo14@u.rochester.edu

If any of our class meetings conflict with a religious event or holiday, please let the instructor or the TAs know so that we can make necessary alternative arrangements for you.

For any accommodation requests that are not handled through the Office of Disability Resources or another relevant University-related entity (e.g., additional exceptions to class policies, medical or family emergencies, etc.), please contact the instructor as soon as the need arises. All such requests will be handled on a case-by-case basis and students may be required to provide external documentation. There will be no make-up exam exceptions for students who have multiple exams on the same day.

If you have any questions about the course materials or lectures, please feel free to ask for clarification in class, ask us after class, email us, or come to our office hours. We are all friendly and happy to help!

Course Learning Objectives

I. Demonstrate knowledge of foundational topics of cognition and cognitive science, such as categorization, attention, memory, language, and learning.

II. Demonstrate an understanding of the methods commonly used in the study of cognitive phenomena, including behavioral (e.g., match-to-category tasks), neuroimaging (e.g., fMRI) and computational (e.g., neural networks).

III. Explain how information about perceived external stimuli and internal mental states is encoded, represented mentally and/or neurally, and used by humans to understand and act upon the external world.

IV. (Optional) Demonstrate improved ability to communicate both orally and in writing about how the processes, mechanisms, and organizational principles of knowledge of human cognition impact and/or predict human behavior and actions.

Course Structure

Lectures (19): Most of the class will consist of lectures on cognitive science topics, e.g., concepts, categories, learning, attention, language, memory, neural network models. Some lectures may include brief, high-level descriptions of investigative methodologies (e.g., fMRI, EEG, TMS, etc.) and computational analysis + modeling techniques (e.g., SVM, HMM, etc.).

Guest Lectures (3): We will have two guest lectures during the semester on Thu Feb. 06 (instructor: TBD), Tue Mar 24 (instructor: TBD), and Thu Apr 02 (instructor: TBD). Please note that the material covered during these lectures may be included in subsequent quizzes and exams. Information about these lectures will be updated on the syllabus as it becomes available, and notification will be sent to students.

In-Class Exams (3): We will have three in-class exams on Thu Feb 26, Tue Mar 31, and Thu Apr 30. If you have known conflicts for these dates, please contact the instructor and/or the TAs as soon as possible.

Exam Reviews (3): Before each in-class exam, we will have a review session to recap the material relevant to the current exam. Review sessions are not a substitute for attendance at the lectures. The review sessions are meant to be comprehensive, but not exhaustive, thus topics or questions may show up on the exams that were covered in class, but not in the review sessions.

Quizzes (4): The class will have four mandatory quizzes on Tue Feb 10, Thu Feb 19, Thu Mar 19, and Thu Apr 16. If you have known conflicts for these dates, please contact me and/or the TAs as soon as possible.

Discussions (6): Throughout the semester, we will have 6 seminar-style and/or small group discussions centered on topic questions listed on the syllabus. The discussions are meant to address practical and philosophical implications of the materials covered in the lectures. Students who consistently participate and/or contribute significant insights to class discussions may earn up to 3% total extra credit by the end of the course (increments of 0.25% or 0.50% extra credit will be awarded after each discussion and posted on Blackboard).

Materials

There is no required or optional textbook for this class. Instead, there will be two types of reading materials:

(1) Required readings, marked in green on the syllabus, must be completed *before* their respective class time. These can be found in the 'Required Readings' folder on Blackboard. Any material in the required readings (whether we cover it explicitly in class or not) may be included on quizzes and exams.

(2) Optional readings, marked in gray on the syllabus, expand on the material we will cover in class, and may be completed after class at your convenience. These can be found in the 'Optional Readings' folder on Blackboard. Material in the optional readings will not be required knowledge for quizzes and exams but may be useful for participating in class discussions.

Readings for each week (Tue + Thu) will be posted on Blackboard by the end of the day on the previous Friday (e.g., for the Jan 27 & Jan 29 class times, materials will be posted on or before Jan 23).

Adjustments to the topics and readings listed on the syllabus may be made as the class progresses, but all posted readings are final.

Lecture slides will be posted on Blackboard by the end of the day after each lecture.

Course Requirements and Policies:

Attendance is mandatory for all classes: lectures, guest lectures, quizzes, exam reviews, and exams.

At the end of each main lecture (18 total, not counting Jan 20, guest lectures, review sessions, or Exams), you will be asked to fill in an exit ticket that you can submit on your phone or other electronic device (QR code and web link in last slide of the day). The ticket will simply ask for your name, and a take-away from that day's session. There will be an optional field that will allow you to ask any lingering questions. This exercise serves three purposes: (1) it provides a small incentive for you to attend and participate in class; (2) it allows you to reflect on your learning, which has been associated with better learning; (3) it allows the instruction team to understand and address the questions that the class has about the content. You will receive full credit on this portion of the grade if you submit at least 90% of your exit tickets (i.e., at least 16 submissions across the 18 core lectures of the class, not including Jan 20).

- Lectures:
    - reading the required supporting materials **before** class is mandatory
    - the sessions will be recorded and available on Blackboard / Panopto
    - slides will be made available after each class
    - reading the optional materials is encouraged after class
- Discussions
    - Active participation is expected in all class interactive activities
- Guest Lectures:
    - material covered may be included in quizzes and exams
- Exams & Quizzes
    - All exams and quizzes will be given in class, on paper, closed book, no devices allowed
    - please contact the instructor as soon as possible if you believe you cannot attend

Academic misconduct: All assignments, tests, and activities associated with this course must be performed in accordance with the University of Rochester's Academic Honesty Policy and the Student Code of Conduct. More information is available at:

http://www.rochester.edu/college/honesty
http://www.rochester.edu/college/cscm/assets/pdf/standards-of-student-conduct.pdf

All lecture recordings are for the exclusive use of students currently enrolled in the class and available through Blackboard / Panopto only. Any attempt to download, share outside the class, or otherwise record the lectures on external storage media without explicit permission from the instructor will be considered academic misconduct.

Plagiarism, cheating, and any form of academic misconduct will be reported following the guidelines set by the University. Also, please be respectful when you post your comments/questions on Blackboard or respond to the posted polls and activities.

Special accommodations: If you need special accommodation (e.g., medical or family emergencies, observance of religious holidays/events, etc.), please let us know as early as possible. We will do our best to accommodate, but all such requests will be handled on a case-by-case basis and students may be required to provide external documentation. If you can't take a test or submit an assignment on time for health reasons, documentations are typically required for make-ups or late submissions. Otherwise, late submissions won't be accepted.

Mobile devices: Please silence your mobile devices. No cellphone / smartphone or any other entertainment devices are allowed while class is in session. Laptop / tablet use in class is allowed for notetaking and reading course materials only.

Inclusive Class Policy

This classroom respects and welcomes students of all backgrounds and abilities—including their race, ethnicity, religion, gender identification, sexual orientation, socio-economic status, disability status, affiliation, and national identity. As members of an inclusive learning community, we strive to model speech and behaviors conducive to authentic open discussion of frequently complex issues. Like all courses, this course also has its entry point into debate. It is important to understand that students need not embrace the course position to be successful in it. You are encouraged to speak up in class for optimal sharing and reflection on a diversity of individual perspectives, and I also invite you to talk with me separately (i.e., after class or by appointment) about any concern or situation that affects your ability to fully participate in class activities or to complete your work successfully.

Your Instructor Has "Face Blindness"

Prof. Iordan has a condition called "prosopagnosia" or "face blindness", which makes it very difficult for her to recognize people, even if she's seen them frequently before. Due to this, there is always a chance that she might not know who you are when you participate in class and/or come to office hours and/or when you run into her on campus—for the latter, please say hi! We will go over this condition during the "Faces" lecture on Tue Feb 17, but she wanted to let you know in advance to prevent any misunderstandings during your interactions with her this semester.

TL; DR: Prof. Iordan may not be able to recognize you when she sees you. She promises she's not being rude or dismissive, it's just how her brain works (or doesn't).

Evaluation

Participation: 20%

Attendance (19): 5%

Full credit if at least 90% of exit tickets are submitted during lecture (16 / 18)
For special accommodation passes (e.g., emergencies), please contact the instructor

Discussion impressions (6): 3% each, 15% total

Write-up: 100-200 words
Assessed as ✓- (no credit), ✓ (full credit)
Lowest score will be dropped
Due at 11:59pm the day before class (see syllabus; no late submissions accepted)

In-class participation (6): 0.25%–0.50% each extra credit

Significant and/or original insights during discussion will be awarded 0.25%–0.50% extra credit
Determination for awarding extra credit will be made by the instructor with input from the TAs

Note on Generative AI: The use of generative / summarization AI technologies (e.g., ChatGPT, T5) is not permitted for Discussion impressions. First infraction will result in a score of ✓- (no credit) and a warning. Multiple infractions will be considered an instance of academic misconduct.

Quizzes: 30%

In-class quizzes (4): 10% each, 30% total

20 min. at the beginning of class on the days listed on the syllabus
Topics are not cumulative and are only based on lectures since previous quiz
Multiple choice and true/false questions
Lowest quiz score will be dropped

Exams: 50%

In-class exams (3): 25% each, 50% total

Full class time on days listed on the syllabus
Topics are cumulative and are based on all lectures from beginning of class until day of exam
Multiple choice, true/false questions, and short answer questions
Lowest exam score will be dropped

All exams and quizzes will be on paper, in class, closed book, with no devices allowed. Any deviation from this policy will be considered an Honor Code violation.

If a student must miss class on a quiz or exam day due to a personal or professional conflict, they may reach out to the instructor and provide documented justification for their absence. On a case-by-case basis, with instructor permission, students may be allowed to take a make-up quiz or exams, to be administered within 7 days of the original date/time of the corresponding in-class test. There will be no make-up quiz/exam exceptions for students who have multiple exams on the same day.

Instructions for discussion impressions: Before each discussion class, please read the required article carefully and write a short impression for it that includes: (a) 1 general comment about the article, e.g., did you like it and why? did you think it was interesting and why? etc.; (b) 1-2 questions that were most puzzling about the article, i.e., aspects of it that you did not understand or were not clear; and (c) 1-2 critical comments, e.g., things that you believe are missing in / wrong with the paper (and potentially how they could be solved). Your answers should be very brief (approximately 100 words per article, no more than 250 words total). Impressions are due at midnight, the day before each seminar (dates listed on the class calendar).

A potentially helpful guide on evaluating / critiquing a scientific paper is to keep in mind the following questions as you're reading:

(1) What are the questions/hypotheses that the article is trying to address?
(2) Why should we (or anybody) care about these questions/hypotheses?
(3) How did the authors try to answer the questions?
(4) What are the main results?
(5) What conclusions do the authors draw from their results?

Grades: Grades for all assignments will be posted on Blackboard. Please note that the points total shown on Blackboard is not weighted by each grading category. Please keep track of your own grades throughout the semester and let us know if you have any questions or notice any discrepancies. The final grades (rounded up to the nearest integer) will be based upon the following scale:

Points	Letter
93-100	A
90-93	A-
87-90	B+
83-87	B
80-83	B-
77-80	C+
73-77	C
70-73	C-
67-70	D+
63-67	D
60-63	D-
00-60	E

Course Schedule

#	DATE	TOPIC	READINGS
01	Tue Jan 20	Course overview and introduction	
02	Thu Jan 22	The study of the mind and research methods in cognition	Stanford Encyclopedia of Philosophy: Cognitive Science
03	Tue Jan 27	Concepts and categories	Medin & Smith (1984) Tversky (1977)
	Wed Jan 28	Discussion #1 impressions due @ 11:59pm	

04	Thu Jan 29	The hierarchical structure of semantic categories Discussion #1: Is the basic level universal across cultures?	Rosch et al. (1976) Jolicoeur et al. (1984)
05	Tue Feb 03	Visual categorization in the brain: from light to maps to concepts	Tootell et al. (1982) Grill-Spector & Malach (2004)
06	Thu Feb 06	Guest instructor: TBD	
07	Tue Feb 10	Visual categorization in the brain: special category domains Quiz #1	Haxby et al. (2001) Iordan et al. (2015)
08	Thu Feb 12	Object and scene perception	Haxby et al. (2001) Iordan et al. (2015)
	Mon Feb 16	Discussion #2 impressions due @ 11:59pm	
09	Tue Feb 17	Faces: a special cross-species cognitive domain Discussion #2: Are some categories innate?	Maurer et al. (2002) Grill-Spector et al. (2017)
10	Thu Feb 19	Mapping semantic categories across the human brain Quiz #2	Connolly et al. (2012) Huth et al. (2012, 2016)
11	Tue Feb 24	Exam #1 Review	
12	Thu Feb 26	Exam #1	
13	Tue Mar 03	Computational models of (re)cognition	Rogers & McClelland (2003) DiCarlo & Cox (2007)
	Wed Mar 04	Discussion #3 impressions due @ 11:59pm	
14	Thu Mar 05	Emulating cognition: large neural network models Discussion #3: Is the algorithm biased against me?	Cichy & Kaiser (2019) Rajalingham et al. (2017)
	Tue Mar 10	No class (Spring break)	
	Thu Mar 12	No class (Spring break)	
	Mon Mar 16	Discussion #4 impressions due @ 11:59pm	
15	Tue Mar 17	Learning and expertise Discussion #4: Is expertise the same in my brain and yours?	Tarr & Gauthier (2000) Meshulam et al. (2021)
16	Thu Mar 19	Attention: visual search, change blindness, tuning Quiz #3	Kastner & Ungerleider (2000) Çukur et al. (2013)
17	Tue Mar 24	Guest instructor: TBD	
18	Thu Mar 25	Exam #2 Review	Bender et al. (2021) Scotti, Banerjee, et al. (2023)
19	Tue Mar 31	Exam #2	
20	Thu Apr 02	Guest instructor: TBD	
21	Tue Apr 07	Memory: encoding, recall, forgetting	Schacter et al. (1998) Josselyn & Tonegawa (2020)
	Wed Apr 09	Discussion #5 impressions due @ 11:59pm	

22	Thu Apr 09	Mental imagery and imagination Discussion #5: Can we reconstruct our dreams?	Kosslyn et al. (2001) Horikawa et al. (2013)
23	Tue Apr 14	Spatial navigation and cognitive maps	Ekstrom & Isham (2017) Epstein et al. (2017)
24	Thu Apr 16	Cognition in our daily lives: narratives and events Quiz #4	Zacks & Swallow (2007) Baldassano et al. (2018)
25	Tue Apr 21	Cognition in our daily lives: schemas and comprehension	Nguyen et al. (2017) Zadbood et al. (2021)
	Wed Apr 22	Discussion #6 impressions due @ 11:59pm	
26	Thu Apr 23	Influencing cognition in the brain Discussion #6: Is it ethical to exogenously change a mind?	Shibata et al. (2001) Iordan et al. (2024)
27	Tue Apr 28	Exam 3 Review & course wrap-up	
28	Thu Apr 30	Final Exam	

Disability Resources

We encourage you to talk with the instructor and/or the TAs about any concern or situation that affects your ability to complete your academic work successfully. Students requiring accommodations should contact the Office of Disability Resources in Taylor Hall (email: disability@rochester.edu, web: https://www.rochester.edu/college/disability/about/index.html; phone: 585-276-5075).