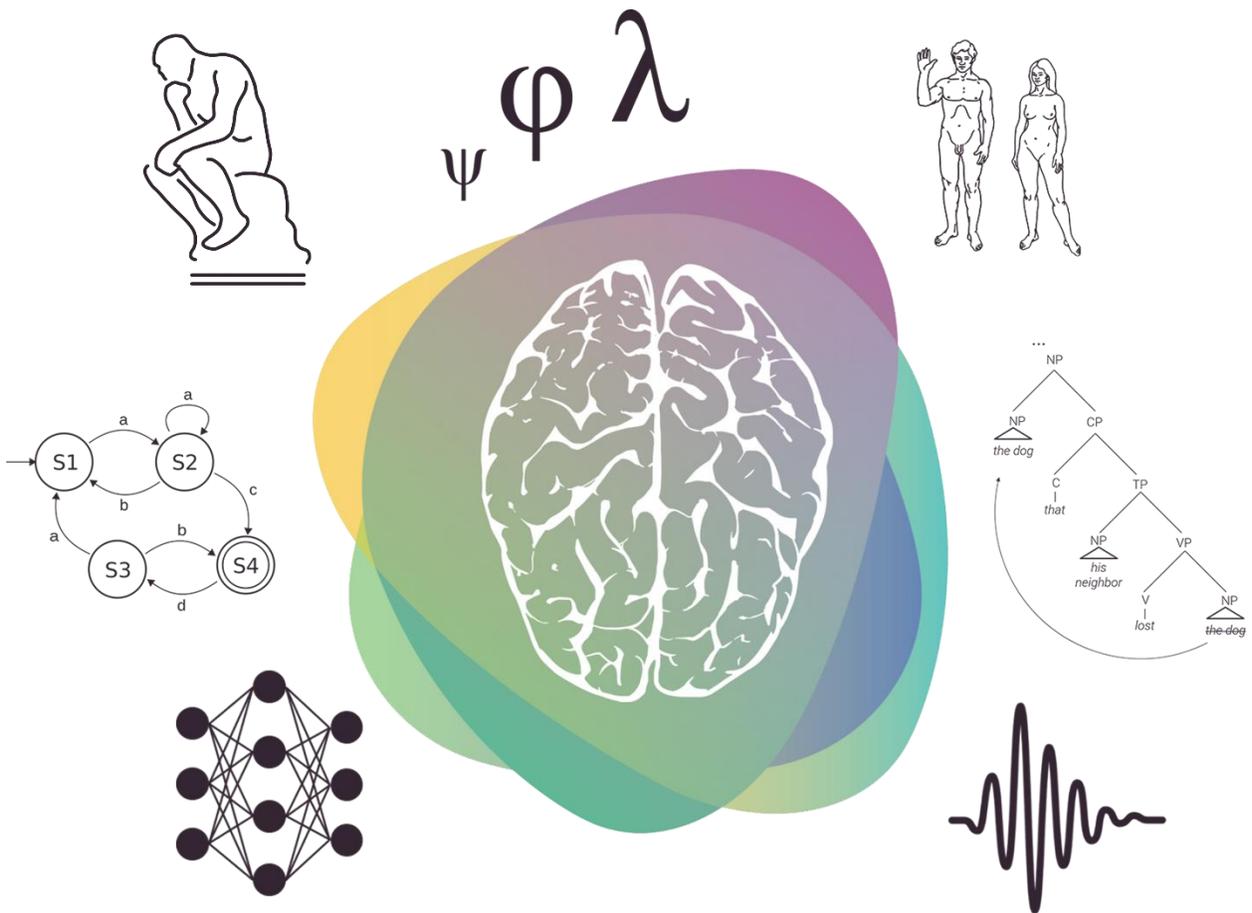


Cognitive Science: A Multidisciplinary Introduction

185:201:B1



Cognitive Science: A Multidisciplinary Introduction

Meets: All lectures are asynchronous, meaning you can watch recorded lecture videos on your own time, at your leisure. We will have an optional live discussion/recitation each Thursday from 2-3:30pm, where we will discuss that week's topic and do some activities/demos/etc. This live recitation will also be recorded and uploaded to Canvas, and attendance is not mandatory (but it is encouraged!).

Instructor: Ryan Rhodes (ryan.rhodes@rutgers.edu)

Office Hours: TBA. Office hours will be held via Canvas Conferences.

Course Site: <https://rutgers.instructure.com/courses/123721>

Course Materials

Readings: *Readings will be supplied on Canvas. You do not need to buy a textbook!*

Lecture videos: All lectures will be recorded and uploaded to Canvas. There will be 2-3 lecture videos per module.

All relevant materials can be found on the course canvas site (see above).

Course Description

This course is an introduction to the nascent field of Cognitive Science. To capture the interdisciplinary nature of this field, we will address a range of topics and research programs from a variety of disciplines, including philosophy, computer science, cognitive psychology, neuroscience, linguistics, and artificial intelligence. The goals of this course are to introduce you to the foundations of Cognitive Science, help you appreciate the development of this field over the years, and allow you to explore the investigations and lively debates that have taken place within and across the disciplines that make up the field.

This is an online-only, asynchronous course. All course activity will be organized online, for you to complete on your own time. All course materials, including lecture videos, readings, quizzes, exams, and discussion forums will be hosted on Canvas. You will be responsible for watching lecture videos and completing all assignments, quizzes, and exams on your own time. All course content will be organized into modules, organized by topic. You will be responsible for the completion of two modules per week.

Additionally, we will have an optional live discussion/recitation once per week (each Thursday from 2-3:30pm) where we will discuss that week's topic and do some class activities/demos/etc. Attendance for the live session is not mandatory, but I encourage you to attend! It's fun!

After completing this course students should:

- Appreciate the interdisciplinary nature of cognitive science, the diversity of viewpoints, the controversies, and the areas of emerging consensus.
- Know various definitions of the foundational concepts of computation and representation and be able to discuss them from multiple points of view.
- Have basic familiarity with brain anatomy and physiology.
- Understand how the cognitive architecture of perception, memory, language, and so forth come together to produce behavior.

Grading

Homework – 35%

There will be 2 homework assignments per week, except before exams (10 total). Some assignments will be interactive activities or demos, and some will be short responses on a prompt from the reading/lecture.

Lecture Quizzes – 10%

There will be a short quiz (3 questions) accompanying each lecture video. After watching the lecture, complete the quiz.

The lowest 5 quizzes will be dropped (17 quiz grades will be counted toward your final grade).

Exams – 50%

There will be 2 exams, each worth 25% of your final grade. These exams will consist of short answer and multiple-choice questions. They will be open-book, and you will have several days to complete them.

Discussions – 5%

We will maintain Discussion forums on Canvas for you to discuss course topics with other students, ask questions, debate philosophical topics, and get feedback. There will be a dedicated Discussion topic for each module, and you will be expected to contribute at least one comment/question per module.

Course Schedule

Week 1	Module 1 – <i>What is Cognitive Science?</i> Reading: Friedenberg & Silverman (2016), Ch. 1; Marr (1982)
Week 2	Module 2 – <i>History of Cognitive Science</i> Reading: Friedenberg & Silverman (2016), Ch. 2
	Module 3 – <i>Computational Theory of Mind</i> Reading: Clark (2000)
Week 3	Module 4 – <i>Connectionism</i> Reading: Bruckner & Garson (2019)
	Module 5 – <i>Structure of Language</i> Reading: Everaert et al. (2015)
Week 4	Module 6 – <i>Midterm Exam</i>
	Module 7 – <i>Sensation and Perception</i> Reading: Beaumont & Rogers (1988)
Week 5	Module 8 – <i>Memory</i> Reading: Nairne & Neath (2012)
	Module 9 – <i>Neuroscience</i> Reading: Kanwisher (2017), Beres (2017)
Week 6	Module 10 – <i>Social Cognition</i> Reading: Gigerenzer & Hug (1992)
	Module 10 – <i>Final Exam</i>

Academic Integrity

Cheating or plagiarism of any kind will not be tolerated. All violations will be reported to the Office of Student Conduct without exception. If you are unsure what constitutes a violation, please consult academicintegrity.rutgers.edu.

Disability Services

Rutgers University welcomes students with disabilities into all of the University's educational programs. In order to receive consideration for reasonable accommodations, a student with a disability must contact the appropriate disability services office at the campus where you are officially enrolled, participate in an intake interview, and provide documentation. If the documentation supports your request for reasonable accommodations, your campus's disability services office will provide you with a Letter of Accommodations. Please share this letter with your instructors and discuss the accommodations with them as early in your courses as possible.

Join the Rutgers Cognitive Science Club!

The Rutgers Cognitive Science Club hosts a guest speaker series, socials, and movie nights.

For more information visit:

<http://ruccs.rutgers.edu/ruccs/index.php/opportunities/cogsci-club>.

Readings

- Beaumont, J. G. (1988). Sensation and Perception. In J. G. Beaumont & E. F. Rogers (Eds.), *Understanding Neuropsychology* (pp. 37–63). Basil Blackwell.
- Beres, A. M. (2017). Time is of the Essence: A Review of Electroencephalography (EEG) and Event-Related Brain Potentials (ERPs) in Language Research. *Applied Psychophysiology Biofeedback*, 42(4), 247–255. <https://doi.org/10.1007/s10484-017-9371-3>
- Buckner, C., & Garson, J. (2019). Connectionism. In E. N. Zalta (Ed.), *The Stanford Encyclopedia of Philosophy*. <https://doi.org/10.1145/544317.544327>
- Clark, A. (2000). Meat Machines: Mindware as Software. In *Mindware: An introduction to the philosophy of cognitive science* (pp. 7–27). Oxford University Press.
- Everaert, M. B. H., Huybregts, M. A. C., Chomsky, N., Berwick, R. C., & Bolhuis, J. J. (2015). Structures, Not Strings: Linguistics as Part of the Cognitive Sciences. *Trends in Cognitive Sciences*, 19(12), 729–743. <https://doi.org/10.1016/j.tics.2015.09.008>
- Friedenberg, J., & Silverman, G. (2016). *Cognitive science: an introduction to the study of mind* (3rd ed.). Sage.
- Gigerenzer, G., & Hug, K. (1992). Domain-specific reasoning: Social contracts, cheating, and perspective change. *Cognition*, 43(2), 127–171. [https://doi.org/10.1016/0010-0277\(92\)90060-U](https://doi.org/10.1016/0010-0277(92)90060-U)
- Kanwisher, N. (2017). The quest for the FFA and where it led. *Journal of Neuroscience*, 37(5), 1056–1061. <https://doi.org/10.1523/JNEUROSCI.1706-16.2016>
- Marr, D. (1982). Understanding complex information-processing systems. In Marr, D. (1982). *Vision: A computational investigation into the human representation and processing of visual information* (pp. 19–29).
- Nairne, J. S., & Neath, I. (2012). Sensory and Working Memory. In *Handbook of Psychology* (Second Ed., pp. 419–446).