Cognitive Science: A Multidisciplinary Introduction
185:201
Cognitive Science: A Multidisciplinary Introduction

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

Meets: Tuesday and Friday 10:20-11:40am
Location: Lucy Stone Hall Auditorium, Livingston Campus
Office Hours: TBA. Psych A111. (Make sure you see an “A” before the number!)
Course Site: Canvas

Section Instructors
Elif Poyraz (elifnur@psych.rutgers.edu)
Sections: 01, 02
Office Hours: TBA. Psych 131.
Jane Lutken (cjane.lutken@rutgers.edu)
Sections: 03, 04
Office Hours: TBA. Psych A106.

Recitation 01: Friday 4:05-5:00pm, LSH-A121 (LIV)
Recitation 02: Thursday 4:05-5:00pm, LSH-A121 (LIV)
Recitation 03: Friday 12:25-1:20pm, LSH-A121 (LIV)
Recitation 04: Tuesday 12:25-1:20pm, TIL-209 (LIV)

Course Materials

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

Lecture slides: pdfs of slides will be uploaded to Canvas under the relevant modules.

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.

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.

All course materials will be available on Canvas, organized into weekly modules. You will find all relevant materials there, including: readings, assignments, (optional, just for fun) links to cool videos or outside articles, etc.

This course has no required textbook (save your money for the weekend). Instead, all materials including readings will be posted on Canvas. Our course readings are a pretty even split between textbook chapters, academic book chapters, journal articles, and articles from non-academic publications like newspapers and magazines. Some of these readings are challenging, but it’s important to grapple with real academic writing on these complex, interdisciplinary topics.

**Grading**

**Attendance — 10%**

Attendance will be scored in lecture through small participation quizzes, roll call, or other means. Please come to class and recitation! Getting a good grade in any class is 90% just showing up!

We will drop four zeros from your attendance quiz grade, which means you can miss up to four lectures with no penalty (no questions asked). If you miss class for religious observance, let me know, and your absence will be excused.

**Weekly Responses — 30%**

There will be one response assigned per week (12 total). You will be required to complete six responses total – three responses from the first half of the course (before the midterm), and three from the second half of the course (after the midterm). Which responses you complete is up to you!

These responses should be ~500 words and should meaningfully engage with the topic and the prompt. You should include what you learned from the readings, lecture, recitation
discussion, and you are also free to include anything relevant that you’ve learned in other courses or even your own lived experience. We want you to engage critically and creatively with the topics we discuss in class—I love seeing new ideas!

Recitation Participation — 20%

Recitation will consist of review, discussion, and intermittent activities, demos, or seatwork. Please go to recitation! Your section instructor will be grading your participation in recitation. Generally, this means simply giving you credit for being present and engaging in the activity of the week. Some weeks this may be a simple attendance grade—other weeks you may do some work during recitation that can be handed in for a grade. Please come to recitation having read that week’s readings and gone to lecture—and be ready to ask questions or engage in discussion!

If you miss recitation, you can make up the missing points by coming to office hours. You can come either to Dr. Rhodes’ office hours, or your section instructor.

Exams — 40%

There will be 2 exams (Midterm Exam and Final Exam), each worth 20% of your final grade. Each exam will consist of multiple choice, short answer questions, and essay questions. The exam will be taken in class and will not be open-book. You will be allowed one index card of notes during the exam.

Extra Credit — up to 2%

There are two ways to gain extra credit in this course—research participation, and a special extra credit assignment. During the semester, I will send an announcement about research opportunities. These represent research studies being conducted on campus that need volunteers! I will offer 1% extra credit for each research study you participate in. The researcher will send me a list of who participated at the end of the semester—you don’t need to do anything but show up!

The extra credit assignment is worth 2%. You’ll pick a topic from class that interested you and teach that topic to someone not in this class. This could be a friend, roommate, relative, or a complete stranger—as long as they haven’t taken this class! You’ll submit either a one-page writeup or a one-minute video summarizing what you talked about, including a blurb from your “student” about what they learned.
# Course Schedule

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<th>Course Overview</th>
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<td>Week 2</td>
<td>Module 1 – <em>What is Cognitive Science?</em>&lt;br&gt;Reading: Friedenberg &amp; Silverman (2016), Ch. 1</td>
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<td>Week 4</td>
<td>Module 3 – <em>A Brief History of the Mind</em>&lt;br&gt;Reading: Friedenberg &amp; Silverman (2016), Ch. 2; Miller (2003)</td>
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<td>Week 5</td>
<td>Module 4 – <em>Is the Mind a Computer?</em>&lt;br&gt;Reading: Clark (2000)</td>
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<td>Week 6</td>
<td>Module 5 – <em>Artificial Minds</em>&lt;br&gt;Reading: Bruckner &amp; Garson (2019); Hinton (1992)</td>
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<td>Week 7</td>
<td>Module 6 – <em>Mind and Brain</em>&lt;br&gt;Reading: Kanwisher (2017), Beres (2017)</td>
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<td>Week 8</td>
<td><em>Midterm Exam</em></td>
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<td>Week 9</td>
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<td>Week 10</td>
<td>Module 7 – <em>The Language Instinct</em>&lt;br&gt;Reading: Everaert et al. (2015)</td>
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<td>Week 11</td>
<td>Module 8 – <em>The Mind’s Eye</em>&lt;br&gt;Reading: Beaumont &amp; Rogers (1988); Miller (1990)</td>
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<td>Week 12</td>
<td>Module 9 – <em>The Power of Memory</em>&lt;br&gt;Reading: Nairne &amp; Neath (2012)</td>
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<td>Module 11 – <em>The Reasoning Mind</em>&lt;br&gt;Reading: Tversky &amp; Kahneman (1974); Gigerenzer &amp; Hug (1992)</td>
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<td>Week 15</td>
<td>Module 12 – <em>Emergence of the Mind</em>&lt;br&gt;Reading: Tooby &amp; Cosmides (1997)</td>
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<td>Week 16</td>
<td><em>Final Exam Review</em></td>
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*Note: this schedule is subject to change.*
ChatGPT

ChatGPT is an LLM (large language model), a powerful language-generation tool. We do not forbid the use of ChatGPT—but we have some ground rules. You may use ChatGPT (or other language model) as part of your writing process for weekly responses, with the following caveats:

- You must write your own prompt for ChatGPT. Do not just copy+paste the assignment prompt! Rewrite the prompt to try to elicit a well-formed response from the LLM.
- You must share the prompt you used. Include it in your weekly response. (I think this should be the golden rule of AI usage—I always want to know what prompts work!)
- You must evaluate its response. Is the output accurate? Does it match what we discussed in class? Remember that cognitive science is both a new field, and a very diverse field. What the model outputs may not correspond perfectly to what we cover in class!
- You must cite anything generated by ChatGPT (or other LLM). I want to know what came from you, and what came from the AI.

**Be aware:** ChatGPT is not perfect! It can get facts wrong, especially in fields like cognitive science. The further we go from well-established textbook facts toward debates, open questions, and even controversial ideas, the worse ChatGPT’s performance will be. ChatGPT also has a well-documented tendency to fabricate citations. Just because it produces valid-looking citations does not mean it’s right! These AI models can (and often do!) confabulate—they generate plausible-sounding nonsense.

How can we be so sure of this? Because we are experts in our particular areas—and we’ve tested ChatGPT about the topics we know inside and out. We’ve even prompted ChatGPT on our own published work, so we’ve seen it fabricate citations wholesale and confabulate about research we conducted ourselves! **Be careful!**

**Late Penalties**

All assignments are subject to late penalties. Canvas will automatically deduct 10% every day the assignment is late (to a maximum of 50% deduction). Please turn things in on time! Be mindful that Canvas applies this penalty automatically even one second after the posted due date, so be mindful of time, and get things done early!
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.

Cog Sci Movie Night

I will be running regular Cog Sci Movie Nights this semester. We meet once a month on Fridays at 7pm to watch a movie with some cog sci-related themes or subject matter. There will be snacks. Feel free to bring a friend!
Readings


