



# COGS100: Introduction to Cognitive Science

Fall 2024 | Mondays & Wednesdays 10:30–11:45 AM | RH 112

*"What is concealed inside our heads and on the other side of the sky is always and persistently invisible to us terrestrial creatures. Perhaps this is why so many stories have been put forth to fill these absences."*

— Edward S. Reed

## Professor Stephen Flusberg

email: [sflusberg@vassar.edu](mailto:sflusberg@vassar.edu) | Office: New England 109

Office Hours: Tuesdays, 10:00 AM – 2:00 PM | Reserve an office hours appt [HERE](#)

## Course Description

Cognitive Science is the study of the phenomenon of mind, wherever we may find it. What kind of thing is a mind? How do we scientifically study minds? Is understanding the mind equivalent to understanding the brain? Can machines have a mind? Do some machines already have a mind? How would you know? Do you need a body to have a mind? Can artifacts in the world, like your phone, be an extension of your mind? We'll explore these questions (and more) through lectures, readings, discussions, hands-on exploration of machine intelligence, and writing. You will leave this class with a better understanding of the central concepts, frameworks, and theories in cognitive science, and a deeper appreciation for the nature of the mind — including your own.

## Elements of the Course

**Pre-class preparation.** For each class, I will post a selection of materials (book chapters, articles, videos, podcasts, etc.) on our Moodle site. You should read/watch/listen to these materials *before* the class that they are listed for. Materials will be posted at least a couple weeks ahead of time and will always be available for free.

**Course engagement (10% of your final grade).** Engagement in the course can take many forms, including participation in discussions, asking questions, being attentive while in class, coming to office hours, and regular attendance (see attendance policy below).

**Assignments (90% of your final grade).** You will complete five assignments throughout the semester. Additional details will be provided as we move through the course. *You must turn in all assignments to receive a passing grade.*

1. **Conversation with an AI (20%).** You will have a conversation with an artificial intelligence about the nature of the mind and compose a reflection on the experience
2. **Turing machine (20%).** You'll solve a set of algorithmic puzzles using an online Turing Machine application
3. **Teachable machine (10%).** You'll train a deep learning model to solve a simple image classification problem, investigate what it learned, and write a short lab report
4. **Amicus briefs (20%).** You will critically evaluate the idea that a non-human AI should be treated as if it has the same mental states — and rights — as a human being.
5. **Integrative essay (20%).** You will be asked to synthesize material from the course to develop an integrative account of some aspect of cognition

## Class Expectations and Policies

**Attendance policy.** Regular attendance in class is important to the goals of the course since class time will often involve discussions and activities. However, please don't attend if you are feeling ill or observing a religious holiday. If you know that you are going to miss a class or you *have* missed a class, send me a quick email to let me know and explain what's going on.

**Classroom etiquette.** Please be mindful of how your classroom behavior impacts your peers. If you want to use a laptop or tablet in class, you are welcome to do so, but please keep it focused on class-related activities. Non-class related activities are especially distracting to your classmates who can see your screen. Phones should generally be silenced or off, but if you need to be reachable via phone during class meetings keep your phone on and let me know ahead of time.

**Academic Integrity.** Your work must accurately reflect your own intellectual contributions. When you borrow from others, attribution must be given. Using material without proper attribution is a serious violation of the academic policies of the college and can result in severe penalties. Please read through the college's guide on academic integrity and attribution, available at <http://libguides.vassar.edu/goingtothesource>.

**Generative AI policy.** Over the past few years, generative AI software has appeared that can generate fluid text, answer questions, write essays, and create stunning images (like the picture used at the top of the syllabus). In a sense, these AI systems represent a remarkable application of ideas developed in the field of cognitive science, which we will discuss this semester. One of your assignments will even have you engage with an AI chatbot and reflect on the experience.

However, these programs raise significant ethical issues as well, especially in an educational context. In this class, you may use AI tools like ChatGPT as a tool to help you, but you cannot have it do your work for you. Authorized uses include help with brainstorming, refining your ideas, and, under some circumstances, checking your grammar and style. Unauthorized uses include using the AI to solve problems for you or do your homework, write drafts of your essays, or even write single sentences or paragraphs for you. If you aren't sure whether you can use an AI app to do something, please come talk to me.

You are responsible for the information you submit based on an AI query; for example, your submission should not contain misinformation or unethical content. You must acknowledge your use of generative AI and must properly cite AI generated content in order to comply with [college policies](#) on academic integrity. Please consult these [MLA](#) / [APA](#) resources for guidance on citing generative AI. Any assignment that uses generative AI tools in unauthorized ways may be considered a violation of academic integrity, and will be addressed according to [College Regulations](#). When in doubt about permitted usage, please ask me for clarification.

**Late submission / extension policy.** I try to be purposeful with deadlines. For most of the assignments, the deadline is set for a particular reason, and so reaching the deadline is important for the sake of maximizing the learning benefit of completing the assignment. I hope that this will convince you to turn in everything on time, but of course things come up. If you need additional time on an assignment, please email me as early as you can before the assignment is due *and tell me when you will be submitting the assignment*. Depending on the request, I may be able to grant a couple extra days (except for the last essay, which is due the last possible day). If I don't hear from you ahead of time, late submissions will be penalized 2% per day.

## How to get help and succeed in the course

This course assumes no prior background in cognitive science or any of its constituent disciplines (e.g., psychology, computer science, neuroscience, anthropology, philosophy, etc.). However, by its very nature, the material we cover can be challenging. There will likely be days or weeks when you are confused or have additional questions that are not addressed in class. That's OK! There are several ways to get help this semester and I encourage you to take advantage of them.

First, **please come talk to me!** I'm always friendly and usually helpful. Office hours are a chance to come chat with me about the course material, assignments, cognitive science, or life at Vassar. You are welcome to use my office hours as much as you'd like. **My scheduled Office hours are Tuesdays 10:00 AM – 2:00 PM in New England 109.**

If those times don't work, you can email me to find an alternative time. You can book office hour appointments by clicking the link on our Moodle site or on the first page of this syllabus. The default appointment length is 20 minutes, but if you know you'll need more

time you are welcome to book back-to-back slots. If you have a question that can be handled via email, I will do my best to respond quickly, though I generally do not reply to emails after 8PM unless it's an emergency.

Second, schedule a chat with our **Cognitive Science Intern**. Tom Doyle is the cognitive science intern this semester. He can help you with the assignments or general questions about the class. You can email Tom at [tdoyle@vassar.edu](mailto:tdoyle@vassar.edu). Office hours listed on Moodle.

**Academic Accommodations.** If you have obstacles (documented disabilities or undocumented challenges) that make doing coursework difficult, please let me know. This course is for you and can be tailored, to some extent, to each of you. Academic accommodations are available for students registered with the [Office for Accessibility and Educational Opportunity](#). Students in need of ADA/504 accommodations should schedule an appointment with me early in the semester to discuss any accommodations for this course that have been approved by the Office for Accessibility and Educational Opportunity, as indicated in your AEO accommodation letter.

**Campus Resources.** There are a lot of people on campus who, like me, want you to succeed in this class. Some helpful places relevant to this class include: [The Writing Center](#) is part of the Learning, Teaching, and Research Center (LTRC). You can schedule an appointment for help with any part of the writing process. [The Dean of Studies Office](#) in Main Building is a crucial resource if you are experiencing any difficulties that are affecting your ability to succeed in class, and especially situations that are affecting multiple classes. Your class advisor can meet with you individually to discuss options to address your concerns.

# Course Schedule

Note: the most up-to-date schedule of topics and assigned readings will always be posted on Moodle, as details might shift or change as we move through the semester. In addition to (or in lieu of) readings, there may be videos and other required media on some days.

Week	Date	Topic	Readings	Notes
<b>1</b>	M 9/2	<b>Labor Day — No Class</b>		
	W 9/4	What is cognitive science?		
<b>2</b>	M 9/9	What's in a mind?	Dennett (2013) excerpts; Barrett (2011) - Ch. 1	
	W 9/11	Are minds (metaphysically) special?	Ken Livingston - What is mind?	
<b>3</b>	M 9/16	Are minds just brains?	Maslin (2007) - Ch. 3; Goldstein (2018) - Ch. 2	
	W 9/18	Is the mind truly reducible?	Pessoa (2022) - Ch. 8; Kagan (2006) - Ch. 7	
<b>4</b>	M 9/23	Does the matter of mind matter?	Maslin (2007) - Ch. 5 excerpt	
	W 9/25	Is the brain a computer?	Pinker (1997) excerpts; Crane (2003) excerpt	Assignment #1 due 9/27
<b>5</b>	M 9/30	What can GOFAI do for you?	Pfeifer & Scheier (1999) - Ch. 2 & 3 excerpts	
	W 10/2	Does brain design matter after all?	Flusberg & McClelland (2014) - 1st half	
<b>6</b>	M 10/7	How do neural networks work?	Flusberg & McClelland (2014) - 2nd half	
	W 10/9	What can modern AI do for you?	Lee & Trott (2023) - LLM blog post	
	M 10/14	<b>Fall Break — No Class</b>		
	W 10/16	<b>Fall Break — No Class</b>		
<b>7</b>	M 10/21	What is it like to be a robot?	Lemoine (2022) - is LaMDA Sentient?	
	W 10/23	What are minds for?	Montague (2006) - Ch. 1	Assignment #2 due 10/25
<b>8</b>	M 10/28	Is the mind an inference engine?	Carroll (2016) - Ch. 9 & 10; Gershman (2021) - Ch. 2	
	W 10/30	Is the brain a prediction machine?	Clark (2023) - Ch. 1 + excerpts	Assignment #3 due 11/1
<b>9</b>	M 11/4	How (in)direct is perception?	Barrett (2011) - Ch. 6	
	W 11/6	Does a mind need a body?	Webb (1996); Clark (1999); Chemero (2023)	

<b>10</b>	M	11/11	Where does the mind stop and the world begin?	Clark & Chalmers (1998); Sokol (2017)	
	W	11/13	Is the brain <i>really</i> a computer?	Barrett (2011) - Ch. 7; Richards (2018)	Assignment #4 due 11/15
<b>11</b>	M	11/18	What makes humans so smart?	Suddendorf (2018); Laland (2018)	
	W	11/20	Are linguistic minds different?	Traxler (2011) - Ch. 1; Dennett (2013)	
<b>12</b>	M	11/25	Do you have that funny feeling?	Feldman Barrett (2018) - Ch. 1 & 2	
	W	11/27	How conscious are we?	Blackmore (2018) - Ch. 1	
<b>13</b>	M	12/2	Who are you?	Neisser (1988); Dennett - Where am I?	
	W	12/4	Do we have free will?	List, Caruso, & Clark (2020)	Assignment #5 due 12/7
<b>14</b>	M	12/9	What is the future of cog sci?		
	W	12/11	<b>No Class</b>		