

University of Waterloo

Waterloo ON

Phil/Psych 256 (Section 001), Introduction to Cognitive Science

Fall 2016, MW, 1:00-2:20p, AL 211

INSTRUCTOR

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Office: Hagey Hall, 322

Hours: Fridays, 10:30a-12:00p (or by appointment)

TEACHING ASSISTANT

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Hours: Mondays, 11:30a-12:30p

COURSE DESCRIPTION

This course will be an introduction to some of the main themes and interdisciplinary questions at the heart of cognitive science. As a relatively new scientific discipline (in comparison with, say, physics), many of the foundational issues are still to be settled. This has led to lively debate and congress between people from competing schools of thought, coming from a wide range of backgrounds, including philosophy, psychology, linguistics, anthropology, computing and AI research, mathematics, and neuroscience (to name but a few). While cognitive science gets its proper start after WWII, we will see how the roots of cognitive science go back much deeper in the Western intellectual tradition. One should not be surprised about this much longer history, given that cognitive science asks a range of very specific questions about how thinking works, but also very general (perhaps even philosophical) questions, such as:

- What is intelligence? How is it studied? Can we make intelligent machines?
- Is the mind a computer? If so, what kind of computer? What is the nature of computation?
- Do we think using discrete rules? What is the content of thought – language, images, abstract concepts, similarities?
- What differences and similarities are there between cognition in humans and non-human animals?
- Is some cognition inherently social?
- Does cognition happen in the head, or does it extend into the world?
- What is the role of emotion in cognition?
- Do we think in our native language, or is there a language of thought?

While we will discuss different functions of the mind, and the different ways various disciplines study the mind, we will be primarily concentrating on the main theories of mental representation and mental content. The first three weeks of the course will cover the philosophical prehistory of cognitive science, and then we will start looking at views of the mind that have been developed since the 1950s.

INTENDED LEARNING OUTCOMES

The hope is that everyone learns new ways of thinking about how the mind works, and comes to gain a respect for interdisciplinary studies of the mind. However, we also hope to achieve some learning outcomes not specifically tied to course content, including critical reading and writing skills, the development of peer evaluation skills, and debate and discussion skills. By the end of this class, students should be able to

1. **Conceptualize** the different theories of mental representation we will encounter.
2. **Critically assess** the different arguments made for different theories of mind (mental representation and content).
3. **Discern** normative or evaluative questions about how we ought to think from descriptive or factual questions about how we think.
4. **Hone your writing and research skills.**
5. Be able to **identify, name, analyse/define, and apply key terminology** from the various disciplines we will encounter.

WHAT YOU MUST DO TO SUCCEED

- **Attend classes, and do the readings.** Nick will be posting lecture material when it is possible to post it, but there aren't always lecture slides – and they do not contain all of the necessary content, nor a record of our enlightening discussions. Missing lecture will make it hard to do well on the assessments in this course.
- **Be critical but fair** when dealing with ideas that are coming from a different perspective from your own. If you're a computer scientist, you might not initially get why the philosophers are talking so much about consciousness; if you're an engineer, you might not understand why the computer scientists and philosophers are talking so much about logic; if you're a philosopher, you might not initially understand how psychologists use the term "concepts"; etc. Be open to meeting each other using overlapping vocabularies and shared ideas, but also be ready when things seem like they are coming out of the blue, or when folks sound like they are using key terms differently than you... since the likely are!
- Be willing to **clarify** your views using course concepts and terminology.
- **Engage in criticism and debate.** Treat your interlocutor with respect, and apply the principle of charity. Also, expect the same from your interlocutor. We want to be humble in the process of knowledge-production. We are all fallible, and we are all part of a community of inquirers that can help limit the deleterious effects of bias and unclear thinking.

TEXTBOOK

Primary texts will be made available as PDFs or as links to online content on the course LEARN site. Every week, we will be doing some reading from the following text:

Paul Thagard, *Mind: Introduction to Cognitive Science*, Second Edition.
Cambridge, Massachusetts: MIT Press (A Bradford Book), 2005.
ISBN: 0-262-20154-2

ASSESSMENTS AND DUE DATES

Assessment	Due Date	Page Length	Value
Critical Analysis	October 9	3 pages	15%
Reading Quizzes	Sept. 19; Oct. 3 and 24; Nov. 7 and 28	NA	3% x 5 = 15%
Term Project Proposal	November 14/18	3 pages	15%
Peer Review of Proposal	November 14, in class	1-2 pages	10%
Term Project	December 5	6 pages	30%
Participation	<i>Ongoing</i>	NA	15%

Writing assignments that are submitted late will be penalized **10% of the assessment value per day**, including weekends.

ASSESSMENT OVERVIEWS (Detailed Guidelines to Follow on LEARN)

Critical Analysis: You will reconstruct an argument or theoretical position you have encountered in one of the course readings, tell your reader why it is significant, and assess your chosen passage. Why did you pick this piece (i.e. why do you find it interesting, perplexing, frustrating, etc.)? Is the argument or theoretical position plausible? Do you think it is valid/apt/true/justified/grounded? Why or why not? How might somebody critique the author's views, and how might the author respond?

Reading Quizzes: There will be 5 very short assessments spaced throughout the term. For exact dates, please see the Assessments list above. You will be asked no less than three and no more than 6 questions, and each quiz will be worth 3% of your overall grade. You will have a limited amount of time to complete this assessment (likely 3 or 4 minutes per question); you can begin each quiz at any point between 12:00pm (noon) on the Sunday before they are due, and 12:00pm (noon) on the day they are due. We will take up and discuss these questions as a class at the beginning of each lecture on those five days.

Term Project Proposal: This will be your plan of attack for the Term Project. We expect to see a working introduction that introduces an interesting problem related to course material, provides a brief indication of the theoretical positions folks have taken on the issue, and your thesis/hypothesis/focus of research for the paper. You will also provide a skeletal outline for how you think the project will proceed, and an annotated bibliography including all relevant course material and at least two external sources.

Term Project: This is a major essay that you will have been developing since approximately the mid-point of the term. You will utilize lessons learned on the Critical Analysis and the Proposal processes to craft a paper that explores one of several questions to be provided to you well in advance of the due date. If students prefer to explore a question of their own devising, or pursue a project that is not a traditional essay, then they should talk to Nick and Samantha about their interests in advance.

Participation: There will be lots of class discussion. Students are expected to be at every lecture, and are expected to engage in class discussion regularly. You needn't say something every lecture, but your contributions should be frequent and of a very high calibre – always respectful and focussed on moving class discussion forward! There will also be some group exercises and discussions throughout term, so students will have opportunities to contribute in smaller groups if they feel uncomfortable speaking in front of the whole class.

ELECTRONIC DEVICE POLICY

You may use a laptop or a tablet functioning as a note-taking device. Please turn off phones. If you are found to be using your device for non-course related activities, you may be asked to leave.

NOTE: There is a wealth of empirical evidence that shows use of screens in a class has a negative impact on you **AND THOSE AROUND YOU!** If you need to use a laptop or other note-taking device, please move to the back or sides of the room, where you will be less distracting to others.

E-MAIL ETIQUETTE

1. Before sending an unnecessary e-mail to Nick or Samantha, make sure your question isn't easily answered by the syllabus or assignment handouts!
2. All e-mails should include "Phil/Psych 256" in the subject heading, and your name in the actual e-mail. Leave **48 hours** for reply.
3. Think before sending any longer e-mails dealing with substantial content. Save your questions for class discussion, or stop by office hours for extended chats.

LEARN (COURSE WEBSITE)

LEARN is the main mode of communication for this course after lecture and e-mail. Nick will be posting lecture materials, announcements, any possible changes to the reading schedule, readings not from our textbook, and grades via LEARN. Because LEARN is so important, students are strongly encouraged to regularly access the site.

TENTATIVE SCHEDULE

Readings from Thagard's textbook have the starting page in parentheses following the chapter title. Other readings, followed by "(L)", can be found on LEARN –as PDFs, links to online material, or on the Ares Course Reserve System through our library.

Sept. 12 and 14: Welcome and Introduction – What is Cognitive Science?

Thagard, "Representation and Computation" (3)

G. Miller, "The Cognitive Revolution: a historical perspective" (L)

(Optional) Thagard, "Why Cognitive Science Needs Philosophy and Vice Versa" (L)

Sept. 19 and 21: The Prehistory of Cognitive Science, Part 1

Plato, (VIDEO, viewing in class): “Allegory of the Cave” from *Republic*
(Optional) Plato, *Meno* (L)

Hume, Sections II and III from *An Enquiry Concerning Human Understanding* (L)

Sept. 26 and 28: The Prehistory of Cognitive Science, Part 2

Descartes, “Meditation VI” from *Meditations on First Philosophy* (L)

Elisabeth of Bohemia, excerpts from her *Correspondence with Descartes*

Kant, Introduction to *Critique of Pure Reason* (L)

Oct. 3 and 5: Logic

Thagard, “Logic” (23)

Frege, “The Thought” (L)

Oct. 14*: Rules and Cognition – Representation Beyond Our Finitude

Thagard, “Rules” (43)

Chomsky, “Perspectives on Language and Mind” (L)

* Thanksgiving break runs from Oct. 10 to 12; Oct. 14 is a makeup for the Oct. 12 Study Day – i.e. Friday Oct. 14 is following a Wednesday Schedule

Oct. 17 and 19: Concepts, Part 1

Thagard, “Concepts”

Fodor, “Unphilosophical Introduction: What Concepts Have to Be” from *Concepts* (L)

Oct. 24 and 26: Concepts, Part 2

Machery and Prinz, (VIDEO, viewing in class) Philosophical Theory of Concepts

Rosch, “Reclaiming Concepts” (L)

(Optional) Machery, Précis of *Doing Without Concepts* (L)

(Optional) Prinz, “Empiricism Reconsidered” from *Furnishing the Mind* (L)

Oct. 31 and Nov. 2: Analogies and Images

Thagard, “Analogies” (77) and “Images” (95)

Nov. 7 and 9: Connectionism and Neural Networks

Thagard, “Connections” (111)

Nov. 14 and 16: Emotion and Cognition**

Thagard, “Emotions” (161)

Damasio, “A Passion for Reasoning” from *Descartes’ Error* (L)

** PEER REVIEW in class; bring a copy of your Proposal

Nov. 21 and 23: Consciousness

Thagard, “Consciousness” (175)

Dennett (Video: viewing in class), The Illusion of Consciousness (TED Talk)

Chalmers (Video: viewing in class), How Do You Explain Consciousness (TED Talk)

Nida-Rümelin, “Pseudonormal Vision: An Actual Case of Qualia Inversion?” (L)

Nov. 28 and 30: Mind in Body and World

Thagard, “Bodies, the World, and Dynamical Systems” (191)

Clark and Chalmers, “The Extended Mind” (L)

Wilson, “Introduction: Depression, Biology, Agression” from *Gut Feminism*

Dec. 5 and 7: Social Cognition

Thagard, “Societies” (205)

Jacobson, “Seeing as a Social Phenomenon: Feminist Theory and the Cognitive Sciences” (L)

ACADEMIC INTEGRITY

In order to maintain a culture of academic integrity, members of the University of Waterloo are expected to promote honesty, trust, fairness, respect and responsibility.

Discipline: A student is expected to know what constitutes academic integrity, to avoid committing academic offences, and to take responsibility for his/her actions. A student who is unsure whether an action constitutes an offence, or who needs help in learning how to avoid offences (e.g., plagiarism, cheating) or about “rules” for group work/collaboration should seek guidance from the course professor, academic advisor, or the Undergraduate Associate Dean. When misconduct has been found to have occurred, disciplinary penalties will be imposed under Policy 71 – Student Discipline. For information on categories of offenses and types of penalties, students should refer to [Policy 71 - Student Discipline](#).

Grievance: A student who believes that a decision affecting some aspect of his/her university life has been unfair or unreasonable may have grounds for initiating a grievance. Read [Policy 70 - Student Petitions and Grievances, Section 4](#).

Appeals: A student may appeal the finding and/or penalty in a decision made under Policy 70 - Student Petitions and Grievances (other than regarding a petition) or Policy 71 - Student Discipline if a ground for an appeal can be established. Read [Policy 72 - Student Appeals](#).

OTHER SOURCES OF INFORMATION FOR STUDENTS

[Academic integrity](#) (Definition) [Academic Integrity Office](#) (uWaterloo)

ACCOMODATION FOR STUDENTS WITH DISABILITIES

Note for students with disabilities: The [AccessAbility Services office](#), located in Needles Hall Room 1401, collaborates with all academic departments to arrange appropriate accommodations for students with disabilities without compromising the academic integrity of the curriculum. If you require academic accommodations to lessen the impact of your disability, please register with the AS office at the beginning of each academic term.