

Recent Announcements

FA19: FOUNDATIONS OF COGNITIVE SCI: 1560

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COGS Q240 Philosophical Foundations of Cognitive Science

Fall 2019 Schedule and Syllabus

Room: TE F106

Time: 11:15A-12:30P MW -- Discussion section 12:20P-01:10P F (LH 316)

Instructors:

(Prof.) Ann-Sophie Barwich <abarwich@iu.edu>

Office hours: Monday 1.30P - 3.30P (please email me to schedule).

(A.I.) Justin Slattery <jpslatte@iu.edu>

Office hours: By appointment (please email me to schedule.)

Course Description

Does modern science challenge our deep-seated, philosophical conception of ourselves as human agents with rational beliefs?

Cognitive Science is a relatively young but vastly advancing, multidisciplinary field at the intersection of experimental studies of the brain and general theories of cognition. It emerged about 60 years ago from developments in philosophy, computer science, psychology, and linguistics. This course revisits the main philosophical topics underpinning the modern science of mind and aims to apply this understanding to selected cutting-edge issues. Central to the rise of cognitive science were new ideas about how minds could be understood in computational terms: the computational theory of mind. However, developments in neuroscience, psychology, and philosophical approaches to cognition and robotics, have caused some to question whether cognitive science should remain committed to the computational theory of mind. In this course, students will learn about the original promise of the computational theory, and how it provided an

alternative to earlier philosophical and scientific views about the relationship between mind and body. We will go on to debate whether embodied and social processes amount to an overthrow of the computational paradigm.

Specifically, we will cover four thematic parts: (1) computational theories of mind and brain; (2) mind-brain identity and dualism (and zombies); (3) embodied, extended, and social cognition; (4) perception.

Assignments and Grading

This course is designated Intensive Writing (IW), which according to the faculty handbook means, “students must be required to write “at least 5,000 words (roughly 20 typed pages), not counting revisions (and excluding essay examinations and informal writing, e.g., journals or brief response statements). Students must receive periodic evaluations of their writing, and they must be required to redraft one or more papers in light of the instructor’s criticism. Ordinarily, students will write a series of papers over the course of a semester, not one long-term paper.”

There are no scheduled examinations, but there are 4 formal pieces of writing required, and these will be extensively workshopped during discussion sections. Discussion sections will also be used to clarify and extend the discussion of course concepts.

IW assignments, specified in greater detail below are due by midnight on the dates specified in the table below. All must be submitted via Canvas. Acceptable formats are pdf, rtf, .doc, and.docx.

All submissions should be double-spaced, 1-inch margins, and font size 10-12 points. Include a word count with your document.

All sources must be cited in an acceptable format (APA preferred). Also, if you are unsure about what counts as plagiarism, take this tutorial and self- test.

The writing assignments are tightly integrated with the main lecture content, and the topics may not be fully covered in the readings alone, so attendance at all three meetings each week is essential.

Prepare for all assignments in advance so that last-minute glitches do not catch you off guard, e.g., an internet connection fails right when an assignment is due, or your computer crashes; none of these constitute acceptable excuses. Due dates are final deadlines. Late written work will be penalized at the rate of one grade deduction per day (i.e. a “B+” becomes a “B”). Extensions for written work will be granted only in exceptional circumstances, e.g. documented (bring me a paper copy that I can keep) medical or family emergency; if you know that you will need an extension, talk to me as far in advance as possible—do not wait until the day the paper is due.

70% for the IW assignments, distributed as follows:

IW-1, due 10/7, 10% (100 points)

IW-2, due 11/4, 25% (250 points)

IW-3, due 11/22, 25% (250 points)

IW-4, due 12/06, 10% (100 points)

Participation: 20% (200 points)

[9 Reaction pieces - 16 points each; 72 points participation in class]

Attendance: 10% (100 points)

Texts

There is no required textbook for the course, but there are roughly 2-3 required readings per week. You find them under "Files" in Canvas.

Attendance and Participation

Active participation and respect by all enrolled students is expected. Prompt and regular attendance is expected barring extraordinary circumstances.

Turn off cell phone ringers during class. You are responsible for checking your official IU email account regularly for course communications.

THE SYLLABUS

(This syllabus may be subject to change as needed at the professor's discretion. If changes are made, notice will be given in class in advance.)

Week 1: What is Cognition?

M Aug 26: *Introduction*

No readings: Overview of the course and its requirements, introduction to the main themes of the

semester.

W Aug 28: *On (Not) Defining Cognition*

Reading: Allen, Colin. 2017. "On (not) defining cognition." *Synthese* 194 (11): 4233-4249.

PART 1: COMPUTATIONAL THEORIES

Week 2: Computation and Coding

M Sep 2: Labor Day

Freedom!

W Sep 4: *The Brain as a Computer?*

Reading: Churchland, Paul. 1995. "The Engine of Reason, the Seat of the Soul." Cambridge, MA: MIT Press, Chapter 1.

Watch: Koch, Christoph - "What is meant by Computation?" (55 mins) URL=
<https://www.youtube.com/watch?v=Hznt0DLk_y0&list=PLIqj4aDvMHQPgdlofgSxpySI8seQY63Nb>

Lecture 2: What is Meant by Computation?



Week 3: Three Levels of Explanation

M Sep 9: *David Marr and the 3 Levels of Explanation*

Reading: Marr, David. 1982) *Vision*, Chapters 1 & 6.

Watch: Nancy Kanwisher: "How Can We Study the Human Mind and Brain? Marr's Levels of Analysis."
(23 mins) URL=<https://www.youtube.com/watch?v=Di_3pGAveGs>

1.2 - How Can We Study the Human Mind and Brain? Marr's...**W Sep 11: *David Marr and Reductionism***

Reading: Bickle, John. 2015. "Marr and reductionism." *Topics in Cognitive Science* 7(2), 299-311.
(Meet the author! Guest-Lecturer, via Skype, John Bickle.)

Week 4: Faces and Neural Networks**M Sep 16: *Coding Faces - Learning about Brains via Machines?***

Reading: Churchland, Paul. 1995. "The Engine of Reason, the Seat of the Soul." Cambridge, MA: MIT Press, Chapter 3.

W Sep 18: *The Historical Origins of Neural Networks - in 1934!*

Readings: (1) Piccinini, Gualtiero. 2004. "The First Computational Theory of Mind and Brain: A Close Look at McCulloch and Pitts's 'Logical Calculus of Ideas Immanent in Nervous Activity'", *Synthese* 141: 175–215;

(2) Gefter, Amanda. 2016. "The Man Who Tried to Redeem the World with Logic." Nautilus
 URL= <http://nautil.us/issue/21/information/the-man-who-tried-to-redeem-the-world-with-logic>
 (<http://nautil.us/issue/21/information/the-man-who-tried-to-redeem-the-world-with-logic>)

Week 5: Origins - Thinking and Intelligence as Computation

M Sep 23: *The Turing Test*

Reading: Churchland, Paul. 1995. "The Engine of Reason, the Seat of the Soul." Cambridge, MA: MIT Press, Chapter 9.

W Sep 25: *Alan Turing, Herbert Simon and Allan Newell*

Readings: (1) Newell, Allen, and Herbert Simon. 1975. "Computer science as empirical enquiry: symbols and search." Communications of the ACM 19 (3): 113-126;

Turing, Alan M. 1950. "Computing machinery and intelligence." Mind 59 (236): 433

[Optional/Background Reading: Mindware Ch. 2]

Week 6: Analog, Digital, or not Computational at all?

M Sep 30: *Alternative(s to) Computation*

Readings: (1) van Gelder, Timothy. (1995. "What might cognition be if not computation?" The Journal of Philosophy 92 (7): 45-381;

Maley Corey J. 2018. "Brains as Analog Computers. Brains might compute, but not digitally." URL= <https://medium.com/the-spike/brains-as-analog-computers-fa297021f93> (<https://medium.com/the-spike/brains-as-analog-computers-fa297021f93>) >

W Oct 2: WRITING WORKSHOP

Readings: Four IW 1s by your peers. Prepare and discuss peer review comments to help each other improve the first draft.

IW 1 (Final): Due Oct 7, midnight.

Week 7: Your Brain is a Time Machine

M Oct 7: *Recurrent Networks*

Reading 5: Churchland, Paul. 1995. "The Engine of Reason, the Seat of the Soul." Cambridge, MA: MIT Press, Chapter 9.

W Oct 9: *Time Travel*

Reading: Buonomano, Dean. 2017. Your brain is a time machine: The neuroscience and physics of time. New York: WW Norton & Company, Chapters 1 and 2.

PART 2: MIND AND BRAIN***Week 8: Minding the Brain: Dualism or Identity Theory?*****M Oct 14: *How the Brain links to the Mind***

Reading: Churchland, Paul. 1995. "The Engine of Reason, the Seat of the Soul." Cambridge, MA: MIT Press, Chapter 7. (you can skip pp. 170-174)

W Oct 16: *Are Mind and Brain identical?*

Reading: Churchland, **Patricia**. 1983. Neurophilosophy. Bradford Books/MIT Press; Chapter 8.

Week 9: Consciousness!**M Oct 21: *Different Philosophical Positions***

Reading: Churchland, Paul. 1995. "The Engine of Reason, the Seat of the Soul." Cambridge, MA: MIT Press, Chapter 8.

W Oct 23: David Chalmers vs Daniel Dennett

Reading: Chalmers, David. 1995. "The puzzle of conscious experience." Scientific American 273(6), 80-86. (incl. Christoph Koch)

Watch: Dennett: "Consciousness as illusion" (21 mins) URL=
<https://www.ted.com/talks/dan_dennett_on_our_consciousness
(https://www.ted.com/talks/dan_dennett_on_our_consciousness)>

(<https://www.bbc.co.uk/sounds/play/b08kv3y4>)

Week 10: ZOMBIES

M Oct 28: *Philosophical Zombies*

Reading: Kirk, Robert. 2019. "Zombies." In: Stanford Encyclopedia of Philosophy, ed. by E. Zalta.
URL=<<https://plato.stanford.edu/entries/zombies/> (<https://plato.stanford.edu/entries/zombies/>)>

W Oct 30: WRITING WORKSHOP

Readings: Four IW 2s by your peers. Prepare and discuss peer review comments to help each other improve the first draft.

IW 2 (Final): Due Nov 4, midnight.

PART 3: COGNITION BEYOND THE BRAIN**Week 11: Cognition in a Social World**

M Nov 4: *The Neural Representation of the Social World*

Reading: Churchland, Paul. 1995. "The Engine of Reason, the Seat of the Soul." Cambridge, MA: MIT Press, Chapter 6.

W Nov 6: *The Intentional Stance*

Reading: Dennett, Daniel. 1989. "True Believers." In: The intentional stance. Cambridge, MA: MIT Press, Chapter 2.

Week 12: Embodied and Extended Cognition

M Nov 11: *Embodiment Theories*

Reading: Wilson, Robert, and Lucia Foglia. 2015. "Embodied Cognition." In Stanford Encyclopedia of Philosophy, ed. by E. Zalta. URL=<<https://plato.stanford.edu/entries/embodied-cognition/> (<https://plato.stanford.edu/entries/embodied-cognition/>)>

W Nov 13: *Extended Cognition*

Reading: Clark, Andy, and David J. Chalmers. 1998. "The extended mind." *Analysis* 58 (1) :7-19.

Week 13: Imitation

M Nov 18: *Cultural Cognitive Evolution*

Reading: Heyes, Celia. 2018. "Cognitive Gadgets: The Cultural Evolution of Thinking." Cambridge, MA: Harvard University Press, Chapter 6.

W Nov 20: WRITING WORKSHOP

Readings: Four IW 3s by your peers. Prepare and discuss peer review comments to help each other improve the first draft.

IW 3 (Final): Due Nov 22, midnight.

THANKSGIVING

PART 4: THE SENSES

Week 14: Perception

M Dec 2: *Color in Context*

Readings: (1) Chirimuuta, Mazviita. 2015. *Outside Color: Perceptual Science and the Puzzle of Color in Philosophy*. Cambridge, MA: MIT Press, Ch. 4

(2) Mazviita Chirimuuta (2018) *The Reality of Color Is Perception An argument for a new definition of color.* Nautilus URL <http://nautil.us/issue/56/perspective/the-reality-of-color-is-perception-rp>
(<http://nautil.us/issue/56/perspective/the-reality-of-color-is-perception-rp>)

W Dec 4: *"The Other Senses" - Smell*

Reading: Barwich, Ann-Sophie. Forthcoming 2020. *Smellosophy: What the Nose Tells the Mind*. Cambridge, MA: Harvard University Press, Chapter 9.

IW 4 (Final): Due Dec 6, midnight.

Week 15: Which of the topics and themes we discussed would YOU like to know more about?

M/W --> Readings: tba

Week 16: FINALS WEEK (no lectures/seminars)**Writing Tutorial Services (!!)**

For free help at any phase of the writing process—from brainstorming to polishing the final draft—call Writing Tutorial Services (WTS, pronounced “wits”) at 855-6738 for an appointment. When you visit WTS, you’ll find a tutor who is a sympathetic and helpful reader of your prose. To be assured of an appointment with the tutor who will know most about your class, please call in advance. WTS, in the Information Commons on the first floor of the Wells Library, is open Monday- Thursday 10:00 a.m. to 8:00 p.m. and Friday 10:00 a.m. to 5:00 p.m. Walk-in tutorials are available when WTS has an opening, but the appointment book often fills in advance. WTS tutors are also available for walk-in tutorials (only) in the Academic Support Centers in Briscoe, Forest, and Teter residence halls, open Sunday-Thursday 7:00 p.m. to 11:00 p.m.









Statement for Students with Disabilities

The Americans with Disabilities Act (ADA) is a federal anti-discrimination statute that provides comprehensive civil rights protection for persons with disabilities. Among other things, this legislation requires that all students with disabilities be guaranteed a learning environment that provides for reasonable accommodation of their disabilities. If you believe you have a disability requiring an accommodation, please contact IU Disability Services for Students (<https://studentaffairs.indiana.edu/disability-services-students/index.shtml>).

Statement about Academic Misconduct

University rules concerning academic misconduct will be rigorously enforced in this class. See Section G of the IU Code of Student Rights, Responsibilities and Conduct for details (<http://studentcode.iu.edu>).

Course Summary:

Date	Details	due by
Mon Sep 30, 2019	 <u>IW 1 (Presubmission): "Computation" in Cognitive Science</u> (https://iu.instructure.com/courses/1820339/assignments/9641765)	11:59pm
Mon Oct 7, 2019	 <u>IW 1 (Final): "Computation" in Cognitive Science</u> (https://iu.instructure.com/courses/1820339/assignments/9641813)	11:59pm
Mon Oct 28, 2019	 <u>IW 2 (Presubmission): Mind & Brain</u> (https://iu.instructure.com/courses/1820339/assignments/9641854)	11:59pm
Mon Nov 4, 2019	 <u>IW 2 (Final): Mind & Brain</u> (https://iu.instructure.com/courses/1820339/assignments/9641874)	11:59pm
Mon Nov 18, 2019	 <u>IW 3 (Presubmission): Cognition beyond the Brain</u> (https://iu.instructure.com/courses/1820339/assignments/9656810)	11:59pm
Fri Nov 22, 2019	 <u>IW 3 (Final): Cognition beyond the Brain</u> (https://iu.instructure.com/courses/1820339/assignments/9656811)	11:59pm
Mon Dec 2, 2019	 <u>IW 4 (Presubmission): The Brain as a Computer</u> <u>(Revision/Extension IW 1)</u> (https://iu.instructure.com/courses/1820339/assignments/9656812)	11:59pm
Fri Dec 6, 2019	 <u>IW 4 (Final): The Brain as a Computer (Revision/Extension IW 1)</u> (https://iu.instructure.com/courses/1820339/assignments/9656813)	11:59pm