

Syllabus – COGS Q240: Philosophical Foundations of Cognitive Science – Fall 2015

Rosa Cao

Office hours W 4-5pm and F 11-12pm, Sycamore 123, or by appt rosacao@indiana.edu

Branden Bryan

Assistant Instructor, Office hours F 1:30 – 2:30pm, Eigenmann 819 branbrya@umail.iu.edu

About this course

Can computers think? What is special about a mind? How do minds work? The first half of the course will cover some of the conceptual foundations of cognitive science as a new research program in the 1950s and 60s. We'll be looking at the explanatory status of cognitive science as well as its relation to other traditional ways of approaching questions about the mind. In the second half of the course we will focus on more recent debates in the field about the nature of representations, whether they are strictly needed for cognition, and what form (if any) mental representations take.

Readings

Readings will be posted on the course website (<https://iu.instructure.com/courses/1479335>) and should be completed *before* you come to each class. There is no required text, but Andy Clark's *Mindware* is highly recommended and should be available at the IU Bookstore.

How we determine your grade

10% - A discussion question on one of the readings to be submitted by midnight on the course website before each regular class meeting

15% - Participation in lecture and discussion section

5% - Quizzes and other in-class written exercises

70% - Six Intensive Writing (IW) assignments*

5% IW-1, due 09/11, Explain one of the –isms. (Expository, 600 words minimum)

10% IW-2, due 10/02, Explain functionalism to a 6th grader. (Expository, 600 words)

10% IW-3, due 10/23, Can machines think? (Argumentative, 1000 words)

15% IW-4 due 11/13, Mind-Body Problem or FP debate (Argumentative, 1000 words)

10% IW-5, due 12/04, Revision of an earlier IW, or draft of final paper IW-6 (1000 words)

20% IW-6, due 12/15, Any topic from Weeks 9 – 15 (Argumentative, 1500 words)

All Intensive Writing assignments are due midnight *before* Friday section, with the exception of the final IW-6 which is due 11:59pm on Tuesday 12/15.

Schedule (check Canvas for updates)

Week 1 – Introduction (1-page writing assignment due Aug 28)

Aug 25: Syllabus, expectations, reading and writing

Aug 27: What is (Philosophy of) Cognitive Science?

- Thagard SEP article on Cognitive Science

- Clark, Preface, Introduction, Chapter 1, and Appendix 1, *Mindware*

Aug 28: "Do animals have minds?" Short writing exercise.

* This course is designated Intensive Writing (IW), which according to the faculty handbook means that you are 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). [You will] receive periodic evaluations of [your] writing, and [you are] required to redraft one or more papers in light of the instructor's criticism." Each IW will be explained in more detail as it comes up.

Syllabus – COGS Q240: Philosophical Foundations of Cognitive Science – Fall 2015

Week 2 – Dualism vs. the “scientific” worldview

Sep 1: Rationalists and Empiricists

- Descartes, Selections from *Meditations*
- Hume, selections from the *Enquiry*
- Churchland, selections from Ch 2 of *Matter and Consciousness* on Dualism

Sep 3: The Turing Test

- Turing, “Computing Machinery and Intelligence”

Week 3 – Folk Psychology and Behaviorism (IW-1 due)

Sep 8: Folk Psychology and Eliminativism

- Dennett, “True Believers”
- Churchland, pp. 23-35, 43-49, and 54-59 in *Matter and Consciousness*

Sep 10: Behaviorism

- Putnam, “Brains and Behavior”
- Gray, Peter. Excerpts on learning from Ch 4: *Psychology*

Week 4 – After Behaviorism

Sep 15: The rationalist strikes back

- Chomsky, “Review of B.F. Skinner’s *Verbal Behavior*”

Sep 17: Functionalism

- Putnam, “Nature of Mental States”
- Block, “Troubles with functionalism” (excerpt)

Week 5 – Explanatory Strategies

Sep 22: Levels of explanation

- Dennett, “Real Patterns”
- Fodor, “Special Sciences” (optional)

Sep 24: Computational approaches

- Marr, excerpts from *Vision*
- Clark, Ch 3 *Mindware*

Week 6 – Symbol Systems (IW-2 due)

Sep 29: The power of symbol systems

- Clark, Ch. 2.1, *Mindware*
- Dennett, “Seven Secrets of Computer Power”
- Newell and Simon, “Computer Science as Empirical Enquiry”

Oct 1: What symbol systems cannot do

- Clark, Ch 2.2, *Mindware*
- Searle, “Can Computers Think?”
- (Optional) Dreyfus, selections from “What computers cannot do”

Week 7 – If computers can’t think, how can we?

Oct 6: Recipes for representation

- Dretske, “A Recipe for Thought”
- Newsome, “Sense and the Single Neuron,” (excerpt, *Annu Rev Neurosci* 1998)

Oct 8: Evolution and Content

- Millikan, “Compare and Contrast Dretske, Fodor, and Millikan on Teleosemantics”

Week 8 – Mental representations

Oct 13: Maps in the head

- Tolman, “Cognitive maps in rats and men”

Oct 15: The format of mental representations

- Shepard & Metzler, “Mental Rotation of 3D images”
- Pylyshyn, “What the mind's eye tells the mind's brain”

Syllabus – COGS Q240: Philosophical Foundations of Cognitive Science – Fall 2015

Week 9 - Connectionism (IW-3 due)

- Oct 20: What is connectionism?
- Clark, Ch 4, *Mindware*
- SEP entry on connectionism
- Oct 22: Neural networks
- Marsalli, "McCulloch-Pitts Neurons" CCSI mind project, online

Week 10 – Against representation

- Oct 27: Cognition without computation
- van Gelder, "What might cognition be if not computation?"
- Oct 29: Embodied robots
- Brooks, "Intelligence without representation"
- Clark, Ch 5, *Mindware*

Week 11 – New approaches

- Nov 3: Dynamical Systems
- Beer, "Dynamical approaches to cognitive science"
- Clark, Ch 7, *Mindware*
- Nov 5: ...and beyond
- Harvey, "Evolutionary Robotics"
- Clark, Ch 6, *Mindware*

Week 12 – Extended cognition (IW-4 due)

- Nov 10: Extended mind
- Clark & Chalmers, "The Extended Mind"
- Clark, Ch 8, *Mindware*
- Nov 12: Group minds
Theiner et al, "Recognizing Group Cognition"

Week 13 – The overextended mind?

- Nov 17: Conservatism
- Rupert, "Against group minds"
- Nov 19: Détente
- Clark, "Pressing the Flesh"
- (or Clark, "Embodiment and the philosophy of mind")

Thanksgiving Week – No class

Week 14 – Bayesian approaches (IW-5 due)

- Dec 1: The mind as inference machine
- Griffiths et al, "Probabilistic models of cognition"
- Dec 3: Prediction without explanation?
- McClelland et al, "Letting Structure Emerge"
- Optional: Griffiths et al, "Rational Use of Cognitive Resources"

Week 15 – Meta-issues

- Dec 8: Philosophy of Cognitive Science vs. Philosophy of Mind
- Chemero & Silberstein, "After Philosophy of Mind"
- Dec 10: Bonus session: Catch-up, topics of special interest, possibly meta-issues
- TBD

Week 16 – IW-6 due 11:59pm TUESDAY 12/15 for 20% of your course grade

*Please note that the readings and schedule are subject to change
Do check the website regularly (ideally after each class) for updates and announcements*

Syllabus – COGS Q240: Philosophical Foundations of Cognitive Science – Fall 2015

How to do well in this course

The most important thing you can do is show up and participate. Do the readings ahead of time, so that you know what's going on in the conversation. It's okay if there are things you don't understand – that's what we're here for. Come to office hours, talk to your classmates, argue! Don't be afraid to be wrong.

Writing Tutorial Services

Writing in the way that we want you to for this class may feel difficult. Writing tutorial services (located in Wells library and a few residence halls) can help, whether it's just with getting started or improving what you've already written. I'm told that it's best to call ahead for an appointment, but that tutors are also available on a walk-in basis. Hours and more information can be found at <http://www.indiana.edu/~wts/>.

Course policies

Plagiarism and other academic misconduct

Don't plagiarize. Not sure what counts as plagiarism? Here are [some guidelines](#). If you're still in doubt, ask Branden (or a writing tutor!) If we find that you've plagiarized, you will get zero credit for the assignment, in addition to whatever other sanctions may apply. On other academic misconduct, please see [the Code of Student Rights, Responsibilities and Conduct](#).

Attendance

Attendance is expected at all classes. The standard IU policy states, "with the exception of days covered by the [Religious Observances Policy and Procedures](#) of Indiana University, illness or military orders are the only acceptable excuses for absence from class." For Q240 in particular, the point of meetings is to discuss ideas from the readings, which we can't do if you're not here. If you don't plan to participate, you shouldn't take this class. If you must miss a class for a legitimate reason, let us know in advance and provide documentation.

Lateness

No late papers will be accepted unless you contact us about them *before* the deadline. If you have a good reason for needing an extension (see attendance policy for acceptable excuses), you will receive a new, firm, deadline with no penalty. If you do not have a good reason[†], then you will lose 1/3 of a grade for that assignment for each day (including weekends and holidays) that it is late. The first day starts immediately after the deadline. So if you started out with a B for the paper, you will get a B- fifteen minutes after the deadline, and a C+ after it is 24 hours late.

Notice that we want to know what is happening with you! So even if you don't have a good excuse, come talk to us before the deadline and tell us why. The worst thing you can do is panic or hide (or skip class/section to work on the assignment). Don't do that – if you are having trouble with the assignment, seek help *early*. We want you to do well.

Message from the Dean's office on class materials

"Several commercial service have approached students regarding selling class notes/study guides to their classmates. Please be advised that selling a faculty member's notes/study guides individually or on behalf of one of these services using IU email, Canvas, or Oncourse violates both IU information technology and IU intellectual property policy. Selling notes/study guides to fellow students in this course is not permitted. Violations of this policy will be considered violations of the Code of Student Rights, Responsibilities, and Conduct and will be reported to the Dean of Students as a violation of course rules (academic misconduct). Sanctions for academic misconduct may include a failing grade on the assignment for which the notes/study guides are being sold, a reduction in your final course grade, a failing grade in the course, among other possibilities."

[†]It's not a good reason if you have too much other work to do, or an extra-curricular activity is taking up all of your time that week, or your computer breaks. These aren't good reasons because they should be avoidable if you plan ahead. You have three weeks to work on most of the writing assignments, the deadlines are provided well in advance, and you should have a back-up strategy in place for computer problems.