PHL 453: Cognitive Science Winter 2017
Tuesday/Thursday, 3PM-4:50PM in Bldg 5 124

Alex Madva (preferred email address: alexmadva@gmail.com)
Office Hours: Tuesday 5:10PM-7PM, and by appointment; Building 1, Room 329
Additional office hours on Friday, 11:30am-1pm (sometimes electronic)

Course Description: How does the mind work? Cognitive science tackles this question with tools from a wide range of fields, including experimental psychology, computer science, linguistics, neuroscience, philosophy, and others. First, we will raise basic philosophical questions about the nature of the mind. What must the mind be like if we can study it scientifically? Second, we turn to questions about Artificial Intelligence. Are our minds similar to digital computers? Can computers think? Third, we focus on the cognitive science of belief and perception. Can the complex machinery of the mind be understood in terms of its basic parts? Fourth, we conclude by critically examining claims about whether and how men and women "think differently." Investigating what effects, if any, gender and sexuality have on patterns of cognition will require integrating research from biology, neuroscience, and developmental and evolutionary psychology. Spoiler alert: as we attempt to disentangle the complex interplay of "nature" and "nurture" in the formation of the mind, we will begin to appreciate just how much we *still don't know* about what makes us who we are.

Course Goals
- Understand how diverse fields of research can contribute to our understanding of the mind.
- Become familiar with basic philosophical questions underlying the science of the mind.
- Appreciate how scientific research can advance our philosophical understanding of the mind.
- Learn the history and ongoing challenges facing the development of Artificial Intelligence.

Required Readings
There are no books to purchase. All assignments will be made available on Blackboard or the web. I will provide attachments and links to these materials via email after each class. **You are therefore responsible for checking your CPP email after every class.**

Additional Required Materials: YOU NEED TO PURCHASE AN ICLICKER FOR THE QUIZZES

Course Grading and Requirements
Attendance and Participation: 20%
Quizzes: 20%
First Paper: 15%
Second Paper: 20%
Third Paper: 25%
Extra credit: A variety of extra-credit opportunities, including responses to outside readings, films, and podcasts, and the opportunity to participate in psychology experiments

Course Grading and Requirements continued

Attendance & Participation (20%): This includes attendance, participation, and in-class assignments. **Attendance is mandatory, as is arriving on time.** Excused absences require signed documentation from a doctor or dean. **Participation and preparation are crucial.** There are a variety of ways to participate, including: actively contributing to discussions, demonstrating reflection on the readings, listening carefully to others' contributions (not dominating discussion), and showing respect toward classmates. If you are uncomfortable speaking in class, I encourage you to visit my office hours and contribute more to the Discussion Board on Blackboard. (You may want to subscribe to the Discussion Board so you receive emails when someone posts there.) There may also be in-class debates and group work. PowerPoint slides will be posted to Blackboard after class. You are expected to remain engaged in the class and take notes. I may decide to stop posting lecture slides if students are not paying sufficient attention.

Extra Credit Typo Policy: I give extra participation credit if you identify typos in class handouts, assignments, and lecture slides (not emails).

No Laptops or Phones: laptops, tablets, and cell phones cannot be used in the classroom, and must be kept off desks, unless you get my express consent. If you need to use a laptop or tablet during class, please contact me by email or during office hours.

Quizzes (20%): Most classes will begin with a 10-minute quiz on the assigned reading. The quizzes tend to be very difficult, but they are graded on a generous curve. (Typically, getting around 50% of the questions right translates roughly to a B grade.) **Note**: some students find that quizzes don't represent the work they put into the assignments. If you are struggling with the quizzes—for whatever reason—come talk to me. Students who approach me may be given an alternative, supplementary option for demonstrating their engagement with the reading.

Papers (60%): There will be three short paper assignments (600-1,000 words). Due dates to be announced.

Student Access: I am dedicated to providing students with the support they need to succeed in the classroom. Students who need accommodations are encouraged to contact me privately or the Disability Resource Center at (909)-869-3333, building 9, room 103.

Academic Integrity: The University trusts each student to maintain high standards of honesty and ethical behavior. I will observe Cal Poly Policies on Honesty and Plagiarism. While teamwork is encouraged, any kind of cheating is unacceptable. **Students that fail to observe honesty and plagiarism policies will fail the course, and their cases will be reported to the Judicial Affairs Committee.** I will distribute a handout on academic integrity for each student to sign and return to me.

Topics and Readings

Note: the readings and schedule are **tentative and subject to change**. I will confirm the specific upcoming readings in every class and shortly after class via email. **You are therefore responsible for checking your CPP email after every class.**

Week 1 (1/3 and 1/5): Hello
Paul Bloom, "Natural-Born Dualists"
Thomas Polger, "Functionalism", *Internet Encyclopedia of Philosophy*, Sections 1-2;
Michael Lacewing, "Identity Theory"

Optional: Terry Bisson, "Alien/Nation" (video version here!)
Optional: 2 YouTube videos on philosophical questions surrounding dualism here and here.

Basic Concepts: Physicalism, Functionalism, and Computation
Week 2 (1/10 and 1/12)
David Armstrong, "The Nature of Mind"
Louise Antony, "The mental and the physical" (pp.555-563, 1-9 of PDF)

David Anderson, "What is a computer?" (may need a PC with Flash Player)
Alan Turing, "Computing Machinery and Intelligence"
David Anderson & Kari Cox, "The Turing Test" (may need a PC with Flash Player)
Mike Davey, "A Turing Machine" (video)
1st Paper Assignment Distributed

Artificial Intelligence, Brains, and Bodies
Week 3 (1/17 and 1/19)
Clark, selections from *Mindware*, "Symbol Systems: Sketches"
John Searle, "Our Shared Condition – Consciousness" (TED talk)
John Searle, "Minds, Brains and Programs"
Margaret Boden, "Escaping from the Chinese Room"
Jim Pryor, "Guidelines on Writing Philosophy"

Week 4 (1/24 and 1/26)
Paul Churchland and Patricia Churchland, "Could a Machine Think?"
Hubert Dreyfus, "Standing Up to Analytic Philosophy and Artificial Intelligence at MIT in the Sixties"
Boston Dynamics, "Atlas" robots
"27" video on artificial intelligence

Lee Gomes, "Driving in Circles"
Danielle Muoio, "I was behind the wheel when a self-driving Uber failed — here's what happens"
Optional further reading: Brad Plumer, "5 big challenges that self-driving cars still have to overcome"; Gomes, July 2016, "Silicon Valley-Driven Hype for Self-Driving Cars"
Optional further reading: Louise Antony, "The mental and the physical," 563-7
1st Paper Due
2nd Paper Assignment Distributed

The Mental Architecture of Belief
Week 5 (1/31 and 2/2)
Daniel Gilbert, "What the Mind's Not"
Daniel Gilbert, "How Mental Systems Believe"
Jeremy Dean, "Why You Can't Help Believing Everything You Read"
Brian Bergstrom, Bianca Moehlmann, and Pascal Boyer, "Extending the Testimony Problem: Evaluating the Truth, Scope, and Source of Cultural Information"
Eric Mandelbaum, "Thinking Is Believing" (pp.73-81)

The Mental Architecture of Perception

Week 6 (2/7 and 2/9)
Robert Stufflebeam, "Introduction to the Science of Vision"; "Methods Used in the Study of Vision"; "Perception: An Introduction" (read Page 1, Page 2, and Methods Used to Study Perception") – may need a PC with Flash Player
Brain Games video on some visual illusions
Chaz Firestone and Brian Scholl, "Cognition does not affect perception: evaluating the evidence for top-down effects" and replies by commentators

Actions, Habits, and Cognitive Rules of Thumb

Weeks 7-8 (2/14, 2/16, 2/21 and 2/23)
Andy Clark, "Perception, Action, and the Brain," selections
Gerd Gigerenzer, *Gut Feelings*, "Winning without Thinking" (pp.8-13), "The Best Pops Up First" (pp.32-6), "How Intuition Works" (ch.3, pp.40-53), "The Adaptive Toolbox" (pp.60-3), and "Adaptive Goals" (pp.63-6).
Charles Duhigg, "The Habit Loop" and other excerpts from *The Power of Habit*, pp.14-21 (stop at III), 25-27 (stop at VI); 44-52 (stop at IV); 70-78 (stop at III)
Maria Konnikova, "The Surprising Science of Yawning"
2nd Paper Due
3rd Paper Assignment Distributed

Gender, Sexuality, and Cognition: Developmental Psychology, Biology, and Neuroscience

Week 9 (2/28 and NO CLASS ON 3/2)
Jennifer Saul, "Women's Different Voice" (skip pp.213-215)
Rebecca Jordan-Young, *Brain Storm: The Flaws in the Science of Sex Differences*, Ch.1, pp.1-18 and Ch. 3, pp.48-54.
Ch.9, "Taking Context Seriously," (entire) Ch. 10, "Trading Essence for Potential" (entire)
Lori Oliwenstein, "The Most Important Sex Organ"

Week 10 (3/7 and 3/9)
Rebecca Jordan-Young, *Brain Storm*, Chs.9-10
Daphna Joel and Cordelia Fine, "There are many ways to be male and female"
3rd Paper Due (March 13th-17th)