

**Junior Seminar in Cognitive Science**  
**CGSC 390**  
**Fall 2016**

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**Time/Location:** Thursdays, 9:25-11:15  
**Office Hours:** Thursdays, 1:00-2:00; SSS 205 H (inside “Panda Lab”)  
**Course Website:** on Canvas

### **Overview**

This course is intended for juniors in the cognitive science major. It provides an overview of recent advances in cognitive science, as well as some classic foundational papers. By the end of the semester, you should have a better sense of the content and methods used in cognitive science. The readings in this course may be useful for informing your selection of a senior thesis topic. Given the breadth of cognitive science, we will not be able to address all potential topics (and then the interesting intersections between topics!), and so the final list of readings will be determined based on student interests. This is true for all weeks, but especially weeks 5 through 12.

### **Course Requirements and Evaluation**

Twenty-four hours prior to each meeting of the course, you should submit two reading responses that are each approximately 250 words. One of these should address the readings for the upcoming meeting, and should focus on a small number (typically 1-3) of criticisms of the arguments in the readings, or questions about the arguments in the readings. These responses will help to structure the discussion of the upcoming meeting. The second response should focus on the *previous* week, and should reference the response submitted for that week and the discussion during that week. How has your understanding of the material changed following discussion with your peers? Combined, the responses and participation in discussion will account for 50% of the final grade. On the course website, you can find an example for each of the reading response types, as well as instructions for how to submit your responses.

The other 50% of the final grade will come from a final project submitted at the end of the semester. This paper can be (a) a literature review of a course topic covered in more depth than we did in class, (b) a literature review of a topic related to the course content, but that we did not have time to cover in class, or (c) a project proposal for a study related to the course content (you are not expected to actually run the project). We will discuss ideas for projects in more detail partway through the semester, and you will be expected to have a one page project proposal approved by me shortly thereafter. Your final paper should be between 12 and 15 pages, and may be in a form that will be useful for you in the future (e.g., as a basis for a senior project or a graduate school writing sample). You will also give a short presentation on your paper during the last meeting of the semester (most students use PowerPoint for this).

## Readings for Each Week

- The below list based on Fall 2015 student preferences
- The topics and readings may change based on 2016 student interests
- The only required readings each week are those identified with a single letter, and the letters indicate the suggested reading order
- Optional papers have one of two designations: “REC” = recommended to all students, “SPEC” = potentially of specialized interest to some students

### Week 1: Introduction

#### September 1

- There are no readings this first meeting, but you might get a head start on Weeks 2 and 3. This week, we will discuss the major, the course, and some information that might help you read empirical articles (e.g., discussion of statistics and QALMRI)

### Week 2: Where did cognitive science come from?

#### September 8

- (A) UX/Aesthetics Reading Guide
- (B) Miller (2003). The cognitive revolution: A historical perspective. *Trends in Cognitive Science*.
- (C) Chomsky (1959). Review of “Verbal Behavior” by B.F. Skinner. *Language*.
- (D) Fodor (1985). Précis of “The Modularity of Mind.” *Brain and Behavioral Sciences*.
- (E) Frankenjuis & Ploeger (2007). Evolutionary psychology versus Fodor: Arguments for and against the Massive Modularity Hypothesis. *Philosophical Psychology*.

### Week 3: Where is cognitive science going?

#### September 15

- Look through the schedule of the 2015 Cognitive Science Society conference (not the poster sessions, just the talks)
- Chose two papers of interest to you (typically 6 pages each). These must be on different topics (typically this means they should come from different sessions). Read these two papers and send me the pdfs.

### Week 4: Meta-issues in cognitive science

#### September 22

- (A) Meta-issues Reading Guide
- (B) Ioannidis (2005). Why most published research findings are false. *PLoS Medicine*.

- (C) Simmons et al. (2011). False-positive psychology: Undisclosed flexibility in data collection and analysis allows presenting anything as significant. *Psychological Science*.
- (D) Bones & Johnson (2007). Measuring the immeasurable: Or "Could Abraham Lincoln take the implicit association test?" *Perspectives on Psychological Science*.
- (E) Open Science Collaboration (2015). Estimating the reproducibility of psychological science. *Science*. (optional after first page)

## **Week 5: Evolution**

### **September 29**

- (A) Evolution Reading Guide
- (B) Cosmides & Tooby. Evolutionary psychology primer. <http://www.cep.ucsb.edu/primer.html>
- (C) Dunbar (1998). The social brain hypothesis. *Evolutionary Anthropology*.
- (D) Debove et al. (2015). Evolution of equal division among unequal partners. *Evolution*.
- (REC) Delton & Robertson (2016). How the mind makes welfare tradeoffs: Evolution, computation, and emotion. *Current Opinion in Psychology*.

## **Week 6: Development and Concepts**

### **October 6**

- (A) Development Reading Guide
- (B) Carey (2004). Bootstrapping and the origin of concepts. *Daedalus*.
- (C) Rips et al. (2006). Giving the boot to the bootstrap. *Cognition*.
- (D) Tenenbaum et al. (2011). How to grow a mind. *Science*.
- (REC) Gopnik (2012). Scientific thinking in young children. *Science*.
- (SPEC) Ferry et al. (2015). Prelinguistic Relational Concepts: Investigating Analogical Processing in Infants

## **Week 7: My Work on Moral Development (by student request)**

### **October 13**

- (A) Moral Development Reading Guide
- (B) Sheskin et al. (2014). Life History Theory Explains Childhood Moral Development. *Trends in Cognitive Science*.
- (C) Sheskin et al. (2014). Anti-equality: Social comparison in young children. *Cognition*,
- (D) Sheskin et al. (in press). Some Equalities are More Equal Than Others: Quality Equality Emerges Later than Numerical Equality. *Child Development*.
- (SPEC) Skerry et al. (2011). Capuchin monkeys are not prosocial in an instrumental helping task. *Animal Cognition*. (cog sci senior thesis I supervised)

## OCTOBER RECESS

### Week 8: Why are we conscious?

October 27

- (A) Consciousness Reading Guide
- (B) Chalmers (2014). How do you explain consciousness? *TED Talk*.
- (C) Wegner (2003). The mind's best trick: how we experience consciousness. *TICS*.
- (D) Jackson (1982). Epiphenomenal Qualia. *Philosophical Quarterly*.
- (E) Recall from intro cogsci: Bisson (1990). They're made out of meat. *Omni*.
- (F) Recall from intro cogsci: Searle (1980). Minds, Brains, and Programs. *Brain and Behavioral Sciences*.
- (REC) Nagal (1974). What is it like to be a bat? *Philosophical Review*.
- (REC) Gazzaniga (1967). The split brain in [hu]man[s]. *Scientific American*.
- (REC) Block (2015). Consciousness, big science, and conceptual clarity. (Chapter from book on *The Future of the Brain*).

### Week 9: Artificial Intelligence

November 3

- (A) AI Reading Guide
- (B) Turing (1950). Computing machinery and intelligence. *Mind*.
- (C) Breazeal (2002). Robots that imitate humans. *Trends in Cognitive Science*.
- (D) Urmson (2015). How a driverless car sees the road. *TED Talk*.
- (E) Still (2015). Is artificial intelligence the next step in advertising? *The Guardian*.
- (REC) Adami (2015). Artificial Intelligence: Robots with Instincts. *Nature*.
- (SPEC) Cully (2015). Robots that can adapt like animals. *Nature*.
- (SPEC) Gold (2009). Using probabilistic reasoning over time to self-recognize. *Robotics and Autonomous Systems*.

### Week 10: Emotion

November 10

- (A) Emotion Reading Guide
- (B) Ekman (1969). Pan-Cultural elements in facial displays of emotion. *Science*.
- (C) Russell (2003). Core affect and the psychological construction of emotion. *Psychological Review*. (Only intro and Précis, Part II is optional)
- (D) Sell (2009). Formidability and the logic of human anger. *PNAS*.
- (E) Tracy (2015). The nonverbal communication of emotions. *Current Opinion in Behavioral Sciences*.
- (REC) Salovey (2005). The science of emotional intelligence. *Current Directions in Psychological Science*.

- (SPEC) Lindquist (2012). The brain basis of emotion: A meta-analytic review. *BBS*.
- (SPEC) Lerner (2014). Emotion and decision making. *Annual Review of Psychology*.
- (SPEC) Cosmides (2000). Evolutionary psychology and the emotions. (Chapter from book *Handbook of Emotions*)
- (SPEC) Han (2007). Feelings and consumer decision making: the Appraisal-Tendency Framework. *Journal of Consumer Psychology*.
- (SPEC) Sell (2014). The human anger face evolved to enhance cues of strength. *Evolution and Human Behavior*.
- (SPEC) Averill (2012). The future of social constructivism: Introduction to a Special Section of *Emotion Review*. (also see articles in special section)
- (SPEC) Inzlicht (2015). Emotional foundations of cognitive control. *TiCS*.

## **Week 11: Judgment and Decision-Making**

### **November 17**

- (A) JDM Reading Guide
- (B) Kahneman (2003). A perspective on judgment and choice. *American Psychologist*.
- (C) Evans & Stanovich (2013). "Dual-process theories of higher cognition: advancing the debate." *Perspectives on Psychological Science*
- (D) Thaler & Sunstein (2008). Nudge (introduction from book)
- (REC) Leslie et al. (2015). Expectations of brilliance underlie gender distributions across academic disciplines. *Science*.
- (REC) Thaler & Sunstein (2008). Nudge (more chapters from book)
- (SPEC) Blakemore & Robins (2012). Decision-making in the adolescent brain. *Nature Neuroscience*.

## **NOVEMBER RECESS**

## **Week 12: User Interfaces and Aesthetics**

### **December 1**

- (A) UX/Aesthetics Reading Guide
- (B) Dodson (2014). Using Cognitive Principles and Perpetual Processes to Inform Interface Design. *26th Annual IEEE Software Technology Conference*.
- (C) Dillon (2003). User Interface Design. *MacMillan Encyclopedia of Cognitive Science*.
- (D) Noyes (2015). Can gamification solve enterprises' engagement problem? *Article in PC World Magazine*.
- (E) Microsoft HoloLens – Transform Your World with Holograms. <https://www.youtube.com/watch?v=aThCr0PsyUA>
- (REC) Palmer & Griscom (2013). Accounting for taste: Individual differences in preference for harmony. *Psychonomic Bulletin Review*.

- (REC) Walz & Deterding (2015). An introduction to the gameful world. *Introduction to “Gameful World” book.*
- (SPEC) Hololens Press
- (SPEC) Radu & MacIntyre (2012). Using children's developmental psychology to guide augmented-reality design and usability. *IEEE International Symposium on Mixed and Augmented Reality.*
- (SPEC) Hamari et al. (2014). Does gamification work? – A literature review of empirical studies on gamification. *47<sup>th</sup> Hawaii International Conference on System Science.*

### **Week 13: Student Presentations of Final Projects**

#### **December 8**

- No readings—but lots of preparing your presentation!

### **Statement on Academic Integrity**

Please do not violate academic integrity during this course. Most notably, do not plagiarize. As defined in the Yale College Undergraduate Regulations (1), “Plagiarism is the use of someone else’s work, words, or ideas as if they were one’s own.” There are many reasons to avoid plagiarism. Two of them highlighted in materials from the Yale College Writing Center (2) are that plagiarism is a “detriment to your intellectual and moral development” and that “Yale punishes academic dishonesty severely.” The Yale Writing Center has many resources you can consult to learn how to use sources properly and avoid plagiarism (3). Please feel free to contact me if you have any questions or wish to discuss any of this information in more detail.

(1) [http://yalecollege.yale.edu/sites/default/files/files/URegs\\_14-15.pdf](http://yalecollege.yale.edu/sites/default/files/files/URegs_14-15.pdf)

(2) <http://writing.yalecollege.yale.edu/advice-faculty/addressing-plagiarism/sample-plagiarism-warnings>

(3) <http://writing.yalecollege.yale.edu/advice-students/using-sources>