

Cognitive Science 236: Thinking, Reasoning, and Decision Making
Winter 2015
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This course will introduce a variety of issues of interest to cognitive scientists who study people's tutored and untutored reasoning and thinking skills. We will begin by examining skill in well-defined reasoning endeavors, and explore relationships between formal reasoning and everyday reasoning. Later we will turn our attention to decision making, both with laboratory tasks and in the real world. I hope to get you to think carefully about what it means to reason effectively, and to explore your own reasoning strengths and weaknesses. This course counts toward the cognitive science concentration and special major, and also toward the cognitive component of the psychology major.

Course requirements include two midterms, two short papers, a final essay, very short reports of group discussions, as well as occasional "laboratory assignments" where you will be asked to write about examples of reasoning and decision-making from your own experience. The two short papers will consist of writeups of a description of another person's reasoning or decision-making. They will each be about 5-7 pages in length. There will be no final examination. The weights of the assignments are roughly the following: each midterm, 20%; each short paper, 20%, final essay, 10%. Group discussion reports, 10%. Grades are subject to adjustment based on regular, thoughtful class participation and for completing laboratory work in a timely and thorough way. Due dates for all assignments are provided on the attached schedule. You are expected to take note of them and to plan your work accordingly. Late work (especially late papers) will be penalized unless I hear from your class dean.

Readings for the course come from a variety of sources. The required texts are: Halpern, *Thought and knowledge (5th ed)*, and Kahneman, *Thinking, fast and slow*. You might also want to purchase your own copy of Perkins, *The mind's best work*, as we will read a good amount of that book in a very short time. Other readings are on reserve.

Note that the reading load varies from week to week, and try to plan ahead. No additional outside reading will be required for the papers, although I assume you will incorporate relevant readings from the syllabus as appropriate.

This course is always an enjoyable one to teach, and I hope you'll come to find many of the topics enjoyable, too. I'll be announcing office hours shortly, and hope you'll come by to talk about topics related (or even unrelated!) to the course.

Tentative* schedule of topics and assignments
(*we may make changes in the schedule as the term progresses)

Date Topic and Assignment

M 1/5 Introduction and overview; the cases of The Missing Jam and Aunt Sarah

W 1/7 Historical approaches to modeling thinking
Read: Halpern, ch. 1

F 1/9 Thinking in the context of other cognitive processes
Read: Halpern, chs. 2, 3

M 1/12 Propositional and syllogistic reasoning
Read: Halpern, ch. 4

W 1/14 Analyzing arguments
Read: Halpern, ch. 5
First paper assigned

F 1/16 Methods of studying thinking
Read: Ericcson [ER]; Perkins (1981,p. 24-40) [ER]

M 1/19 Analogical and other formal inductive reasoning tasks.
Read: Sternberg [ER]

W 1/21 Catch-up day

F 1/23 Hypothesis formation, testing and evaluation
Read: Halpern, ch. 6 Wason [ER]

First Paper Due

M 1/26 Creative thinking: The mind's best work?

Read: Halpern, ch. 10; Perkins (1981) 41-161 [rest of book is worth skimming]
[ER]

W 1/28 Discussion: Studying everyday thinking

Read: Perkins 1985 [ER]; Stanovich, West, & Toplak [ER]

F 1/30 Overview of decision-making

Read: Halpern, chs. 7, 8

M 2/2 **First Midterm**

W 2/4 Two systems of thinking

Read: Kahneman, Part 1, p. 3-104

F 2/6 Catch up day

M 2/9 Midterm break! You may have the day off. (You are most welcome).

W 2/11 Heuristics and biases in decision making

Read: Kahneman, Part II, p. 109-195

F 2/13 Structuring a decision and making a final choice: Expected utility theory

Read: Galotti [ER], Galotti, Wiener & Tandler [ER]

Second paper assigned

M 2/16 Overconfidence in decision making

Read: Kahneman, Part III p. 199-265

W 2/18 Discussion: Using our heads, using our hearts

Read: Kleinmuntz [ER], Eastwood, Snook, & Luther [ER]

F 2/20 Prospect Theory

Read: Kahneman, Part IV, p. 269-374

M 2/23 Narrative-Based Decision Theory

Read: Beach [ER]

W 2/25 Two Selves

Read: Kahneman, Part V, p. 377-418

F 2/27 Catch up day

Second Paper Due

M 3/2 Expertise and decision making

Read: Klein [ER] ch. 1-4

W 3/4 Making moral and ethical decisions

Read: Shumaker & Heckel, ch. 1 [ER] Paxton & Greene [ER]

F 3/6 Discussion: Can people articulate their thinking/decision-making processes?

Read: Fischhoff [ER]

Final essay assigned

M 3/9 Individual differences in decision-making

Read: Galotti, Tandler & Wiener [ER]

W 3/11 **Second Midterm**

M 3/16 (9 p.m.) **Final Essays Due**

(hard copies only to my mailbox) {early submissions welcomed!}

Bibliography

Texts:

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Kahneman, D. (2011). *Thinking, fast and slow*. New York, NY: Farrar, Straus & Giroux.

Other Course Readings: (copies on ereserve at main libe)

Beach, L. R. (2009). Decision making: Linking narratives and action. *Narrative Inquiry, 19*, 393-414.

Eastwood, J., Snook, B., & Luther, K. (2012). What people want from their professionals: Attitudes toward decision-making strategies. *Journal of Behavioral Decision Making, 25*, 458-468.

Ericsson, K. A., (2006). Protocol analysis and expert thought: Concurrent verbalizations of thinking during experts' performance on representative tasks. In K.A. Ericcson, N. Charness, P. J. Feltovich & R. R. Hoffman (Eds.), *The Cambridge handbook of expertise and expert performance* (pp. 223-241). New York NY: Cambridge University Press.

Fischhoff, B. (1991). Value elicitation: Is there anything in there? *American Psychologist, 46*, 835-847.

Galotti, K. M. (2007). Decision structuring in important real-life choices. *Psychological Science, 18*, 320-325.

Galotti, K. M., Tandler, J. M., & Wiener, H. J. D. Real-Life Decision Making in College Students II: Do Individual Differences Show Reliable Effects? (2014). *American Journal of Psychology, 127*, 33-42.

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- Paxton, J. M. & Greene, J. D. (2010). Moral reasoning: Hints and allegations. *Trends in Cognitive Science*, 2, 511-527.
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- Shumaker, D. M. & Heckel, R. V. (2007). What we know about moral development. In D. M. Shumaker & R. V. Heckel, (Eds.), *Kids of character: A guide to promoting moral development* (pp. 1-31). Westport, CA: Praeger.
- Stanovich, K. E., West, R.F., & Toplak, M. E. (2013). Myside bias, rational thinking, and intelligence. *Current Directions in Psychological Science*, 22, 259-264.
- Sternberg, R.J. (1977). Component processes in analogical reasoning. *Psychological Review*, 84, 353-378.
- Wason, P. C. (1960). On the failure to eliminate hypotheses in a conceptual task. *Quarterly Journal of Experimental Psychology*, 12, 129-140.