

Psychology 550L and CCT 651L: Advanced Cognitive Psychology Syllabus: Spring 2014

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Class Time: Tuesday, 4-6:45 PM (W/1/055)
Office Hours: Tuesday and Thursday, 2-3:15 PM
Vacation Days: Spring Vacation (March 16 – 23)
Course withdrawal/pass fail deadline: April 10th

Course Description and Goals:

The goal of the course is to introduce students to the contemporary field of cognitive psychology--its key questions, methods, findings, debates, and proposed models and theories. How is the mind designed that allows it to function so well in the everyday world? To what extent does the mind have both *modular* and *general purpose* components? What might be the advantages and disadvantages of this form of design? How is information *represented* in the different components, and how does form of representation affect inference, thinking, and problem solving? What changes occur in thinking and problem solving with the development of expertise? Important topics considered include: perception, attention, consciousness, memory, meaning-based mental representations and imagery, language, thinking and reasoning, problem solving, and the nature of expertise. Throughout, we will pay special attention to identifying "important general principles" of how the mind functions, the evidence for those principles, and the applicability of the theories and findings to issues of improving learning and teaching.

Course Text and Readings:

- Daniel Reisberg. (2013) *Cognition: Exploring the Science of the Mind*. 5th edition. New York: W.W. Norton & Company.(Available for purchase in the bookstore)
- Supplementary readings (classic articles in the field): Available on E-Reserves in Healey Library.
- Kahneman, Daniel (2011) *Thinking Fast and Slow*. New York: Farrar, Straus, and Giroux. (Available for purchase in bookstore)

Course Requirements:

1. Weekly *general principles journal*: each entry about 1 typed single-spaced page, based on readings for upcoming week; submitted by email to Instructor by **Monday 5PM**. (Must complete 10 entries for course; see directions next page) (20%)
2. *Two papers* (that involve data collection and analysis)
 - a. Memory Paper (about 8-10 pages plus appendix) (20%) **due March 15**
 - b. Expert/Novice Paper (about 8-10 pages plus appendix) (20 %) **due April 22**
3. *A final term paper on a topic of your choice* (about 12 pages) (20%) **due May 20**
Note: CCT students should also add a brief appendix in which you identify the tools, practices, and perspectives from the course that are relevant to your work.
4. *Attendance/participation* (20%)

Pointers about the preparation assumed for this course

(in lieu of formal prerequisites): Through courses and other personal and professional experience you should have an interest in psychology, in understanding more about how people organize and represent knowledge, solve problems, make decisions, and learn. The course also assumes you are interested in using this knowledge to know how to support the development of strong critical and creative thinking in yourself and others, that you have excellent critical reading and writing skills and are capable of doing independent research on a topic of your choice.

Objectives of the Course: By the end of the course you will have:

1. Become aware of some of the main principles of cognitive psychology about how people perceive, remember, pay attention, reason, make decisions, and solve problems that you can state clearly and apply to situations in your everyday life.
2. Become aware of the role of conscious and unconscious processes in thinking, and the role of the transcendental method (inference to best explanation) in theory building in psychology.
3. Developed critical thinking skills involved in using knowledge of these principles to form and test hypotheses about how prior knowledge affects comprehension and memory, and consider the implications for improving communication and teaching.
4. Understood the many changes that occur in knowledge representation, thinking, and problem solving with the development of expertise, the strengths and limits of different problem solving methods, and the factors that promote the development of expertise
5. Developed skill in devising a meaningful problem to use in a think aloud protocol and gathered and interpreted data from novices and experts about how they differ in problem solving
6. Developed skill at defining a problem for study that pertains to understanding/improving some aspect of thinking and reasoning, identifying relevant prior research on the topic using databases, identifying and understanding competing points of view, and considering the relation among these points of view
7. Reflected on the tools, practices, and perspectives from the course that you intend to bring into you specific professional or personal endeavors that you can use in Reflective Practitioner Portfolio.

Course Policies:

1. If you are having difficulty in completing an assignment or paper, please contact me to work out the problems. Extensions can be given in unusual circumstances. In general, late papers will not be accepted if I have not given prior approval.
2. Incompletes for the course can only be given with prior consent of the instructor and when the majority of work has been completed. The student must also sign an incomplete contract.
3. In accordance with Section 503 and 504 of the Rehabilitation Act of 1973 the University of Massachusetts Boston attempts to accommodate all students with certified "special needs". Through the Lillian Semper Ross Center for Disability Services various aids such as sign language interpreting, readers, testing accommodations, counseling, etc., are available to students. If you believe that you have such special needs you should contact the Center on the second floor of the Campus Center. If you need accommodations in order to complete course requirements, please contact the Ross Center for Disability Services (Location: Campus Center 2-2100; phone: 617-287-7430).
4. It is assumed that in this class each student will act in a professional and honest manner. Therefore, any student who engages in an act of Academic Dishonesty, plagiarizing a paper (copying from any source without quotes and referencing is plagiarizing), falsifying data,

paraphrasing other student's weekly reactions, etc., will receive a failing grade for that assignment and in most cases a failing grade for the course.

Directions for Weekly General Principles Journal Entries

1. Based on the *new* readings for a given week, each student should identify ONE "general principle" about how the mind works that you found interesting. You need to then provide two specific examples of this general principle and a brief critical commentary.
2. Entries for each general principle should include:
 - a. *A brief statement of the general principle*: typically one complete sentence. A principle is a general rule (or law) about how something works (not a definition of a word). Many important general principles in science are simple, but not obvious (e.g., Newton's idea that for every action there is an equal and opposite reaction; the principle of conservation of mass that states that in an isolated or closed system, mass cannot be changed by processes acting in the system; or Darwin's principle that the adaptation of a population to an environment is produced through the twin processes of the production of random heritable, variation and selection.) The principle should be stated in entirely your own words. Be on the look-out for such general principles in psychology. Although based on the reading, the principle should be stated in your own words.
 - b. *Two specific examples* of the general principle. A general principle by its nature applies to more than one situation. Show that your principle has some generality by providing two different examples. Be sure to explain how the examples illustrate all aspects of the principle. One example may come from the book, but at least one should come from your everyday experiences.
 - c. *Brief critical reflection on the principle*: The critical reflection can take a variety of forms (and might vary from principle to principle). For example, you might consider why you found it interesting or significant, the questions you have about it, or its possible application to teaching and learning. You might consider how strong the evidence is for the principle, alternatives to the principle that should be considered, or possible limitations in the contexts to which the principle applies. Or, you might consider how this principle *connects* to other principles (from previous weeks). You only have to consider one of these things (or anything else that you think qualifies as a critical reflection).
3. Submit your entry for the coming week to me via email by **Monday 7 PM**. That will allow me to look over the entries prior to class, so I can build on some of your ideas during class. Bring a copy to class as well and be prepared to share with class members. No late general principles will be accepted.
4. Each week, you need to add at least one *new general principle* from the reading. By the end, you should have identified ten important general principles from the course.

Tentative Schedule of Readings, Topics, and Assignments

(Readings are to be completed prior to class meeting, except for class 1)

<u>Date</u>	<u>Topic</u>	<u>Reading</u>
Introduction, Methods, Perception, and Attention		
Jan. 28	Introduction: What is cognitive psychology? Why is it important to me?	Reisberg, 1
Feb. 4	What kinds of data and evidence can we use? What contribution can cognitive neuroscience make?	Reisberg, 2
Feb. 11	How do we see? What is the role of unconscious and conscious processing and prior knowledge?	Reisberg, 3 *Treisman, Anne (1986)
Feb. 18	What is attention for? Is it necessary for perception? How much can we attend to at one time? Term Paper Topics due	Reisberg, 4 *Strayer & Drews (2007)
Human Memory Systems		
Feb. 25	What is the structure and function of the working memory system? Hand out directions for Paper 1: Memory	Reisberg, 5 *Baddeley, Alan (2000)
Mar. 4	How accurate are our memories? What factors affect memory accuracy?	Reisberg, 7 *Bartlett, Sir Frederic (1932) *Loftus, Elizabeth (1997)
Mar. 11	What facilitates retrieval from long-term memory? How can memory retrieval be improved? Hand in Paper 1 by March 15	Reisberg, 6 *Geiselman et al (1986)
Mar. 16-23 SPRING VACATION!		
Knowledge Representation, Problem Solving & Expertise		
Mar. 25	How do experts differ from novices? How does one become an expert in a domain?	*Bransford, John et al. (2000) *Ericsson & Charness (1994)
Apr. 1	No Class (because of Conference)	
Apr. 8	What methods are useful for solving problems? How do experts differ from novices in solving problems?	Reisberg, Chapter 12 *Wineburg (1991)
Apr. 15	How are concepts represented in LTM? How do concepts develop and change?	Reisberg, 8 *Carey, 1985

Apr. 22	How are visual and linguistic knowledge represented? What are strengths and limits of each form? How does each affect thinking and problem solving? Hand in Paper 2	Reisberg, 9 and 10
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Thinking, Reasoning, Decision Making

Apr. 29	Two systems: What is the difference between thinking fast and thinking slow?	Kahneman, Part 1. Two Systems (pp. 19-105)
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May 6	How do we draw conclusions from evidence? What shortcuts do we use? How can our thinking be improved?	Kahneman, Part 2. Heuristics & Biases Reisberg, Chapter 11
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May 13	What is the role of conscious/unconscious processing in decision making? How can decision making be improved?	Bechara et al (1997) Kahneman, Part 3. Overconfidence
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May 20	What have we learned about the human mind? Are there benefits of “mindfulness”? Final Paper Due	Reisberg, Chapter 13 Kahneman, Part 5. 2 Selves Brown et al (2007)
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Full Bibliographic Information on Articles on E-Reserves (listed in order of reading):

*Treisman, Anne (1986) Features and objects in visual processing. *Scientific American*, 255 (5), 114-125.

*Strayer, D. and Drews, F. (2007) Cell-Phone-Induced Driver Distraction, *Current Directions in Psychological Science*, 13(3), 128-131.

*Baddeley, A. (2000) The episodic buffer: A new component of working memory? *Trends in Cognitive Sciences*, 4 (11), 417-423.

*Geiselman, E.E., Fisher, R.P, MacKinnon, D.P. & Holland, H.L (1986) Enhancement of eyewitness memory with the cognitive interview. *American Journal of Psychology*, 99, 385-401.

*Bartlett, Sir Frederick (1932). Chapter 5: Experiments on remembering: The method of repeated reproduction (pp. 63-93) in *Remembering*. Cambridge, England: Cambridge University Press.

*Loftus, Elizabeth (1997) Creating false memories, *Scientific American*, (September 1997)

*Bransford, J., Brown, A. & Cocking, R. (2000) (Eds.) chapter 2: How experts differ from novices. In *How People Learn: Brain, Mind, Experience and School* (pp. 31-50).

*Ericsson, Anders and Charness, Neil (1994) Expert performance: Its structure and acquisition. *American Psychologist*, 49, 725-747.

*Wineberg, Sam (1991). Historical problem solving: A study of the cognitive processes used in the evaluation of documentary and pictorial evidence. *Journal of Educational Psychology*, 83, 1, 73-87.

*Carey, Susan (1985). The Human body, in *Conceptual Change in Childhood*. Cambridge: MIT Press.

*Bechara, A., Damasio, H., Tranel, D., and Damasio, A. (1997) Deciding advantageously before knowing the advantageous strategy, *Science* 275 (February 1997), 1293-1295.

*Brown, K., Ryan, R., & Crewsell, J. (2007) Mindfulness: Theoretical Foundations and evidence for its salutary effects, *Psychological Inquiry*, 18(4), 211-237.

Criteria for Evaluating Class Participation:

- 1) Has consistent and faithful class attendance (arrives on time, present for the whole class)
- 2) Gives evidence of coming to class prepared (having done readings) (e.g., by submitting general principles on time and prior to class)
- 3) Makes contributions to class discussions: Raises thoughtful questions about readings, makes insightful connections between readings and everyday experiences; actively participates in class activities; supports learning of other class members

Criteria for Evaluating General Principles Journal:

- 1) Weekly entries fit guidelines given (i.e., identify a principle—rather than state a definition or fact; provide two examples of that principle; provide a brief critical reflection on principle, etc.)
- 2) Entries are clearly written and insightful
- 3) 10 entries are submitted