COGNITIVE PROCESSES (PSY 427)

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Office Hours: Monday, 2:15-3:15
Friday, 2:15-3:15 is "tea time"
By appointment

Office Hours: Tuesday, 3:15-4:15
By appointment

Learning Objectives:

I want you to improve your skills at:

(1) reading empirical journal articles;
(2) thinking critically about research and theory;
(3) supporting your position on an issue;
(4) communicating your thoughts clearly in both speaking and writing.

I also want you to learn basic theories, concepts, methods and findings in cognitive psychology (but that is secondary to sharpening skills).

Means to Objectives:

Learning is the result of understanding and understanding is the result of thinking. Therefore, I want you to think about the material in this course. To this end, I will emphasize class discussion and I will avoid lecturing as much as possible. I will use a couple of methods to encourage you to do reading assignments on time and to think about the readings. My "tests" of course content will not involve any memorization; rather, they will require you to apply course content in a thoughtful fashion. I hope that you will always be excited by what you are doing in the class, but that you will rarely be entirely comfortable that you "have it together." If you are thinking about the material, you'll realize that there is always another question to ask.

Readings:

There will be regular reading assignments in the textbook and the book of readings. The materials for the course are:

* Goldstein, E. Bruce. (2005). *Cognitive Psychology: Connecting Mind, Research, and Everyday Experience*. Belmont, CA: Wadsworth.

* Goldstein, E. B., Baker, R., & MacKewn, A. (2005). *Concept Maps and CogLab Online Manual for Goldstein's Cognitive Psychology*. Belmont, CA: Wadsworth.

* Supplementary readings at Johnny Print

Requirements and Grading:

1) **You are expected to attend lectures and labs (bonus or penalty points possible).** Attendance will be taken regularly in both lecture and lab. Attendance at 80% of lectures and 80% of labs will earn full credit towards your final grade. There will be 14 labs, so 80% attendance is 11 classes. There will be 29 lectures, so 80% attendance is 23 classes. For each lecture and each lab that you attend beyond the 80% expectation, **2 bonus points will be added** to your total points. For each lecture and each lab that you fall short of the 80% expectation, **4 penalty points will be subtracted** from your total points.
   NOTE[1]: I will not accept even excused absences in recording attendance except in unusual circumstances. This is because there is a lot of "padding" in the attendance requirement before you start losing credit for poor attendance.
2) **Timely completion of CogLab experiments (50 points).** Most of the labs require you to complete a CogLab experiment on the web. The experiments from CogLab must be completed **no later than 3:00 p.m. on the Sunday preceding the lab** in which the experiment will be discussed. This is so the TA can compile all of the data and have it prepared in summary form by lab time. EVEN IF YOU MUST MISS THE LAB MEETING, you are required to complete the experiment on time unless you have been excused in advance by Dr. Lorch. If you complete a lab on time, you earn 5 points; if you fail to complete a lab on time, **you will have 5 points deducted from your point total**.
3) **Pop quizzes (50 points).** The reading for the course includes several primary source materials (i.e., journal articles). These readings are to be completed by the relevant lab. Some of them are directly related to the lab experiment; some are indirectly related to the lab, but directly related to another topic to be covered that week in class. Any time you are assigned a journal article to read, you may receive an unannounced quize on the reading in lab or in lecture. The quizzes will be **open note format**, so that there will be no need to memorize what you read. Rather, you should take notes on each article and keep the notes with your notebook/class materials in the event of a quiz. (More below on the suggested content of your notes).
4) **Class participation (50 points).** I will regularly ask you contribute your thoughts on the book chapters you read. These assignments will ask you to identify a concept or an experimental result that you find particularly important and briefly say why. You will also be asked to identify some concept or procedure or finding that you would like some help understanding. When I make such an assignment, I will establish an absolute deadline for submitting it (no credit if it is late). I will use your assignments as a basis for initiating class discussion or, occasionally, deciding on what to lecture. I am likely to put individuals "on the spot," calling on you to elaborate some idea or some point of confusion. Points for class participation will be based on the timely completion of the written assignment.
5) **Unit assignments (100 points/unit).** Toward the end of each of the units in the course, there will be a "unit assignment." These assignments will require you to apply what you have learned in that section of the course to some problem or question. Each assignment will be a maximum of 5 double-spaced, typed pages and will be worth 100 points. I will evaluate each unit assignment with respect to whether: (a) you have applied relevant concepts in an appropriate manner; (b) how well you have documented your ideas with descriptions of relevant experiments; and (c) how thorough you have been in your treatment of the problem/question. These assignments will be done outside of class and you may consult your book and any readings in writing your paper. We will probably devote some lab and/or class time to discussion of the assignment and you may discuss the assignment with one another. **HOWEVER, your written work must be your own**.

→ Your final grade in the course will be based on the sum of all points earned on the above 4 components of the course divided by the total number of required points (i.e., 450).

Grade cutoffs will be: $\geq$ 90% = A; 80%-89.99% = B; 70%-79.99% = C; 60%-69.99% = D; <60% = E

OUTLINE OF TOPICS & READINGS

<u>Week #1: Introduction to Cognitive Processes (Aug. 25)</u>

Read Chapter 1 in text
Syllabus & requirements
Introduction to cognitive processes

<u>Week #2: Brain & Cognition (Aug. 29)</u>

Monday lab:	Read Roediger & Gallo article before lab
	Bring book of readings to lab; we'll dissect Glanzer & Cunitz in class
Tuesday:	Read Chapter 2 in text
	Neurons; principles of brain organization; methods of studying brain & cognition
Thursday:	Seeing isn't as easy as it looks

<u>Week #3: Perception (Sept. 5)</u>

Monday lab:	*** NO LAB ***
Tuesday:	Read Chapter 3 in text
	Bottom-up processing
Thursday:	Top-down processing & Gestalt principles

<u>Week #4: Models of Pattern Recognition (Sept. 12)</u>

Monday lab:	Do CogLab called "Word Superiority" by Sunday, 3:00
	Read Rumelhart & McClelland article before lab
Tuesday:	Read Chapter 3 in text
	Models of word recognition; Interactive Activation Model
Thursday:	Models of object recognition; Recognition by Components

<u>Week #5: Divided Attention (Sept. 19)</u>

Monday lab:	Do CogLab called "Attentional Blink"
	Read Strayer & Johnston
Tuesday:	Read Chapter 4 in text
	Divided attention
Thursday:	Automaticity

<u>Week #6: Focused Attention (Sept. 26)</u>

Monday lab:	Do CogLab called "Spatial Cueing"
	Read Egly et al. article
Tuesday:	Read Chapter 4 in text
	Auditory selective attention
Thursday:	Visual selective attention
	UNIT 1 ASSIGNMENT distributed at end of class
	UNIT 1 ASSIGNMENT due at start of class on Tuesday, 10/4

<u>Week #7: Structural Models of Memory/STM (Oct. 3)</u>

Monday lab: Discussion of Unit 1 (due tomorrow)
Tuesday: **Unit 1 Assignment due at start of class**
The modal model of memory
Thursday: Read Chapter 5 in text
Refinements of the modal model: Baddeley's working memory model

Week #8: Getting Information Into LTM (Oct. 10)

Monday lab: Do CogLab called "Levels of Processing"
Read Craik & Lockhart article
Tuesday: Read Chapter 6 in text
Principles of explicit learning
Thursday: More principles of explicit learning

Week #9: Getting Information Out of LTM (Oct. 17)

Monday lab: Do CogLab called "Encoding Specificity"
Read Jacoby, Woloshyn & Kelley article
Tuesday: Read Chapter 6 in text
Principles of explicit retrieval
Thursday: Implicit learning and retrieval

Week #10: Everyday Memory (Oct. 24)

Monday lab: Do CogLab called "False Memory"
Read Roediger & McDermott
Tuesday: Read Chapter 7 in text
The operation of memory in realistic contexts
Thursday: Systematic errors in memory
UNIT 2 ASSIGNMENT distributed at end of class
UNIT 2 ASSIGNMENT due at start of class on Tuesday, 11/1

Week #11: The Nature of Concepts (Oct. 31)

Monday lab:	Discussion of Unit 2 (due tomorrow)
Tuesday:	**Unit 2 Assignment due at start of class**
	Categorization and conceptual categories
Thursday:	Read Chapter 8 in text
	Rosch's theory of concepts and categorization

Week #12: Semantic Networks (Nov. 7)

Monday lab:	Do CogLab called "Prototypes"
	Read Collins & Quillian article
Tuesday:	Semantic networks
Thursday:	*** NO CLASS ***

Week #13: Connectionist Models (Nov. 14)

Monday lab:	Do CogLab called "Lexical Decision"
	Read Balota & Lorch
Tuesday:	Connectionist models of concept learning & processing
Thursday:	Read Chapter 9 in text
	Visual imagery

Week #14: Visual Imagery (Nov. 21)

Monday lab:	Do CogLab called "Mental Rotation"
	Read Kosslyn, Ball & Reiser article
Tuesday:	Imagery and the brain
Thursday:	*** NO CLASS ***

Week #15: Problem Solving (Nov. 28)

Monday lab:	Work in lab on solving problems
	(No CogLab experiment or article)
Tuesday:	Read Chapter 11 in text
	Steps in problem solving
Thursday:	Analogical reasoning

Week #16: Reasoning & Decision Making (Dec. 5)

Monday lab:	Do CogLab on "Typical Reasoning"
	Do CogLab on "Monty Hall"
	Read Tversky & Gilovich article
Tuesday:	Read Chapter 12 in text
	Reasoning
Thursday:	Decision-making
	UNIT 3 ASSIGNMENT distributed at end of class
	UNIT 3 ASSIGNMENT due during scheduled final exam

SUPPLEMENTARY READINGS for LECTURE and LAB

Date Due	Article
UNIT 1	***
8/29	Roediger, H.L., & Gallo, D.A. (1999). How to read a journal article in cognitive psychology. In D.G. Elmes, B.H. Kantowitz, & H. L. Roediger III (Eds.), *Research methods in Psychology, 6th ed.* Belmont, CA: Wadsworth.
8/29 **In Lab**	Glanzer, M., & Cunitz, A.R. (1966). Two storage mechanisms in free recall. *Journal of Verbal Learning and Verbal Behavior, 5*, 351-360.
9/12	Rumelhart, D.E., & McClelland, J.L. (1981). Interactive processing through spreading activation. In A.M. Lesgold & C.A. Perfetti (Eds.), *Interactive processes in reading* (pp. 37-60). Hillsdale, NJ: Erlbaum.
9/19	Strayer, D.L., & Johnston, W.A. (2001). Driven to distraction: Dual-task studies of simulated driving and conversing on a cellular telephone. *Psychological Science, 12,* 462-466.
9/26	Egly, R., Driver, J., & Rafal, R.D. (1994). Shifting visual attention between objects and locatons: Evidence from normal and parietal lesion subjects. *Journal of Experimental Psychology: General, 123,* 161-177.
UNIT 2	***
10/10	Craik, F.I.M, & Lockhart, R.S. (1972). Levels of processing; A framework for memory research. *Journal of Verbal Learning and Verbal Behavior, 11*, 671-684.
10/17	Jacoby, L.J., Woloshyn, V., & Kelley, C. (1989). Becoming famous without being recognized: Unconscious influences of memory produced by dividing attention. *Journal of Experimental Psychology: General, 118,* 115-125.
10/24	Roediger, H.L., III, & McDermott, K.B. (1995) Creating false memories: Remembering words not presented in lists. *Journal of Experimental Psychology: Learning, Memory & Cognition, 21,* 803-814.
UNIT 3	***
11/7	Collins, A.M., & Quillian, M.R. (1969). Retrieval time from semantic memory. *Journal of Verbal Learning and Verbal Behavior, 8,* 240-247.
11/14	Balota, D. A., & Lorch, R.F., Jr. (1999). Depth of automatic spreading activation: Mediated priming effects in pronunciation but not lexical decision. *Journal of Experimental Psychology: Learning, Memory, & Cognition, 12,* 336-345.
11/21	Kosslyn, S.M., Ball, T.M., & Reiser, B.J. (1978). Visual images preserve metric spatial information: Evidence from studies of image scanning. *Journal of Experimental Psychology: Human Perception and Performance, 4,* 47-60.
12/5	Tversky, A., & Gilovich, T. (1989). The cold facts about the “hot hand” in basketball. *Chance: New directions for statistics and computing, 2,* 16-21.