

Mind, Brain and Behavior
Fall, 2009
Dr. Daphna Shohamy

Psychology W1010; Monday & Wednesdays 2:40-3:55, Schermerhorn Hall Room # 501

TAs: Larissa Higgins, Tali Sarig, Heather Van Volkinburg, Elliott Wimmer

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Office Hours: Monday 4-6, Thursday 4-5, in Schermerhorn #318c, and by appointment.

Course Description

This course will provide an introduction to what we know, and what we are still figuring out, about the intriguing link between the brain, the mind, and behavior. We will start with a basic review of the brain as a biological organ, and its basic operations. Next, we will discuss how this organ gives rise to a wide variety of complex behaviors, from the ability to sense and perceive what is happening in the world, to the ability to learn, think, remember, and control our environment.

Readings

The main textbook will be **Principles of Cognitive Neuroscience, by Dale Purves et al.**, (Sinauer Press, 2008). This textbook will provide the primary reading source.

Additional supplements from articles and other book chapters will be available online as discussed in class.

Exams

Format: Multiple choice, fill-in and short essay questions.

Make-up exams: Will be allowed only with written justification and will be given only at a single date.

	Date	Topics Covered	% Grade
Exam 1	Sep. 30 th	Section 1: Basic neuroscience: how the brain works	20%
Exam 2	Nov. 9 th	Section 2: Cognitive Neuroscience I: how the brain supports perception and memory	30%
Final Exam	Dec 23 rd	All sections covered in the course	50%

Self Tests

Optional quizzes made up of questions that integrate the most important material from the lectures and book. Self-tests can:

- 1) help you to keep up with and reinforce key points in the reading and lectures
- 2) help your grade. Each test can earn you up to 1 point, for a maximum of **7 points** (7 perfect self tests) to be added to your final grade.

- **Posting New Self-Tests:** Self-tests are posted on-line Thursdays by noon.
- **Turning in Answers:** Self-tests are due before the start of class the following Monday (2:40 pm). You should submit them through Courseworks (Tests & Quizzes). I recommend that you first write out your response and spell check it in Word (or other text editor) and then paste it into Courseworks. Late self-tests will not be counted.
- **Posting Answers to Self-Test:** Answers will be posted on the website the Mondays after class.

Experiments

Participation in the experiment subject pool can earn you up to 6 credits, each worth 1/2 a point towards your final grade (for a maximum of **3 points**).

Course Schedule

Date	Day	Topic	Readings	Self Test
9/9	W	<i>What is this course about?</i> Introduction to the study of mind, brain and behavior		
9/14	M	<i>What is the brain?</i> Introduction to the organ in our skulls, its architecture and basic functional features	Chapter 1	
9/16	W	<i>What are neurons?</i> From general architecture to cell structure and function	Chapter 1	ST1: Q
9/21	M	<i>What do neurons do?</i> Action potentials and neuronal firing	Appendix	ST1: due
9/23	W	<i>How do we study the link between brain, mind, and behavior?</i> Basic methods in animal research: neurochemistry, neurophysiology, lesions, genes	Chapter 3 + slides	ST2: Q
9/28	M	<i>How do we study the link between brain, mind, and behavior?</i> Basic methods in human research: functional imaging, neuropsychology, brain stimulation	Chapter 3	ST2: due
9/30	W	Exam #1 (20% of grade)		
10/5	M	<i>How is sensory information processed in the brain?</i> Organization of sensory processing	Chapter 4	
10/7	W	<i>How does the brain process visual input?</i> Perception of visual stimuli	Chapter 5	ST3: Q
10/12	M	<i>What are the neural processes underlying attention?</i> Neural and cognitive mechanisms of attention	Chapter 10	ST3: due
10/14	W	<i>How does the brain create memories?</i> I. Learning and memory in the brain: From Cells to Systems	Chapter 13	ST4: Q
10/19	M	What happens when memory is lost (Class movie)		ST4: due
10/21	W	<i>How does the brain create memories?</i> II. Different neural systems support different kinds of learning	Chapter 14-15	ST5: Q
10/26	M	<i>What are the neural mechanisms underlying social and emotional behavior? I. Introduction to emotion</i>	Chapter 17	ST5: due
10/28	W	<i>What are the neural mechanisms underlying social and emotional behavior? II. Emotion and Cognition</i>	Chapter 18-19	ST6: Q
11/2	M	<i>Academic Holiday – No Class</i>		ST6: due
11/4	W	Summary and review: pulling it all together		ST7: Q
11/9	M	Exam #2 (30% of grade)		ST7: due
11/11	M	<i>What are the neural bases of language?</i> (Guest lecture: Heather Van Volkinburg)	Chapter 20-21	ST8: Q
11/6	W	<i>How is time represented in the brain?</i>	Chapter 22	ST8: due
11/18	M	<i>How is cognition controlled?</i> Executive function and the frontal Lobes	Chapter 23	ST8: Q
11/23	W	<i>How do we make decisions?</i> Reward, feedback and neuroeconomics (Guest lecture: Elliott Wimmer)	Chapter 24	ST8: due
11/25	M	<i>Evolution in brain and cognition</i>	Chapter 26	ST10: due
11/30	W	<i>How does experience change the brain?</i> Cognitive and neural development	Chapter 27	ST11: Q
12/2	M	<i>How do we study consciousness and the brain?</i>	Chapter 28	ST11: due

12/7	W	"Catch-up" Day and Review		
12/9	M	Study Days		
12/14	W	Study Days		
12/23		Final Exam (50% of grade)		