

**Mind, Brain and Behavior  
Psychology W1010  
Spring, 2013**

**Dr. Daphna Shohamy**

**Monday & Wednesdays 10:10-11:25, Schermerhorn Hall Room # 614**

**TAs:** Juliet Davidow, Raphael Gerraty, Mary Rossillo

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**Office Hours:** Monday 4:15-6:00, Thursday 2:00-4:00 (Schermerhorn 312), and by appointment.

**\*\*Note: this syllabus is subject to change. Please check website for the most current version.\*\***

**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, including its basic structure and operations. Next, we will discuss how the brain 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, 2012, 2<sup>nd</sup> edition). This textbook will provide the primary reading source.

Additional supplements from articles and other book chapters will be available online as discussed in class. This information will be posted on Courseworks, in a folder called "**Readings**" under "Files & Resources".

Slides will be posted on Courseworks after each class, in a folder called "**Class Slides**", under "Files & Resources".

**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.

	<b>Date</b>	<b>Topics Covered</b>	<b>% Grade</b>
<b>Exam 1</b>	Feb. 18 <sup>th</sup>	Section 1 - Basics of neuroscience: how the brain works	<b>20%</b>
<b>Exam 2</b>	April 3 <sup>rd</sup>	Section 2 - Cognitive Neuroscience I: how the brain supports perception and memory	<b>30%</b>
<b>Final Exam</b>	May 13 <sup>th</sup>	All sections covered in the course	<b>50%</b>

**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).

## Class Schedule

### **Wednesday, January 23<sup>rd</sup>: What's this course about?**

Introduction to the study of mind, brain and behavior

### **Monday, January 28<sup>th</sup>: What is the brain?**

Introduction to the brain, its architecture and basic functional features

**Required reading: Appendix**

### **Wednesday, January 30<sup>th</sup>: What are neurons?**

From general architecture to cell structure and function

**Required reading: Appendix**

### **Monday, February 4<sup>th</sup>: What do neurons do?**

Action potentials, neuronal firing and neurotransmitters

**Required reading: Assigned Readings**

### **Wednesday, February 6<sup>th</sup>: How do we study the link between brain, mind, and behavior?**

Methods I: Perturbing the brain

**Required reading: Chapter 2**

### **Monday, February 11<sup>th</sup>: How do we study the link between brain, mind, and behavior?**

Methods II: Observing the brain in action

**Required reading: Chapter 2**

### **Wednesday, February 13<sup>th</sup>: Summary and review**

Brain organization, neurotransmission and methods

### **Monday, February 18<sup>th</sup>: Exam #1 (20% of grade)**

### **Wednesday, February 20<sup>th</sup>: How is sensory information processed in the brain?**

Organization of sensory processing

**Required reading: Chapters 3 & 4**

### **Monday, February 25<sup>th</sup>: How does the brain process visual input?**

Perception of visual stimuli (Guest speaker: Christine Constantinople)

**Required reading: Chapters 3**

### **Wednesday, February 27<sup>th</sup>: How does the brain process auditory sensation?**

Perception of sounds (Guest speaker: Joe Schumacher)

**Required reading: Chapters 4**

### **Monday, March 4<sup>th</sup>: How does the brain control movement?**

Motor systems and motor control

**Required reading: Chapter 5**

### **Wednesday, March 6<sup>th</sup>: What are the neural processes underlying attention?**

Neural and cognitive mechanisms of attention

**Required reading: Chapter 6-7**

### **Monday, March 11<sup>th</sup>: How does the brain create memories?**

I. Learning and memory in the brain: From cells to systems

**Required reading: Chapter 8**

**Wednesday, March 13<sup>th</sup>: How does the brain create memories?**

II. Different neural systems support different kinds of memories

**Required reading: Chapter 8-9**

**Spring Break**

**Monday, March 25<sup>th</sup>: Vision and Perception**

**(Review Chapter 3)**

**Wednesday, March 27<sup>th</sup>: The Emotional Brain**

**Required reading: Chapter 10**

**Monday, April 1<sup>st</sup>: Summary and review**

**Wednesday, April 3<sup>rd</sup>: Exam #2 (30% of grade)**

**Monday, April 8<sup>th</sup>: The social brain**

**Required reading: Chapter 11**

**Wednesday, April 10<sup>th</sup>: How is cognition controlled?**

Executive function and the frontal lobes

**Required reading: Chapter 13**

**Monday, April 15<sup>th</sup>: Dopamine, Drugs, and Behavior**

Guest Speaker: Suzanne Wood

**Required reading: Chapter 14**

**Wednesday, April 17<sup>th</sup>: How do we make decisions?**

Reward, feedback and neuroeconomics, (Guest Speaker: Raphael Gerraty)

**Required reading: Chapter 14**

**Monday, April 22<sup>nd</sup>: How does experience change the brain?**

Cognitive and neural development

**Required reading: Chapter 15**

**Wednesday, April 24<sup>th</sup>: What happens in the brain of a teenager?**

Brain changes during adolescence (Guest speaker: Juliet Davidow)

**Required reading: Assigned readings**

**Monday, April 29<sup>th</sup>: The bilingual brain**

**Suggested reading: "Bilingualism: consequences for mind and brain", Bialystik, Craik and Luk, 2012. *Trends in Cognitive Science*, 16. Posted in Coursework, under Resources.**

**Wednesday, May 1<sup>st</sup>: The social brain**

**(rescheduled from 4/8)**

**Monday, May 6<sup>th</sup>: Catch Up/Review; new cool stuff about the brain.**

**Monday, May 13<sup>th</sup>: Exam #3 (50% of grade)**