Mind, Brain and Behavior
Psychology W1010
Spring, 2014

Dr. Daphna Shohamy

Monday & Wednesdays 2:40-3:55, Northwest Corner Building # 501

Email for TAs: MBB.TAs@gmail.com
Office Hours: Monday 4:15-6:00, Thursday 2:00-4:00 (Schermerhorn 312), 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, 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, 2nd 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.

<table>
<thead>
<tr>
<th>Date</th>
<th>Topics Covered</th>
<th>% Grade</th>
</tr>
</thead>
<tbody>
<tr>
<td>Exam 1</td>
<td>Feb. 17th Section 1 - Basics of neuroscience: how the brain works</td>
<td>20%</td>
</tr>
<tr>
<td>Exam 2</td>
<td>April 2nd Section 2 - Cognitive Neuroscience I: how the brain supports perception and memory</td>
<td>30%</td>
</tr>
<tr>
<td>Final Exam</td>
<td>May 12th All sections covered in the course</td>
<td>50%</td>
</tr>
</tbody>
</table>

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 22nd**: What’s this course about?
Introduction to the study of mind, brain and behavior

**Monday, January 27th**: What is the brain?
Introduction to the brain, its architecture and basic functional features
   **Required reading**: Chapter 1

**Wednesday, January 29th**: What are neurons?
From general architecture to cell structure and function
   **Required reading**: Chapter 1

**Monday, February 3rd**: What do neurons do?
Action potentials, neuronal firing and neurotransmitters
   **Required reading**: Chapter 1 + appendix

**Wednesday, February 5th**: How do we study the link between brain, mind, and behavior?
Methods I: Perturbing the brain
   **Required reading**: Chapter 3

**Monday, February 10th**: How do we study the link between brain, mind, and behavior?
Methods II: Observing the brain in action
   **Required reading**: Chapter 3

**Wednesday, February 12th**: Summary and review
Brain organization, neurotransmission and methods

**Monday, February 17th**: Exam #1 (20% of grade)

**Wednesday, February 19th**: How is sensory information processed in the brain?
Organization of sensory processing
   **Required reading**: Chapters 3 & 4

**Monday, February 24th**: How does the brain process visual input?
Perception of visual stimuli (Guest speaker: Christine Constantinople)
   **Required reading**: Chapters 3 & 4

**Wednesday, February 26th**: How does the brain process auditory sensation?
Perception of sounds (Guest speaker: Joe Schumacher)
   **Required reading**: Chapters 3 & 4

**Monday, March 3rd**: How does the brain control movement?
Motor systems and motor control
   **Required reading**: Chapter 8-9

**Wednesday, March 5th**: What are the neural processes underlying attention?
Neural and cognitive mechanisms of attention
   **Required reading**: Chapter 10-12

**Monday, March 10th**: How does the brain create memories?
I. Learning and memory in the brain: From cells to systems
   **Required reading**: Chapter 13
Wednesday, March 12th: How does the brain create memories?
II. Different neural systems support different kinds of memories
   Required reading: Chapter 14-15

Spring Break

Monday, March 24th: Class Movie

Wednesday, March 26th: What is sleep and what is it good for?
   Required reading: Assigned readings

Monday, March 31st: Summary and review

Wednesday, April 2nd: Exam #2 (30% of grade)

Monday, April 7th: The social and emotional brain
   Required reading: Chapter 18-19

Wednesday, April 9th: How is cognition controlled?
   Executive function and the frontal lobes
   Required reading: Chapter 23

Monday, April 14th: How do we make decisions?
   Reward, feedback and neuroeconomics
   Required reading: Chapter 24

Wednesday, April 16th: How does experience change the brain?
   Cognitive and neural development
   Required reading: Chapter 27

Monday, April 21st: What happens in the brain of a teenager?
   Brain changes during adolescence (Guest speaker: Juliet Davidow)
   Required reading: Assigned readings

Wednesday, April 23rd: The bilingual brain
   Required reading: Assigned readings

Monday, April 28th: How do we study consciousness and the brain?
   Development and evolution of consciousness
   Required reading: Chapter 28

Wednesday, April 30th: TBD

Monday, May 5th: Catch Up/Review

Monday, May 12th: Exam #3 (50% of grade)