Psychology W1010: Mind, Brain and Behavior

Fall, 2013

Tuesday & Thursdays 11:40-12:55, Schermerhorn Hall Room # 501

Professor Dean Mobbs
Office Hours: Monday 4:10-6:00 + Wednesday 4:10-6:00
(Schermerhorn: Room 370) and by appointment.

TAs: emails (office hours, location in Schermerhorn)
TBD

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

Course Description
This course will provide an introduction to what we know about the fascinating link between the brain, the mind, and behavior. We will start with a basic review of the brain as a biological organ, its evolution, development, and its basic operations including visual, olfaction and others senses. Next, we will discuss how the brain gives rise to a wide variety of complex behaviors, memory, social and emotional behaviors. The course will finally introduce you to the wider neurophilosophical questions concerning freewill, death and consciousness.

Readings
The main textbook will be Principles of Cognitive Neuroscience (2nd Edition), by Dale Purves et al., (Sinauer Press, 2013). 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 “Supplements”.

Exams:
Format: Multiple choice.
Make-up exams: Will be allowed only with written justification and will be given only on a single date.
Exam 1: **September 25th (20% of final grade)**

Section 1: Basic neuroscience: basic anatomy, neurons, development and the senses.

Exam 2: **Oct 18th (30% of final grade)**

Section 2: Cognitive neuroscience I: Genes and cognition, neurological disorders, intelligence, memory, navigation.

Final Exam: **Dec. 19th (50% of final grade)**

Section 3: Cognitive neuroscience II: Body-ownership, decision-making, emotion and social behaviors, consciousness, freewill, and death. And all sections covered in the course.

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).

Classroom policies
You may not use phones, laptops etc. for anything not directly related to the course (such as taking notes).

Calendar:

**Tuesday Sept 3:** What’s this course about?
Introduction to the study of mind, brain and behavior.

**Thursday Sept 5:** What is the brain?
Introduction to the brain, its global architecture and basic functional features, pathways in the brain, methods
- **Required Reading:** Chapters 1 (pp 16-32) + 2 + 3.

**Tuesday Sept 10:** What are neurons and what do neurons do?
The Basics: general architecture to cell structure and function, action potentials, neuronal firing and neurotransmitters.
- **Required Reading:** Chapter 1 (pp 7-15 + Appendix)

**Thursday Sept 12:** The Developing Brain.
From conception to the adult brain.
- **Required Reading:** Chapter 27

**Tuesday Sept 17:** The Senses I: The visual and auditory system
How we see and hear the world, how these senses influence each other in a multimodal fashion.
- **Required Reading:** Chapters 5 + 6

**Thursday Sept 19:** The Senses II: The smelling and taste system
Olfactory and taste systems, how they influence our world. Synesthesia
- **Required Reading:** Chapter 7 (pp 187-193) + Additional Reading Online.
**Tuesday Sept 24:** Exam #1 (20% of grade)

**Thursday Sept 26:** How Genes Change Cognition – A case study of Williams Syndrome.

**Required Reading:** Articles (online)


**Tuesday Oct 1:** What neurological disorders teach us about the brain. Delusions, hallucinations, prosopagnosia, etc.

**Required Reading:** Articles (online)


**Supplementary reading**


**Thursday Oct 3:** Intelligence.

Types of intelligence, neural systems, demand network. Was Einstein’s Brain different? Evolutionary vs. conventional intelligences.

**Required Reading:** Articles (online)


**OCT 8TH – LAST CHANCE TO DROP CLASS!**

**Tuesday Oct 8:** How does the brain store memories?

Learning and memory in the brain: Different neural systems support different kinds of memory.
**Required Reading:** Chapters 13 + 14 + 15

**Thursday Oct 10:** How we navigate the world.
Voles, taxi drivers, and place cells. Neural and cognitive mechanisms of way-finding.

**Required Reading:** Articles (online)


**Tuesday Oct 15th:** “Catch-up” Day and Review Session.

**Thursday Oct 17th:** Exam #2 (30% of grade).

**Tuesday Oct 22:** Ownership over our bodies.
How we know our body is ours?

**Required Reading:** Articles (online)


**Supplementary Readings:**

Thursday Oct 24: How do we make decisions?
Decision Neuroscience and Neuroeconomics

Required Reading: Chapter 24

Tuesday Oct 29: The Social Brain I
The basics of the social brain

Required Reading: Chapter 19 + Articles (online)


Thursday Oct 31: The Social Brain II
Interacting with others

Required Reading: Articles (online)


Tuesday Nov 5: Election Day - University Holiday- NO CLASS

Thursday Nov 7: The Moral Brain
Required Reading: Articles (online)


Tuesday Nov 12: The Emotional Brain I
What are the neural mechanisms underlying negative emotions?

**Required Reading:** Chapter 17 + Articles (online)


**Thursday Nov 14: The Emotional Brain II**

What are the neural mechanisms underlying positive emotions?

**Required Reading:** Articles (online)


**Tuesday Nov 19: Consciousness**

Vegetative state, implicit perception, and action

**Required Reading:** Chapter 28 + Articles (online)


**Thursday Nov 21: Free will, the brain, and its implications**

**Required Reading:** Articles (online)

free will predicts better job performance. Social Psychological and Personality Science, 1, 43-50.


Thursday Nov 26: Class movie

Thursday Nov 28: Thanksgiving Holiday- NO CLASS

Tuesday Dec 3: Death of the Brain
Neuroscience behind near-death and related experiences

Required Reading: Articles (online)

• Mobbs, D. & Watt, C. (2011). There is nothing paranormal about near-death experiences: how neuroscience can explain seeing bright lights, meeting the dead, or being convinced you are one of them. Trends in Cognitive Neuroscience.

Thursday Dec 5: Review Session.

Dec 19–20 Final Exam (50% of grade)