PSYC 27: Cognitive Neuroscience

Course Syllabus, Winter Term, 2014
MWF 1:45-2:50 p.m., B03 Moore Hall
Prof. Ming Meng, Office Hours: Th 2:00-3:00 p.m. and by appointment
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Cognitive neuroscience is a multidisciplinary academic field that involves psychology, neuroscience, computer science, biomedical engineering, and philosophy. Methods employed in cognitive neuroscience include experimental paradigms from psychophysics, functional neuroimaging, electrophysiology, cognitive genomics and behavioral genetics. Theoretical approaches include computational neuroscience and cognitive modeling. This course will discuss about neural underpinnings of various mental phenomena including perception, object recognition, attention, memory, language, emotion, intelligence, social cognition, and consciousness. It aims to provide necessary background knowledge in cognitive neuroscience to students who are interested in related scientific frontiers.

TEXTBOOK

Gazzaniga, Ivry and Mangun (2013) Cognitive Neuroscience: The Biology of the Mind, 4th Ed. W. W. Norton & Company.

COURSE REQUIREMENTS

1. Class attendance and attending office hours at least once (10% of final grade).

2. In class discussions (20% of final grade).
Throughout the course, you may team up with two or three other students to lead discussions about a given topic.

3. Midterm exams (40% of final grade).
There will be two midterm exams, each is worth 20% of the final grade. No make-up exams will be given except in cases of emergency or with written medical excuses.

4. Final exam (30% of final grade).

The final exam will be cumulative but will focus on materials after the midterm exams. Again, no make-up exams will be given except in cases of emergency or with written medical excuses.

5. Bonus credit opportunities.
There may be bonus credit opportunities announced in classes throughout the course. You may accumulate bonus credits up to 10% of final grade.

POLICIES
Honor Code: Students in PSYC 27 are expected to strictly adhere to the Dartmouth Academic Honor Principle. As described in the Student Handbook, fundamental to the principle of independent learning is the requirement of honesty and integrity in the performance of academic assignments, both in the classroom and outside. Dartmouth operates on the principle of academic honor. Students who submit work that is not their own or who commit other acts of academic dishonesty will forfeit the opportunity to continue at Dartmouth. If you have any questions or concerns regarding this policy during the course, please contact Professor Meng.

Students with disabilities: Students with disabilities, including "invisible" disabilities such as chronic illnesses and learning disabilities, are encourage to arrange for accommodations that might be helpful to them. Please meet with Professor Meng as soon as possible (preferably during the first week of the class) to discuss possible accommodations. All discussions will be held in the strictest confidence, although the Academic Skills Center may be consulted to verify documentation of the disability.

Religious Observance: Some students may wish to take part in religious observances that occur during this summer. If you have a religious observance that conflicts with your participation in the course, please meet with Professor Meng before the end of the second week of the term to discuss appropriate accommodations.

COURSE SCHEDULE (SUBJECT TO ADJUSTMENTS UPON NOTICES IN CLASS)

WEEK 1	
Jan 6 (M)	Introduction and Course Overview (Ch 1)
Jan 8 (W)	A brief review of the brain (Ch 2)
Jan 10 (F)	Methods of cognitive neuroscience I (Ch 3)
WEEK 2	
Jan 13 (M)	Methods of cognitive neuroscience II (Ch 3)
Jan 15 (W)	Hemispheric specialization (Ch 4)
Jan 17 (F)	Perception I (Ch 5)
WEEK 3	
Jan 20 (M)	NO CLASS (MLK Day)
Jan 22 (W)	Perception II (Ch 5)
Jan 23 (Th) x-hour	Perception III (Ch 5)
Jan 24 (F)	Object recognition I (Ch 6)
WEEK 4	
Jan 27 (M)	Object recognition II (Ch 6)
Jan 29 (W)	Attention I (Ch 7)
Jan 31 (F)	Attention II (Ch 7)
WEEK 5	
Feb 3 (M)	MIDTERM EXAM I
Feb 5 (W)	Mind reading and the brain-machine interface (Ch 8)
Feb 6 (Th) x-hour	Memory I (Ch 9)
Feb 7 (F)	NO CLASS (Carnival holiday)

WEEK 6	
Feb 10 (M)	Memory II (Ch 9)
Feb 12 (W)	Emotion I (Ch 10)
Feb 14 (F)	Emotion II (Ch 10)
WEEK 7	
Feb 17 (M)	Language (Ch 11)
Feb 19 (W)	Social cognition I (Ch 13)
Feb 21 (F)	Social cognition II (Ch 13)
WEEK 8	
Feb 24 (M)	MIDTERM EXAM II
Feb 26 (W)	Executive functioning and the frontal lobes I (Ch 12)
Feb 28 (F)	Executive functioning and the frontal lobes II (Ch 12)
WEEK 9	
Mar 3 (M)	Consciousness and intelligence (Ch 14)
Mar 5 (W)	Free will and the Law (Ch 14)
Mar 7 (F)	Review