PSYC 244

Cognitive Neuroscience

Fall 2018

Instructor Darcy Burgund
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Office hours: Wednesday, 2:30 – 4:00 pm, or by appointment

Lecture 301 Olin-Rice Science Center; Monday, Wednesday, Friday, 1:10 – 2:10 pm

Lab 352 Olin-Rice Science Center; Thursday, 1:20 – 2:50 pm

Recommended text Gazzaniga, M. S., Ivry, R. B., & Mangun, G. R. (2013). *Cognitive neuroscience: The biology of the mind (4th)*. New York: W. W. Norton & Company, Inc.

Course Description

Cognitive neuroscience is a relatively recent discipline that combines cognitive science and cognitive psychology with biology and neuroscience to investigate how the brain enables the myriad of complex functions we know as the mind. This course will explore basic concepts and contemporary topics in the field with a particular focus on the methods used in cognitive neuroscience research. Through lecture and lab sessions, students will learn to read and interpret primary source material, design and implement cognitive neuroscience studies, and present research in verbal and written forms. Overall, students will gain an appreciation for the amazing intricacy of the brain-mind relationship, as well as a sense of how this relationship may be understood eventually using cognitive neuroscience techniques.

Grading

Grades will be derived from scores on the tests and assignments listed in the schedule. An overview of each assessment is provided below; further detail about each will be given in class.

JCN blitzes (3 @ 5% each)
JCN is the acronym for *Journal of Cognitive Neuroscience*, the only journal exclusively dedicated to publishing top cognitive neuroscience research. On "JCN blitz" days, students will submit a written description of an experimental report published in a recent (≥ 2010) issue of JCN and briefly describe the experimental report aloud to a group of their peers. The purpose of JCN blitzes is to give students practice reading and summarizing empirical works in cognitive neuroscience. In addition, blitzes give students a chance to explore cognitive neuroscience topics that they find particularly interesting and to share their findings with their peers. Students who would like to "blitz" on an article published in a journal other than JCN must first receive permission from the instructor.

Tests (3 @ 20% each)
Three non-cumulative tests will be given during designated class periods (see schedule below). Tests will consist of a variety of question types, including multiple-choice, fill-in-the-blank, short answer, and essay.

Papers (2 @ 10% each)
The first paper will report results from a divided visual-field (DVF) experiment that each student will design and implement with 1 or 2 other students in class. The second paper, which includes a preliminary outline, will propose an experiment using one of the methodologies covered in class to investigate a novel question

in cognitive neuroscience. Each paper will be written individually, will be 5 – 7 pages long (12-point font, double spaced, 1-inch margins), and will require online library research. Specific guidelines for each will be given in class.

Presentation (5%)
The presentation will describe the results from the DVF experiment that each student conducted with 1 or 2 other students in class (see above). Each pair/triplet of students will give a ~10-minute slide-show presentation on their project to the rest of the class.

Course Policies

Assignments
Assignments are due via email to the instructor before the beginning of class. Those turned in after class will be considered one day late, and late assignments will be penalized 5% for each day they are overdue (e.g., 85% becomes 80%). The instructor is happy to *discuss* the contents of a student's assignment with the student prior to its due date, however the instructor will *not read* a student's assignment before it is due. Make-up tests will not be given except under extraordinary circumstances.

Academic integrity
Academic integrity is a serious issue, and Macalester College has established guidelines for defining and reporting cases of cheating and plagiarism. These guidelines are stated in the Student Handbook (www.macalester.edu/internal/studentaffairs/studenthandbook/) and all students are expected to follow them. Cases of suspected academic dishonesty will be reported to the Director of Academic Programs immediately.

Accommodations
I am committed to ensuring access to course content for all students and reasonable accommodations will be made for students with documented disabilities. If you have a disability that will impact your work in this class, please contact Disability Services (www.macalester.edu/studentaffairs/disabilityservices/accommodations/) to discuss your needs. The office will contact me, and we will work together to arrange the appropriate accommodations.

Incompletes
Macalester College strongly discourages assignment of incomplete grades, and no incompletes will be given except under dire circumstances and after consultation with the Dean of Academic Programs.

Schedule and Assignments

9/5/18	Introduction	
9/6/18	History of Cognitive Neuroscience	Chapter 1
9/7/18	Neuroanatomy	
9/10/18	Neuroanatomy	
9/12/18	Neuroanatomy	
9/13/18	Reading JCN Articles	JCN articles
9/14/18	Neuroanatomy	Chapter 2
9/17/18	Methods	
9/19/18	Methods	
9/20/18	**JCN Blitz 1 (5%)**	
9/21/18	Methods	Chapter 3
9/24/18	Hemispheric Specialization	
9/26/18	Hemispheric Specialization	

9/27/18	Implementing DVF Paradigm	
9/28/18	Hemispheric Specialization	Chapter 4
10/1/18	**Test 1 (20%)**	
10/3/18	Sensation and Perception	
10/4/18	**JCN Blitz 2 (5%)**	
10/5/18	Sensation and Perception	
10/8/18	Sensation and Perception	Chapter 5
10/10/18	Object Recognition	
10/11/18	DVF Discussion	
10/12/18	Object Recognition	
10/15/18	Object Recognition	
10/17/18	Object Recognition	Chapter 6
10/18/18	DVF Experiment Setup [NEILL 302]	
10/19/18	DVF Data Collection [NEILL 302]	
10/22/18	**Test 2 (20%)**	
10/23/18	DVF Data Collection [NEILL 302]	
10/24/18	DVF Data Analysis [NEILL 302]	
10/25/18 – 10/28/18	*Fall break*	
10/29/18	DVF Data Analysis [NEILL 302]	
10/31/18	Learning and Memory	
11/1/18	DVF Discussion	
11/2/18	Learning and Memory	
11/5/18	Learning and Memory	
11/7/18	Learning and Memory	
11/8/18	**DVF Presentations (5%)**	
11/9/18	**DVF Paper Due (10%)**	
11/12/18	Learning and Memory	
11/14/18	Learning and Memory	Chapter 9
11/15/18	“Memento”	
11/16/18	“Memento”	
11/19/18	Learning and Memory	
11/21/18 – 11/25/18	*Thanksgiving break*	
11/26/18	Learning and Memory	
11/28/18	Emotion	Chapter 10
11/29/18	**JCN Blitz 3 (5%)**	
11/30/18	Language	
12/3/18	Language	Chapter 11
12/5/18	Attention and Consciousness	
12/6/18	**Proposal Outline (3%)**	
12/7/18	Attention and Consciousness	Chapter 7
12/10/18	*No class*	
12/12/18	**Test 3 (20%)**	
12/18/18	**Research Proposal Due (7%)**	