

Cognitive Neuroscience
Psychology 398 Section 001
Fall 2010
Dumbach 125
Tues/Thurs 8:30-9:45a

Professor
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Office Hours:
Tuesday 10-11a
or by appointment

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Prerequisites

Introductory Psychology (101). A student's lack of appropriate course prerequisites constitutes grounds for being withdrawn from the class at any time.

Materials

I will make use of Blackboard during this course. To logon go to: <https://blackboard.luc.edu/webapps/login/> or simply go to the luc.edu homepage, click on Resources>Technology and then Access 24/7>Blackboard and login in with your UNIVERSAL ID and PASSWORD. All the links in this document can be found there so you don't need to type them in.

Required Readings:

Gazzaniga, M.S., Ivry, R.B., & Mangun, G.R. (2009). *Cognitive neuroscience: The biology of the mind*, 3rd Ed. New York: W.W. Norton & Company.

Sacks, O. (1985). *The Man Who Mistook His Wife For A Hat: And Other Clinical Tales*. New York: Touchstone Books.

Purves, D. et al., (2008). *Principles of Cognitive Neuroscience*. Sunderland, MA: Sinauer Associates. Chapters 24 & 25 will be provided as pdf files on Blackboard.

Computer Software:

To help improve your knowledge of cortical neuroanatomy we will be using a software tool developed at the University of Toronto called "Functional Neuroanatomy" (Version 2.1). This is a Windows only software package available for free download at:

http://video.med.utoronto.ca/neuronotes/index.php?option=com_content&view=article&id=4:functional-neuroanatomy&catid=1:multimedia-learning-tools

My apologies to the Mac users (I'm one), but the software does work fine on the Mac if you have a copy of windows installed with either Bootcamp, Parallels, or VMfusion.

We will begin using this Software on Thursday, September 9, so please make sure to install it on a computer you have access to prior to class that day.

Course Description and Goals

The field of cognitive neuroscience, officially just over 30 years old, has revolutionized the way psychologists study the mind and its disorders. Building on the older disciplines of behavioral neurology and physiological psychology, cognitive neuroscience adds a broad change of new methods that provide spatial and temporal views of neural processing as well as innovative techniques to alter brain structure or functioning. Together these methods add to the traditional experimental methods of psychological science to allow us to move beyond mere speculation and intuition to build theories of how people think based on the scientific method and

importantly constrained by mechanisms and representations consistent with how the brain processes information.

In this course, the methods of cognitive neuroscience will include genetics, brain imaging (e.g., single unit recording, EEG/ERP/ERO, fMRI, PET, MEG) and dissociation-based techniques such as behavioral neurology and TMS. You will also become familiar with the structure of the human brain. Putting these together we will then consider a broad range of topics in higher human cognition including: object recognition, memory, emotions, social cognition, language, attention, consciousness, reasoning & problem solving and decision making.

Thus, this course will survey a broad range of topics mainly through lecture presentations including video. However, you will be expected to learn much from the assigned readings. You will also have a unique opportunity to apply the course material through making a video of your own.

Expectations

1. Academic conduct: All students are expected to abide by the academic integrity policies outlined in the [Loyola University Undergraduate Studies Catalog](#) (e.g., online information at). Each individual student is expected to complete his/her work in the course in an honest and ethical manner. Furthermore, you may not submit a paper or assignment for this class that has already been submitted by you in another class. All forms of academic misconduct (including but not limited to cheating; plagiarism; tampering with materials, grades, or records; aiding in academic misconduct) will not be tolerated, and acts of cheating and plagiarism will be punishable by failure in the respective assignment/quiz. In addition, university policy states that instructors must report all forms of academic misconduct to their departmental chairperson. The chairperson is required to report all forms of academic misconduct to the dean's office, and all forms of academic misconduct are recorded. The administration may impose additional sanctions against the student including expulsion from the university. The consequences of academic misconduct go beyond the imposed sanctions. For example, consider the following process for application to medical or law school and how these schools would use records of academic misconduct in their decision to accept or reject applicants. As part of a general policy in the selection process, medical and law schools contact the administration at the applicant's undergraduate institution to inquire about instances of academic misconduct. Any record of academic misconduct on the part of the applicant is reported to the medical or law school, which would then likely translate into a rejection.

2. You are expected to attend every class and be prepared to discuss the assigned readings. Many of our class goals are dependent on your participation in in-class activities. Your success, as well as the success of your classmates is thus dependent on your presence and active participation. To enforce this expectation we will take attendance every day and this will be a part of your grade (see below). If you come to class more than 15 minutes late or leave more than 15 minutes early this will count as a half absence for that day.

Students who wish to observe their religious holidays need to notify me within the first two weeks of the semester of the date(s) when they will be absent so that course accommodations can be made. If you do not do this, these absences will be recorded and counted towards your grade.

Student athletes are responsible for providing their travel schedule to me within the first two weeks of class or these absences will be recorded and counted towards your grade. You will be responsible for all work missed during your absence.

Extended absences from class because of severe illnesses or family or personal emergencies may keep students away from class for extended periods. Such situations will be resolved on a case-by-case basis. Students who are absent from a significant number of classes due to one of these causes may want to consider taking the course at another time.

3. A significant way you will be exposed to new information in this course is through regular reading assignments. Assigned readings must be read BEFORE the class for which they are assigned. As you

read try to outline or concept map the information you are reading. Also write down questions you have about the material and questions based on the material you can ask each other.

4. Class participation and discussion are mandatory for all students. I expect you to participate verbally in class by asking and answering questions and contributing to discussion. I also expect you to participate in in-class activities including various group activities.
 5. I also expect you to maintain respectful behavior towards all course members as consistent with the [Loyola Student Promise](http://www.luc.edu/judicial/thepromise.shtml) (<http://www.luc.edu/judicial/thepromise.shtml>). Please do not talk when others are speaking, or interrupt during discussion. Please consider other's perspectives and try to be constructive when providing feedback and critiques. **We will all (including the professor and TA) turn off our cell phones at the beginning of class. If your phone rings during class please gather your belongings and leave for the day. This will count as an absence.** Reading email or instant messaging on your phone or on a computer is also not appropriate during class. Please focus your attention on what is happening in class and not on things outside of class.
 6. You **MUST** take exams on the date they are scheduled. Athletes must communicate schedule conflicts within the first two weeks. If you are very sick on the day of the exam you must email me prior to class and provide a doctors note. You will receive an opportunity to take the exam late, but the grade will not count (you will receive the same score as the average of your two other exams). Failure to take the exam on the scheduled day will result in a zero for the exam (resulting in a two grade reduction for the course).
 7. General e-mail policy: I reply to e- mails within 1 to 2 business days, with the exception of when I am away on university business. Typically, I will check class email first thing in the morning and around 6p. Please make sure you spell my e-mail address correctly (rmorrison@luc.edu). **To ensure a timely response please put psyc398 in the subject line of the email.**
 8. Students with disabilities who require accommodations for access and participation in this course must be registered with the Services for Students with Disabilities (SSWD) office. Please contact SSWD at 773-508-7714 (<http://www.luc.edu/sswd/index.shtml>), and see me immediately. All students with special needs are expected to fulfill all course requirements.
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Assignments & Assessment

1. **Participation and Attendance (10pts).** As mentioned previously it is essential you attend class every day. You are also expected to participate in class discussions, ask and answer questions, and do in-class activities. From time to time you will be asked to work in small groups, including for your Final Project. You are also expected to read assigned readings before class as indicated in the syllabus. To ensure that this happens, 10% of your grade will be made up of attendance and participation. If you are more than 15 minutes late for class or leave more than 15 minutes early you will receive half credit for that day's attendance. I also reserve the right to give short-answer pop quizzes on reading material and previous lecture material if I feel the class is not keeping up with reading.
2. **Exams (65pts). Your best score will count for 25pts, the other two exams will be 20pts.** There will be three exams during the course given during the class period on the days indicated in the syllabus. All three exams will be mainly multiple choice with some short answer. EVERY EXAM WILL BE CUMMULATIVE! Thus, there will be material from the first module on the second exam and material from the first and second module on the third exam. The reason for this is two-fold. First, the material in this class builds on prior material, so to have the exams any other way makes no sense. Second, the most robust finding in all of cognition is that of spacing in memory. When you space practice of information you are learning you WILL remember it better in the future. Cramming does not pay, particularly in this class because of the way it is designed.
3. **Neuroanatomy Quiz (10pts).** A working knowledge of cortical neuroanatomy is important throughout this course. You will be expected to understand basic principles of navigation (e.g., anterior/posterior; rostral/caudal; dorsal/ventral), name a small number of neural structures from a variety of different images (e.g., gross anatomy; diagrams; CT/MRI), and appreciate the connectedness of major

functional circuits (e.g., language; vision). We will have one quiz that specifically tests this knowledge, but the knowledge will also be essential throughout the course, including on all three exams.

4. **Final Project (15pts).** You will work with several other students to develop a short film to illustrate a core principle covered in the class. This could be structured around a neurologic interview with one of you (or a friend) being the patient and one being the neurologist or it can be more of a skit format showing daily cognition and containing a brief didactic section explaining how this type of cognition is processed in the brain. As you think about what you want to present and how you want to present it think about how Oliver Sacks does this in "The Man Who Mistook His Wife for a Hat". Sacks works beyond the neurologic case at hand to relate broader principles of cognition, but more importantly what it means to be human. The final project is to be posted to youtube before the final exam time (Saturday, December 18, 9am) at which time we will watch them as a class and discuss them. The final film should be approximately 5 minutes and not longer than 10 minutes.

Grading. Final Grades will be assigned as follows:

A:	90-100%
B+:	87-89.9%
B:	80-86.9%
C+:	77-79.9%
C:	70-76.9%
D+:	67-69.9%
D:	60-66.9%
F:	less than 60%

WEEK	DATE	CLASS TOPIC/ACTIVITY	READING DUE Gazaniga	Sacks/Other
1	8/31 9/2	First Class Introduction	Chapter 1	
2	9/7 9/9	Cellular Mechanisms and Cognition Neuroanatomy	Chapter 2 (pp. 19 – 53; 56-58 only) Chapter 3 (pp. 59 – 88; 96-109 only)	
3	9/14 9/16	Neuroanatomy: Mesulam Guest Lecture Methods of Cognitive Neuroscience	Chapter 4	Sacks - Part One: Introduction
4	9/21 9/23	Neuroanatomy Quiz Methods of Cognitive Neuroscience Methods of Cognitive Neuroscience		Sacks - Part Two & Three: Introduction Sacks - Part Four: Introduction
5	9/28 9/30	Methods of Cognitive Neuroscience Exam I (Chapters 1-4)		
6	10/5 10/7	Object Recognition Object Recognition	Chapter 6 (pp. 207-213; 217-256 only)	Sacks – Chapter 1, 24
7	10/12 10/14	FALL BREAK -- NO CLASS Learning and Memory	Chapter 8 (pp. 312-356; 361-363 only)	
8	10/19 10/21	Learning and Memory NO CLASS		Sacks – Chapter 2, 12, 23
9	10/26 10/28	Emotion Social Cognition	Chapter 9 Chapter 14 (pp. 599-620; 631-633)	Sacks – Chapter 11
10	11/2 11/4	Social Cognition Language	Chapter 10	Sacks – Chapter 10
11	11/9 11/11	Language Exam II		Sacks – Chapter 9
12	11/16 11/18	Attention and Consciousness Attention and Consciousness	Chapter 12	Sacks – Chapter 15 - 18

WEEK	DATE	CLASS TOPIC/ACTIVITY Gazaniga	READING DUE Sacks/Other
13	11/23	Cognitive Control	
	11/25	THANKSGIVING – NO CLASS	
14	11/30 12/2	Cognitive Control Reasoning & Problem Solving	Sacks – Chapter 13, 21 Purves et al., Chapter 25 Sacks – Chapter 23
15	12/7 12/9	Decision Making Exam III	Purves et al., Chapter 24
Final	12/18	Film Screening <u>Saturday 9am</u>	

DATES ARE TENTATIVE. I will communicate changes both in class and also on Blackboard.

30 August 2010