

NEUR 300 - Neuroscience Seminar

Fall 2012 - Tuesdays: 4 – 5:30p
Cuneo Hall Rm109

Professor

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Course Description and Goals

Neuroscience involves the study of the nervous system in both human and nonhuman organisms. Neuroscientists seek to understand how the brain and its underlying neural architecture enables perception, thought, emotion and action as well as other aspects of behavior. This includes describing how the nervous system develops, matures and maintains itself through life during both typical and pathologic trajectories. An important part of neuroscience includes understanding how the nervous system changes with various diseases and how to prevent or cure many devastating neurological and psychiatric disorders.

While the issues central to neuroscience have been of interest for millennia, only in recent decades has neuroscience become a recognized discipline. It now integrates biology, chemistry, and physics with studies of structure, physiology, and behavior, including human emotional and cognitive functions.

Neuroscientists are frequently characterized by the level of analysis they use to address the fundamental questions of neuroscience. **Neuroanatomists** study the structure and organization of the nervous system. With special dyes, they detect specific neurotransmitters, and mark neurons and synapses with specific characteristics and functions. They may also use brain imaging to study the macrostructure of the brain and differences between species or at different stages in development. **Systems Neuroscientists** are interested in the functions of individual molecules, synapses, or cells, but also in how they work together to account for behavior. Neuroanatomists and systems neuroscientists sometimes refer to themselves as *neurobiologists*. They frequently use tools such as antibodies and gene probes to isolate and identify proteins and other molecules responsible for neuronal function. **Behavioral neuroscientists** study the processes underlying non-human animal behavior. Their tools include microelectrodes, which measure electrical activity of neurons, and brain scans, which show parts of the brain that are active during activities such as seeing, remembering or moving. **Cognitive neuroscientists** (Cognitive Psychologists – PhD, Cognitive Neuropsychologists - PhD, Behavioral Neurologists - MD) study functions such as perception, memory, emotion, or higher thought in humans by using behavioral methods in normal and other neuroscience techniques such as functional brain imaging. **Clinical neuroscientists** (Clinical psychologists - PhD, neuropsychologists - PhD, psychiatrists – MD, or behavioral neurologists – MD) use basic research findings to develop diagnostic methods and ways to prevent and treat neurological disorders.

This semester we will hear talks from neuroscientists working at all of these levels. The intent of the course is not to provide you with a comprehensive overview of neuroscience, but rather to give you a glimpse into how neuroscientists ask and answer questions. The intent is also to help you to become a consumer of neuroscience research you may read about both in scientific literature, but also the popular press and to help you apply what you learn about through the scientific literature and neuroscience courses here at Loyola to things in the outside world.

Materials**Required Readings:**

Marcus, G. (2012). *Guitar Zero*. New York: Penguin Press HC.

Readings from the primary and secondary literature supporting individual talks will be supplied via Blackboard at least a week prior each talk.

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 class every week. Your success in achieving the course goals is 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.

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. 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 NEUR 300 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.

Assignments & Assessment (100pts total)

Attendance (60pts) It is essential you attend class every day. You are also expected to read assigned readings before class and participate in class discussions, including asking questions of presenters. To ensure that this happens, 60% 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 do not include the first week's attendance and allow one absence. Thus, each class counts 5pts. You can receive 5pts bonus for attending the talk by Dr. Gary Marcus at the Neuroscience Banquet tentatively scheduled for Saturday, November 10.

It is your responsibility to initial the sign up sheet each day you are in attendance. Please do not email us to tell us you were in class but forgot to sign in. Signing in for another person, or asking someone else to sign you in is grounds for automatic course failure – this IS cheating!

1. **Blog (40pts)**

A goal of the course is to help you become a consumer of neuroscience research. To be an effective life learner it is critical that you learn to process new concepts and use them to interpret new information you encounter on a daily basis. To facilitate this we have set up a blog for the class: morebrainpoints.blogspot.com. Feel free to share the link with family and friends. Remember the objective of a blog entry (as well as most any form of writing) is to provide useful information and commentary in an engaging style. That does not mean you can check your spelling or grammar at the door, in fact your blog better be well written, the blogs from two of my classes last year have received nearly 10,000 views, the WORLD is reading, make sure you are proud of what they read!

By the end of next week you must complete the blog login assignment under the blog tab in Blackboard. Please submit a NON-luc.edu email address (e.g., yahoo, gmail, hotmail, etc) for this purpose, preferably a gmail account if you have one. During the third week of class you will receive an invitation to be an author for the blog, and you will complete the following assignments by posting there. We don't use Blackboard for this so that your posts reach the broader internet community. Posts to other class blogs I host have tens of thousands of views.

Assignment 1 (20pts, Due October 11 by midnight) Your job in this assignment is to create a blog entry that connects at least two concepts discussed in Gary Marcus's book *Guitar Zero* to a contemporary news item. Make sure to reference and describe your news item in your entry so people know what you are talking about. Then use the *Guitar Zero* concepts to help explain, interpret, or comment on your news item. Your news item need not be about music, you can use the learning principles described more broadly. You may choose to describe a report about a scientific finding or rather just choose a general news item that you will use the learning concept to analyze. The news item should be current (from 2012). Good places to look for news articles include:

- The New York Times <http://www.nytimes.com/pages/science/index.html?partner=rss&emc=rss>
- Christian Science Monitor <http://rss.csmonitor.com/feeds/science>
- The Wall Street Journal http://online.wsj.com/search/term.html?KEYWORDS=science&mod=DNH_S
- Time Magazine <http://www.time.com/time/science>
- National Geographic <http://science.nationalgeographic.com/science/>
- Scientific American <http://www.scientificamerican.com/>

- Press Releases and News Services
<http://esciencenews.com/taxonomy/term/12/0>
<http://ksjtracker.mit.edu/>
<http://www.sciencedaily.com/>

There are many other blogs doing this type of thing, please do not cite them directly and remember DO NOT PLAGIARIZE. Plagiarizing other blogs is grounds for failing the course.

Assignment 2 (20pts, Due Tuesday, December 11 by midnight) The second assignment is similar, but in this case instead of using a concept from *Guitar Zero* you will use something you learned during one of the talks (or the accompanying materials) this semester. In this assignment I'd like you to specifically connect to another related research finding. This should not be something from the speaker's lab. It can be from another scholarly paper or from a news article about another finding. The article or news item should be from the last two years (2011-2012). Make sure to accurately describe both the concept/finding from the talk and also from the news/journal article and remember your audience—communicate the information accurately, but in an engaging style. Once again DO NOT PLAGIARIZE!

Grading. Final Grades will be assigned as follows:

| | |
|-----|---------------|
| A: | 93-100% |
| A_ | 90-92.9% |
| B+: | 87-89.9% |
| B: | 83-86.9% |
| B-: | 80-82.9% |
| C+: | 77-79.9% |
| C: | 73-76.9% |
| C-: | 70-72.9% |
| D+: | 67-69.9% |
| D: | 63-66.9% |
| D-: | 60-62.9% |
| F: | less than 60% |

Tentative Schedule

| WEEK | DATE | SPEAKER |
|------|------|--------------------------------------------------------------------------------------|
| 1 | 8/28 | Introduction |
| 2 | 9/4 | Cynthia L. Von Zee, PhD Research Assistant Professor Loyola University Chicago |
| 3 | 9/11 | TBA |
| 4 | 9/18 | Rebecca Siltan, PhD Assistant Professor Loyola University Chicago |

| WEEK | DATE | SPEAKER |
|------|-------|-------------------------------------------------------------------------------|
| 5 | 9/25 | Eric Schroeter, PhD Assistant Professor Loyola University Chicago |
| 6 | 10/2 | Toby Dye, PhD Associate Professor Loyola University Chicago |
| 7 | 10/9 | FALL BREAK -- NO CLASS |
| | 10/11 | First Blog Assignment Due |
| 8 | 10/16 | William Rochlin, PhD Associate Professor Loyola University Chicago |
| 9 | 10/23 | Hui Ye, PhD Assistant Professor Loyola University Chicago |
| 10 | 10/30 | Jean Decety, PhD Professor University of Chicago |
| 11 | 11/6 | Orly Lazarov, PhD Associate Professor University of Illinois at Chicago |
| | 11/10 | Neuroscience Banquet Gary Marcus, PhD Professor New York University |
| 12 | 11/13 | Rob Hurley, PhD Post Doctoral Fellow Northwestern University |
| 13 | 11/20 | Shunbin Xu, MD, PhD Assistant Professor Rush University Medical Center |
| 14 | 11/27 | Bruce Miller, MD Professor University of California, San Francisco |
| 15 | 12/4 | Stephen Steidl, PhD Assistant Professor Loyola University Chicago |
| 16 | 12/11 | Second Blog Entry Due |