

Syllabus

Advanced Topics in Cognition Spring 2014 - 01:830:401

Logistics

Lecture and Recitation Hill 009 Mon and Thurs 10:20 – 11:40am

Faculty Organizer: Elizabeth B Torres

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Course Description

In this course we will provide an introduction to sensory motor issues and how they relate to perception and cognition across the lifespan of the individual. We will teach neuroscience-based principles of mind body interactions during typical and atypical development across the human life span. Examples will be drawn from neurodevelopmental disorders where the sensory motor foundation is ill formed thus impeding the proper scaffolding of perception and cognition. We will also use examples of neurodegenerative disorders where the decline of cognitive processes is preceded by sensory motor dysfunction. The roles of sensory and motor issues in normal cognitive processes will also be discussed using fun experiments from the cognitive and perceptual sciences. Faculty will showcase their cutting edge research on various topics of Perception and Cognition during the Lectures on Mondays. We will discuss these during the Recitation on Thursdays to further expand on sensory-motor related issues.

Course Objectives

Upon successful completion of the course students will:

- have a better understanding of the mind-body relations that contribute to the development and maintenance of stable perception and cognition throughout the lifespan of the individual;
- become familiar with the Rutgers faculty and their research in Cognitive and Perceptual Sciences
- be able to read and summarize scientific papers and to present their content in critical, analytical and objective ways
- search and compile information on a particular topic with an eye for novelty

Texts

There will be no textbook for this class. The readings will be posted on SAKAI by the professors under the Resource Section of the class. Each speaker will provide his/her own papers for each lecture.

You are required to read the paper before the lecture. Also during recitation on Thurs of the same week the paper may be discussed along with other aspects of the lecture. I may give quizzes on the content of the lecture and papers.

Evaluation

Attendance/Participation (30 points): You are expected to attend this class and to be prepared to participate. The maximum number of lectures to miss is one. If you miss more than one, you will need to turn in a summary of the papers and lecture presented that day. Send the summary by email to me before the recitation class that week. Failure to do so will result in a reduction of the portion of the grade for attendance/participation. If you miss more than one recitation a reduction in this portion of the grade will also be applied.

Short Assignment (30 points): Two short questions requiring analytical critics of the paper and presentations discussed in lecture and recitation will be assigned during the semester. Each question will require a short and concise answer (500 words). Please submit these in word.doc under the Assignment tab in Sakai. The first assignment will be due **Thurs March 13th**. The second will be due **Thurs April 17th**. Late assignments will result in automatic one-grade reduction.

Paper (40 points): The final paper is required to be in by **May 1st by 10am**. Failure to turn in the paper will result in the loss of this portion of the grade. Every day that you are late for the submission of the final paper will result in automatic one-grade reduction.

There are two choices: (1) choose a topic discussed in class and conduct an in-depth review of the literature with a focus on what is cutting edge vs. what is “old school”. The paper should be 15 pages maximum and it should state the problem that you want to focus on, state the background and the cutting edge ideas. Whenever possible, you can come up with a new idea or even reformulate the question altogether. (2) Choose a topic and summarize the main experimental paradigms and the main methods in use. Whenever possible, you can come up with a new experimental paradigm and / or new methodology.

If you turn in the essays earlier, by **April 14th**, I will provide constructive feedback. Otherwise, you may wait till **May 1st by 10am** and submit the paper by the due date and time. Please do so by uploading it to Assignments in Sakai. This portion of the grade will be based on your final draft. Please specify in the title that this is your **Final Draft**.

Extra-Credit Options: (1) Turn in some YouTube video relevant to a topic described in class. For example TED talks have a variety of videos that are often relevant to issues in Cognition and Perception. Other videos may be also out there that can relate to the various talks and papers discussed in class. (2) Fun cartoons relevant to the class can also be turned in. (3) If neither of these two choices interests you, you can inform me of your interest and I will provide guidance. The deadline to turn in **extra credit is April 1st**. The total number of points to be added to your final grade using these choices is 5 points.

Rutgers Policy on Academic Integrity

Rutgers has a very detailed policy on Academic Integrity and Code of Student Conduct: <http://academicintegrity.rutgers.edu/academic-integrity-at-rutgers>

Violations include cheating, fabrication, plagiarism, denying information to or misleading others, or facilitating these violations.

No Computers or Phones

Please turn off all computers and cell phones in the classroom. If you wish to record the lectures, approval of the individual speaker is required.

Date	Lecturer	Topic	Readings Due
January			
Mon 27	2 Liz Torres	Intro-Brain Computer Interfaces	
February			
3	Cancelled	Snow Storm	
10	3 Thomas Papathomas	Visual Illusions	
17	4 Brian Keane	Pathological cases with altered Perception	
24	5 Jill Nguyen	Perception – Action Loops	
March			
3	6 Liz Torres	Decisions Making and Motor Control	
10	8 Mary Rigdon	Decision Making and Neuroeconomics	Paper due at Recitation on the 13th
17	John McGann		
24	10 Gretchen Chapman	Medical Decision Making	
31	11 Melchi Michel	Bayesian models of vision	
April			

7	12 Liz Tores	Autism I	
14	Liz Torres	Autism II	Paper due at Recitation on the 17 th
21	13 Pernille Hemmer	Bayesian Inference and Memory	
28	Jonh McGann	Olfaction	
May			
1	TOPIC	PAPER	DUE