

Psychology 511. Introduction to Cognitive Neuroscience



Instructor: Mauricio Delgado

Course Information: Course 511

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Course Description/Goals.

Cognitive neuroscience represents a hybrid of disciplines that combines our knowledge of basic psychological and cognitive processes with neuroscientific evidence. The merging of psychology, neurology and neuroscience allows for a more in-depth investigation of how the brain enables the mind, and how behavior is controlled and carried out. The class is organized into four basic sections.

Part I – Organization of the Nervous System: Some background on the cellular & molecular basis underlying cognition will be discussed, along with a brief introduction to functional neuroanatomy.

Part II – Perception & Action: Initial efforts of cognitive neuroscience involved understanding how basic perceptual processes (e.g., vision, auditory) are mediated neurally.

Part III – Cognition in the Brain: Discussions will center around cognitive processes such as attention, learning and memory and their underlying neural basis.

Part IV – Frontiers of Cognitive Neuroscience: Humans are complex organisms and the understanding of basic cognitive neuroscience needs to be extended to encompass all aspects of human behavior. Thus, we will discuss the neural basis of emotion, social and affective processes and economic decision-making.

Required Text.

There is no required text. There are readings that will accompany every lecture.

Course Requirements:

- 1- Attendance & Participation:** Attendance and participation in class are mandatory.
- 2- Article Presentation:** Students will be required to present and lead discussion on 3 assigned articles throughout the semester. Presentations should be constructed with power point (or equivalent) and contain an introduction, methods, results and discussion (review articles can have a different structure). Further, students should end their presentations with one or two critical evaluation/points of discussion slides. Presentations should last roughly 10-15 minutes, followed by a 5 minute discussion period led by the student.
- 3- Midterm Exam:** An exam covering the first half of the class will be given.
- 4- Final Exam:** An exam covering the second half of the class will be given.

Course Evaluation:

Attendance & Participation	10%
Presentations (3)	30%
Midterm	30%
Final	30%

* **Academic Integrity: Students are expected to do their own work at all times.** This course adheres strictly to the University policy on academic integrity outlined at the following URL:
<http://academicintegrity.rutgers.edu/integrity.shtml>

Course Schedule.

I- Organization of the Nervous System

Week 1 - History of Cognitive Neuroscience

Week 2 - Cellular & Molecular Foundations

Week 3 - Functional Neuroanatomy

Week 4 - Cognitive Neuroscience Methods

II- Perception, Action & Attention

Week 5 - Perception

Week 6 - The Control of Action

Week 7 - Attention

Week 8 - Midterm

Week 9 - Spring Break/Catch up

III- Cognition in the Brain

Week 10 - Language & the Brain

Week 11 - Executive Function

Week 12 - Learning and Memory I – Memory Processes

Week 13 - Learning and Memory II – Principles of Learning

IV- Frontiers of Cognitive Neuroscience

Week 14 - The Emotional Brain

Week 15 - Social & Economic Influences

Week 16 - Final