

Instructor: Jessica Maryott
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Class meets M T Th, 6:30-9pm

Cognitive Neuroscience studies the biological foundations of mental phenomena, that is, how the brain enables the mind. Although it builds on a strong, older foundation, as a distinct entity the field itself is very young, and there is much that remains an intriguing mystery. A key part of the field and of this course focuses on neurons, brain structures, and neural function. We assume that the mind is not in one place in the brain, but emerges from interactions among individual neurons and among ensembles of neurons. Specifically, cognitive neuroscience assumes that a change in the current state of neural activity is the basis for an idea, perception, memory, action, or thought. To carry out its program, cognitive neuroscience uses an enormous range of tools and techniques, and operates at an equally broad range of scales –from the tiny (ion channels) to the formidable (all 1350 grams of the average adult human brain).

Textbook: The course's textbook is *Cognitive Neuroscience: The Biology of the Mind* (2nd edition), by Michael Gazzaniga, Richard Ivry and George Mangun. The text, denoted "GIM" in the list of reading assignments, will be supplemented by various short articles and chapters. Because it is very much changed from the first edition, make sure you have 2e of the textbook.

Expectations: Because summer classes are usually small, this course will emphasize discussion more than normal lecture courses will. You are expected to do the reading and participate in class by asking questions and thinking critically about the information you have read. I also expect you to be honest in your academic work. The University policy on academic honesty is distributed annually as section 5 of the Rights and Responsibilities Handbook. I am obligated to forward instances of suspected dishonesty to the Office of Campus Life for possible referral to the Student Judicial System. Potential sanctions include failure in the course, and suspension from the University. If you have questions about my expectations, please ask.

Evaluation: Eighty percent of the course grade will reflect performance on three exams. The first two exams will carry equal weight; the third exam will be weighted 1.5 times as much as either of the first two exams. The third examination will emphasize material from the final portion of the course but will draw on material from the entire course. The remaining 20 percent of the course grade will reflect substantive contributions to class. Makeup exams will be given only with prior agreement from the instructor; if a medical condition is involved, a physician's written documentation of a serious medical condition must be provided.

Course Grade: Your course grade will primarily reflect your performance on three exams. The first two exams will carry equal weight; the third exam will be weighted 1.5 times as much as either of the first two exams. The third examination will emphasize material from the final portion of the course but will draw on material from the entire course. Examinations will include a combination of multiple choice and short, essay style questions. Your grade will be on a standard scale on which A \geq 92.5%, A- 90-92%, B+ 87.5-89.5%, B 82.5-87%, B- 80-82%, C+ 77.5-79.5%, C 72.5-77%, C- 70-72%, D+ 67.5-69.5%, D 62.5-69%, and D- 60-62%.

The **ONLY** excuses acceptable for missing an exam are illness (documented by a note from a physician), funeral of close friend/relative (documented by a funeral notice or funeral bulletin), mandatory religious obligations or other unavoidable circumstances or University activities.

Special Needs: If you are a student with a documented disability on record at Brandeis University and wish to have a reasonable accommodation made for you in this class, please see me immediately.

Syllabus: Each session will be divided into two mini lectures with a short break in between.

Day	Topic	Read
Monday 7/6	Introduction, overview Neurons.	Chapter 1, 2
Tuesday 7/7	Channels, spikes Neurotransmitters, synapses	Chapter 2
Thursday 7/9	The brain and nervous system Anatomy	Chapter 3
Monday 7/13	Methods of Cognitive Neuroscience Methods (continued)	Chapter 4
Tuesday 7/14	Perception and encoding Perception (continued)	Chapter 5
Thursday 7/16	Exam 1 Higher level perceptual functions	Chapter 6
Monday 7/20	Higher perception (continued) Selective attention	Chapter 7
Tuesday 7/21	Learning and Memory Learning and Memory (continued)	Chapter 8
Thursday 7/23	Learning and Memory (continued) Language	Chapter 9
Monday 7/27	Motor Control Motor Control (continued)	Chapter 11
Tuesday 7/28	Exam 2 Executive Function	Chapter 12
Thursday 7/30	Executive Function (continued) Emotion	Chapter 12, 13
Monday 8/3	Development and Plasticity Development and Plasticity (continued)	Chapter 15
Tuesday 8/4	Consciousness and Neuroethics Review	Chapter 16