

# Brain and Cognitive Sciences

## Course 9

Have you ever wondered why your mind functions as it does? Or how intelligence or language develop? These are the kinds of questions that are asked by students and faculty in MIT's Department of Brain and Cognitive Sciences. Studies conducted here stress connections with basic science and the relationships between the brain and behavior. The focus is on the scientific analysis of the human mind and the cognitive operations of other animal species — as they are embodied in the brain and as they are modeled on the computer.

### **Brain and Cognitive Sciences at MIT**

MIT's Department of Brain and Cognitive Sciences is concerned with teaching and research in the areas of experimental cognitive science, neurobiology, systems neuroscience, psycholinguistics, and natural computation. Undergraduates may major in brain and cognitive sciences, for which the department confers the SB degree, or they may minor in this area.

### **Undergraduate Program**

In addition to fulfilling the General Institute Requirements, students majoring in the department must take Introduction to Psychology, Introduction to Neuroscience, and a course in statistical methods. Students must take six courses in at least two of three core areas: neuroscience, cognitive neuroscience, and cognitive science. Students may take two additional core courses, or take two from a selection of restricted electives. All students must take a laboratory course selected from one of five offered: Systems Neuroscience Laboratory, Experimental Molecular Neurobiology, Laboratory in Psycholinguistics, Laboratory in Visual Cognition, or Higher-Level Cognition. Finally, students must also participate in a research project appropriate to their core area.

By combining the study of brain and cognitive sciences with fields such as experimental psychology, neurophysiology, computer science, philosophy, and mathematics, the department's faculty prepares students

for graduate work in experimental cognitive science, neurobiology, systems neuroscience, experimental psychology, linguistics, artificial intelligence, education, and philosophy.

### **Research**

Through the Undergraduate Research Opportunities Program (UROP), students participate in faculty research, earning either wages or credit. Alternatively, students may take a designated research course for credit.

Research opportunities in brain and cognitive sciences include studies of perception and memory, children's acquisition of language, logic, and knowledge, language processing, brain development, neuropsychology, neurochemistry, motor control, and natural computation.

Brain and cognitive scientists at MIT work in a variety of departments, laboratories, and centers. Consequently, students may become familiar with MIT's Artificial Intelligence Lab, where they study biological information processing; the Research Laboratory of Electronics, which houses facilities for speech communication studies; the Picower Institute for Learning and Memory, which employs molecular, genetic, cellular, and systems approaches to examine the neural bases of activity-dependent changes in the brain; the McGovern Institute for Brain Research, whose mission is to investigate and ultimately understand the biological basis of all higher brain functions in humans; and the Clinical Research Center, which allows students to gain experience with patients who have brain damage or degenerative brain diseases.

### **Post-Baccalaureate Opportunities**

Roughly two-thirds of brain and cognitive sciences graduates go on to graduate or medical school. Industrial positions are also available to SB graduates who have an understanding of computers, language, neuroscience, and cognitive science.

**Contact Information**

For more information, please contact:

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The MIT Course Catalog contains further information on the Institute, including all graduate and undergraduate courses and programs. Please visit the MIT Course Catalog website for more details at <http://web.mit.edu/catalog/index.html>.

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