

# BCOG - BRAIN AND COGNITIVE SCIENCE

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BCOG Class Schedule (<https://courses.illinois.edu/schedule/DEFAULT/DEFAULT/BCOG/>)

## Courses

**BCOG 100** Introduction to the Brain and Cognitive Science credit: 3 Hours. (<https://courses.illinois.edu/schedule/terms/BCOG/100/>)  
Introduction to the study of mind, brain, and behavior. The course will cover how we study the mind and brain from a cognitive science perspective. The course will include topics in sensation, perception, learning, memory, thinking, artificial intelligence, animal cognition, and the development of the mind and brain.

**BCOG 200** Introduction to Programming for the Brain and Cognitive Sciences credit: 4 Hours. (<https://courses.illinois.edu/schedule/terms/BCOG/200/>)

Introduction to computer programming concepts and their application to the study of brain and cognitive sciences. The course will teach basic programming concepts in Python, and introduce applications to experiment and game design, data analysis, computational modeling, and simulations.

**BCOG 301** Intelligence and the Brain credit: 3 Hours. (<https://courses.illinois.edu/schedule/terms/BCOG/301/>)

An introduction to the scientific study of human intelligence, with particular emphasis on modern research in cognitive neuroscience. For centuries, the nature of human intelligence has motivated considerable research and debate: What does it mean for humans to be intelligent? What mental abilities does intelligence refer to? How are these abilities shaped by the environment, cultivated through experience, and represented in the human brain? This course addresses these questions through the lens of modern research in psychology, psychometrics, and cognitive neuroscience. Students will investigate the nature and mechanisms of human intelligence from basic, clinical, and applied disciplines.

**BCOG 458** Advances in Brain and Cognitive Science credit: 3 Hours. (<https://courses.illinois.edu/schedule/terms/BCOG/458/>)

An in-depth, integrative overview of the major themes in the study of Cognitive Science, including cognition as computation, the relation between mind and brain, computability and the role of heuristics in "solving" unsolvable problems, and the logical/mathematical foundations of these themes. Specific topics covered include inverse optics and vision; induction and reasoning; learnability and language; philosophy of minds and brains; evolution; artificial intelligence and computational modeling; information theory; knowledge representation. The emphasis throughout is on the interrelations among these topics as examples of important but fundamentally unsolvable problems. Same as PHIL 458. 3 undergraduate hours. No graduate credit. Prerequisite: One of PSYC 224, PSYC 248, PHIL, 202, PHIL 270, or consent of instructor.

**BCOG 492** Capstone Undergraduate Research credit: 3 Hours. (<https://courses.illinois.edu/schedule/terms/BCOG/492/>)  
Capstone experience for undergraduate students doing advanced research in brain and cognitive sciences. Provides in-depth background knowledge of their research, and teaches students to make effective oral and written presentations of their findings. 3 undergraduate hours. No graduate credit. May be repeated in separate semesters for a maximum of 6 undergraduate hours. The fall offering of the course will focus on identifying a research question and writing a comprehensive review of the literature bearing on the research question. The spring offering of the course will focus on writing the empirical results of the experiment/study and writing a discussion of the results, placing the study findings in the context of the literature. Prerequisite: Senior standing in Brain and Cognitive Sciences, and consent of instructor. Students must arrange to do a research project with a faculty member. Restricted to Brain & Cognitive Science majors.