Cognitive Science (BS)

Major Academic Director: Erik Thiessen (BH 342D); Undergraduate Coordinator: Emilie O'Leary (BH 339)

The field of cognitive science has grown out of increasingly active interaction among psychology, linguistics, artificial intelligence, philosophy, and neuroscience. All of these fields share the goal of understanding intelligence. By combining these diverse perspectives, students of cognitive science are able to understand cognition at a deep level.

Because this major is administered by the Psychology Department, it focuses on human cognition, [its neural underpinnings] and the experimental study of the human mind as illuminated by the techniques of the above disciplines. The goal is nothing less than to characterize the mechanisms underlying human cognition in domains that range from visual, haptic, and auditory perception to problem solving, and that include imagery, language processing, mathematical reasoning, learning, and memory.

Cognitive research draws on a variety of empirical methods, including protocol analysis and eye movement monitoring, in addition to traditional behavioral methods. The theoretical work often involves computer simulation, drawing on both symbolic and connectionists computational approaches. Other on-going cognitive research examines the neural underpinnings of cognition, using functional neuroimaging of normal individuals and patients with particular deficits performing well-specified cognitive tasks. Research groups frequently interact with other departments with related interests, including researchers in computer science, human computer interaction, and robotics at Carnegie Mellon, and in the neurosciences at the University of Pittsburgh.

This is a suggested schedule for the first 2 years for a Primary Major. It is also available as an Additional Major.

The remainder of the Major and GenEd can be completed in the junior and senior year.

1st semester (50 units)
• Complete 2:
  76-101, Interpretation & Argument
  79-104, Global Histories
  36-201, Statistical Reasoning+
  Freshman Seminar
• 99-101 or 99-102, C@CM
• 21-120, Diff. & Integral Calculus*
• 15-110, Principles of Computing
• xx-xxx, Elective**

2nd semester (48 units)
• Complete 2:
  76-101, Interpretation & Argument
  79-104, Global Histories
  36-201, Statistical Reasoning+
  Freshman Seminar
• 21-256, Multiv. Anal. & Approx.*
• 15-112, Fund. of Programming
• xx-xxx, Elective**

3rd semester (45 units)
• GenEd Modeling: Natural Science
• 36-309, Exp. Des. for Beh. & S. S.
• 85-211, Cognitive Psychology
• 21-127, Concepts of Mathematics
• xx-xxx, Elective**

4th semester (46 units)
• 85-2xx, Psychology Survey
• Supplementary Science***
• 15-122, Prin. Impr. Computation**
• xx-xxx, Elective**
• xx-xxx, Elective**

*If required to start with 21-111, complete 21-112, then 21-256 (or 21-122).
**Elective: This space can be used for a pre-requisite course, another GenEd course, major course, or for a course you are interested in.
***Three Supplementary Science courses, beyond the GenEd Modeling: Natural Science requirement, are required; two in the same science.
*Approved substitutions for the GenEd 36-201 requirement are: 36-207, 36-220, or 36-247.
**or 15-150, Principles of Functional Programming, or 15-251, Great Theoretical Ideas in Computer Science