Areas of Specialization

The Department of Cognitive Science has instituted optional “areas of specialization” within the Cognitive Science major for the BS degree only.

The areas of specialization are intended to provide majors with guidance in choosing elective courses and to make the specific interests and training of a major clear to prospective employers and graduate schools. Specifying an area of specialization is optional; however, students should take into consideration that approved courses are not necessarily offered every year, when planning for their specialization.

To major in Cognitive Science with an area of specialization, students must fulfill the requirements for the BS degree and must choose 4 of the required 6 electives from the list of approved electives for that area of specialization. In addition, a Cognitive Science 199 may be allowed for elective credit within the specialization if the research project was clearly in one of the specialization areas. The specialization area will be listed on the transcript.

Cognitive Science

COGS 143: Animal Cognition
COGS 154: Comm. Disorders Child/Adults
COGS 160: Seminar on Special Topics

Biochemistry

BIBB 100: Structural Biochemistry
BIBB 102: Metabolic Biochemistry

Chemistry

CHEM 140A: Organic Chemistry
CHEM 140B: Organic Chemistry
CHEM 140C: Organic Chemistry
CHEM 141A: Organic Chemistry
CHEM 141B: Organic Chemistry
CHEM 143A: Organic Chemistry Laboratory
CHEM 143B: Organic Chemistry Laboratory
CHEM 143C: Organic Laboratory

Linguistics

LIGN 172: Language and the Brain

Psychology

PSYC 168: Psych. Disorders of Childhood
PSYC 169: Brain Damg and Ment. Func.
PSYC 179: Drugs, Addls., & Ment. Discrd.
PSYC 181: Drugs and Behavior

NEUROSCIENCE SPECIALIZATION

This area of specialization is intended for majors interested in neuroscience research or medicine. Allowed electives include courses in cognitive neuroscience, organic chemistry, biochemistry, and physiology.

Cognitive Science

COGS 143: Animal Cognition
COGS 154: Comm. Disorders Child/Adults
COGS 160: Seminar on Special Topics

Biology-Animal Physiology and Neurosciences

BIPN 100: Mammalian Physiology I
BIPN 105: Animal Physiology Lab
BIPN 145: Neurobiology Laboratory
BIPN 146: Computational Neurobiology

Chemistry

CHEM 140A: Organic Chemistry
CHEM 140B: Organic Chemistry
CHEM 140C: Organic Chemistry
CHEM 141A: Organic Chemistry
CHEM 141B: Organic Chemistry
CHEM 143A: Organic Chemistry Laboratory
CHEM 143B: Organic Chemistry Laboratory
CHEM 143C: Organic Laboratory

Psychology

PSYC 168: Psych. Disorders of Childhood
PSYC 169: Brain Damg and Ment. Func.
PSYC 179: Drugs, Addls., & Ment. Discrd.
PSYC 181: Drugs and Behavior

COMPUTATION SPECIALIZATION

This area of specialization is intended for majors interested in software engineering or research in computational modeling of cognition. Allowed electives include advanced courses in neural networks, artificial intelligence, and computer science.

Cognitive Science

COGS 102C: Cognitive Engineering
COGS 118A: Natural Computation I
COGS 118B: Natural Computation II
COGS 121: HCI Programming
COGS 160: Seminar on Special Topics

Biology-Animal Physiology and Neurosciences

BIPN 146: Computational Neurobiology

Computer Science and Engineering*

CSE 100: Advanced Data Structures
CSE 101: Design and Analysis of Algorithms
CSE 102: Storage System Architectures
CSE 130: Program Lang. Prin. and Paradigms
CSE 131: Compiler Construction
CSE 133: Information Retrieval
CSE 160: Intro. to Parallel Computation

Math

MATH 180A: Introduction to Probability
MATH 180B: Intro. to Stochastic Processes I
MATH 180C: Intro. to Stochastic Processes II

*Linguistics

LIGN 170: Psycholinguistics
LIGN 171: Child Lang Acquisition
LIGN 172: Language and the Brain
LIGN 175: Sociolinguistics

Psychology

PSYC 115: Lab in Cognitive Psychology
PSYC 118A: Real-time Exam. of Lang. Processing
PSYC 118B: Real-time Exam. of Lang. Processing
PSYC 119: Psycholinguistics/Cognition Lab

Sociology

SOC/B 118A: Gender and Language in Society
SOC/B 118L: Sociology of Language

HUMAN COGNITION SPECIALIZATION

This area of specialization is intended for majors whose primary interests include human psychology and applications of cognitive science in design and engineering. Allowed electives include courses in cognitive development, language, laboratory research of cognition, anthropology and sociology.

Cognitive Science

COGS 110: The Developing Mind
COGS 143: Animal Cognition
COGS 151: Analogy and Conceptual Systems
COGS 154: Comm. Disorders Child/Adults
COGS 160: Seminar on Special Topics

Biology-Animal Physiology and Neurosciences

BIPN 100: Mammalian Physiology I
BIPN 105: Animal Physiology Lab
BIPN 145: Neurobiology Laboratory
BIPN 146: Computational Neurobiology

Chemistry

CHEM 140A: Organic Chemistry
CHEM 140B: Organic Chemistry
CHEM 140C: Organic Chemistry
CHEM 141A: Organic Chemistry
CHEM 141B: Organic Chemistry
CHEM 143A: Organic Chemistry Laboratory
CHEM 143B: Organic Chemistry Laboratory
CHEM 143C: Organic Laboratory

Psychology

PSYC 168: Psych. Disorders of Childhood
PSYC 169: Brain Damg and Ment. Func.
PSYC 179: Drugs, Addls., & Ment. Discrd.
PSYC 181: Drugs and Behavior

*We cannot guarantee these courses for Cog Sci majors as many CSE courses are very impacted. Also, CSE 102, 133, 160, and 164 may not be offered on a regular basis.
CLINICAL ASPECTS of COGNITION SPECIALIZATION
Major Code: CG31

This area of specialization is intended for majors interested in cognitive neuropsychology, psychiatry, cognitive disorders, and the effects of drugs and brain damage on cognitive functions. Allowed electives include courses in those topics, as well as organic chemistry, biochemistry and physiology.

Cognitive Science
COGS 154: Communication Disorders in Children and Adults
COGS 172: Brain Disorders and Cognition
COGS 174: Drugs: Brain, Mind and Culture
COGS 175: The Neuropsychological Basis of Alternate States of Consciousness

Biochemistry
BIBC 100: Structural Biochemistry
BIBC 102: Metabolic Biochemistry

Biology-Animal Physiology and Neuroscience
BIPN 100: Mammalian Physiology I
BIPN 105: Animal Physiology Lab

Chemistry
CHEM 140A: Organic Chemistry I
CHEM 140B: Organic Chemistry II
CHEM 141A: Organic Chemistry
CHEM 141B: Organic Chemistry

Psychology
PSYC 120: Learning and Motivation
PSYC 124: Introduction to Clinical Psychology
PSYC 140: Lab-Human Behavior
PSYC 163: Abnormal Psychology
PSYC 169: Brain Damage and Mental Functions
PSYC 179: Drugs, Addiction, Mental Disorders
PSYC 181: Drugs and Behavior

HUMAN COMPUTER INTERACTION SPECIALIZATION
Major Code: CG30

This area of specialization is intended for majors interested in human computer interaction, web, visualization, and applications of cognitive science in design and engineering. Additional electives may be petitioned from communication, computer science, computer engineering and visual arts. Please note: We cannot guarantee enrollment in non-COGS courses (i.e., CSE, ECE, ICAM) for HCI students since many of these majors are very impacted and priority is given to students in those majors.

Cognitive Science
COGS 120: Human Computer Interaction
COGS 121: Human Computer Interaction Programming
COGS 160: Upper-Division Seminar on Special Topics
COGS 183: Artificial Life
COGS 184: Modeling the Evolution of Cognition
COGS 187A: Cognitive Aspects of Multimedia Design
COGS 187B: Cognitive Aspects of Multimedia Design II
COGS 188: Representation, Search, and the Web
Plus any COGS 102 not used for core sequence

Communication
COSF 126: The Information Age: In Fact and Fiction
COSF 128: Cultural Industries
COHI 117: Languages, Thought, and the Media
COHI 175: Advanced Topics in Communication: Human Information Processing
COMT 110: News Media Workshop
COMT 111AB: Communicating and Computers
COMT 112: Ethnographic Methods for Media Research
COMT 115: Media and Design of Social Learning Contexts

Computing and the Arts
ICAM 101: Digital Imaging: Image and Interactivity
ICAM 102: Digital Media I: Time, Movement, Sound
ICAM 120: Virtual Environments
ICAM 130: Seminar in Contemporary Computer Topics

Computer Science
CSE 100: Advanced Data Structures
CSE 101: Design and Analysis of Algorithms
CSE 102: Storage System Architectures
CSE 111: Object Oriented Software Design
CSE 118: Ubiquitous Computing
CSE 130: Programming Lang: Principles and Paradigms
CSE 132A: Database System Principles
CSE 132B: Database Systems Applications
CSE 133: Information Retrieval
CSE 134A: Web Server Languages
CSE 134B: Web Client Languages
CSE 135: Server-side Web Applications
CSE 150: Introduction to Artificial Intelligence: Search and Reasoning
CSE 151: Introduction to Artificial Intelligence: Statistical Approaches
CSE 152: Intro Computer Vision
CSE 167: Computer Graphics
CSE 171: User Interface Design

Electrical and Computer Engineering
ECE 161A: Introduction to Digital Signal Processing
ECE 161B: Digital Signal Processing I
ECE 161C: Applications of Digital Signal Processing
ECE 172A: Introduction to Intelligent Systems: Robotics and Machine Intelligence
ECE 187: Introduction to Biomedical Imaging and Sensing

Engineering
*ENG 100: Principle of Team Engineering
*ENG 100L: Team Engineering Laboratory

(*Note: both ENG100/100L must be taken together to receive credit. Student can take either ENG100/100L or Cogs 199 but not both.)