

Cognitive Science

The field of Cognitive Science uses scientific methods of experimentation, computational modeling, and brain imaging to study mental abilities such as perception, action, memory, cognition, speech, and language, as well as the development and evolution of those processes. Students must become knowledgeable in four areas of emphasis: perception, cognition, language, and computational methods, as well as a set of methods relevant to Cognitive Science research. Students then create their own focus area of study, potentially integrating coursework from the Cognitive, Linguistic, and Psychological Sciences department with a diverse subset of fields including Computer Science, Neuroscience, Philosophy, Anthropology, Applied Math and Education. The A.B. program is primarily for students interested in studying human mental processes and acquiring a research orientation to the study of the mind. The Sc.B. program is designed for students who wish to develop a stronger background in Cognitive Science and requires students to engage in a specific research project in the focus area of their choosing. We recommend that prospective concentrators register for one of the gateway courses and at least one other core course in their first or second year.

Concentration Requirements

These are the new requirements approved by CCC effective Fall 2024. For existing concentrators graduating in 2024-25, the prior requirements can be found by selecting the Bulletin archive <https://bulletin.brown.edu/archive/2023-24/>

Common Core

Careers in Cognitive Science and related fields requires familiarity with statistics. Therefore, the Cognitive Science concentration requires a course in Quantitative Methods (CPSY 0900). CPSY 0900 is a prerequisite for most of the laboratory courses, so concentrators should plan to take this course by their fourth semester. The department does not grant concentration credit of AP Statistics, regardless of score. Students who feel that CPSY 0900 is too elementary can complete an approved alternative course (e.g., APMA 1650, CPSY 2906).

Foundation

To provide students with a solid foundation of knowledge in their area of concentration and to minimize redundancy, the Cognitive Science concentration requires four foundation courses in Human Cognition, Perception, Language, and Computational Methods.

Electives

Each concentrator will take four additional courses that allow the student to go into depth in some of the relevant topics. These electives must include at least two courses in one of the four foundation topics (i.e., Human Cognition, Perception, Language, and Computational Methods).

The courses designed to count as electives will often have foundation courses as prerequisites and may include laboratory courses, content courses, or seminars.

Research Methods and Capstone

Another element in the Cognitive Science concentration is a research methods course that builds on the introductory statistics course (which will be a prerequisite) but exposes students to a variety of topics in research of the mind: to empirical methods (e.g., surveys, chronometry, eye tracking, brain imaging), to common designs (e.g., factorial experimental, correlational, longitudinal), to research ethics, and to best practices of literature review. Concentrators will additionally take either a seminar course or an independent research course to serve as their capstone experience.

Requirements for the A.B. degree

CLPS 0900	Statistical Methods	1
CPSY 1900 or CPSY 1901	Research Methods And Design Research Methods	1

Three Foundation Courses within CPSY: 3

CPSY 0010	Mind, Brain and Behavior: An Interdisciplinary Approach	
CPSY 0200 or CPSY 0220	Human Cognition Making Decisions	
CPSY 0400 or CPSY 0450	Cognitive Neuroscience Brain Damage and the Mind	
CPSY 0500 or CPSY 0550	Perception and Mind Science of Consciousness	
CPSY 0610 or CPSY 0700	Children's Thinking: The Nature of Cognitive Development Social Psychology	
CPSY 0800	Language and the Mind	
One Foundation Course Outside of CPSY:		1
LING 0100	Introduction to Linguistics	
NEUR 0010	The Brain: An Introduction to Neuroscience	
SOC 0010	Social Forces: An Introduction to Sociology	

Or choose from a set of approved courses in PHIL, ANTH, or SOC

One Foundation Course in Computation: 1

CPSY 0950	Introduction to programming	
CPSY 1291	Computational Methods for Mind, Brain and Behavior	
CPSY 1492	Computational Cognitive Neuroscience	
CPSY 1950	Deep Learning in Brains, Minds and Machines	
Or any introductory CSCI course with a programming component such as:		
CSCI 0111 or CSCI 0150	Computing Foundations: Data Introduction to Object-Oriented Programming and Computer Science	
or CSCI 0170 or CSCI 0190	Computer Science: An Integrated Introduction Accelerated Introduction to Computer Science	

Four Approved Electives related to Cognitive Science, such as: 4

Students should take four courses from CPSY, PHIL, NEUR, SOC, ANTH, LING, or CSCI with at least one of these classes coming from CPSY at 1the 1000-level and at least two others at the 1000-level.

Capstone: Independent Study (CPSY 1970, CPSY 1980) or approved seminar 1

Total Credits 12

Honors Requirement

The Honors Program in Cognitive Science gives undergraduates a special opportunity to carry out a research project under the direction of a faculty member. The program also provides the opportunity for outstanding senior concentrators to receive their undergraduate degree with Honors. Participation in the program allows students to develop an understanding of research and acquire research skills and background.

Candidates for Honors in Cognitive Science must meet all of the requirements of the concentration as described above. Candidates submit their application for the program in semester 7. We encourage students to seek out a faculty mentor prior to semester 7 as well as complete certain course requirements before semester 7.

Requirements for the Sc.B. degree

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Common Core

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Foundation

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Each concentrator will take four additional courses that allow the student to go into depth in some of the relevant topics. These electives must include at least two courses in one of the four foundation topics (i.e., Human Cognition, Perception, Language, and Computational Methods).

The courses designed to count as electives will often have foundation courses as prerequisites and may include laboratory courses, content courses, or seminars.

Research Methods and Capstone

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Additional requirements for Sc.B.

In line with university expectations, the Sc.B. requirements include a greater number of courses and especially science courses. The definition of "science" is flexible. A good number of these courses will be outside of CPSY, but several CPSY courses might fit into a coherent package as well. In addition, the Sc.B. degree also requires a lab course to provide these students with in-depth exposure to research methods in a particular area of the science of the mind.

CLPS 0900	Statistical Methods	1
CPSY 1900	Research Methods And Design	1
or CPSY 1901	Research Methods	
Three Foundation Courses within CPSY:		3
CPSY 0010	Mind, Brain and Behavior: An Interdisciplinary Approach	
CPSY 0200	Human Cognition	
or CPSY 0220	Making Decisions	
CPSY 0400	Cognitive Neuroscience	
or CPSY 0450	Brain Damage and the Mind	
CPSY 0500	Perception and Mind	
or CPSY 0550	Science of Consciousness	
CPSY 0610	Children's Thinking: The Nature of Cognitive Development	
or CPSY 0700	Social Psychology	
CPSY 0800	Language and the Mind	
One Foundation Course Outside of CPSY:		1
LING 0100	Introduction to Linguistics	
NEUR 0010	The Brain: An Introduction to Neuroscience	

SOC 0010	Social Forces: An Introduction to Sociology	
Or choose from a set of approved courses in PHIL, ANTH, or SOC		
One Foundation Course in Computation:		1
CPSY 0950	Introduction to programming	
CPSY 1291	Computational Methods for Mind, Brain and Behavior	
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Or any introductory CSCI course with a programming component such as:		
CSCI 0111	Computing Foundations: Data	
or CSCI 0150	Introduction to Object-Oriented Programming and Computer Science	
or CSCI 0170	Computer Science: An Integrated Introduction	
or CSCI 0190	Accelerated Introduction to Computer Science	
Four Approved Electives related to Cognitive Science		4
Students should take four courses from CPSY, PHIL, NEUR, SOC, ANTH, LING, or CSCI with at least one of these classes coming from CPSY at 1the 1000-level and at least two others at the 1000-level.		
Five Additional STEM Courses, of which at least two (2) must be PCSY courses at the 1000-level (a lab course is strongly recommended). Courses in APMA, BIOL, CSCI, CHEM, CPSY, MATH, NEUR, or PHYS will be considered and must be applicable to a concentration in that departmen		5
Capstone: Independent Study (CPSY 1970, CPSY 1980) or approved seminar		1
Total Credits		17

Honors Requirement

The Honors Program in Cognitive Science gives undergraduates a special opportunity to carry out a research project under the direction of a faculty member. The program also provides the opportunity for outstanding senior concentrators to receive their undergraduate degree with Honors. Participation in the program allows students to develop an understanding of research and acquire research skills and background.

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