

# Cognitive Science

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## Overview

The Cognitive Science Program at UC Berkeley offers undergraduates the opportunity to explore the mind in interdisciplinary perspective. Courses in the program draw on psychology, linguistics, computer science, philosophy, neuroscience, and anthropology, among other fields, to illuminate how the human mind works, and why it works the way it does.

Many influential ideas within cognitive science originated at Berkeley. The program draws on over 40 affiliated faculty from a variety of departments and is closely integrated with cognitive science research efforts across the campus.

The cognitive science research community at Berkeley is centered around the Institute of Cognitive and Brain Sciences (<http://icbs.berkeley.edu>). Students interested in cognitive science graduate study can receive graduate training in programs in affiliated disciplines, e.g. psychology (<http://psychology.berkeley.edu>), linguistics (<http://linguistics.berkeley.edu>), neuroscience (<http://neuroscience.berkeley.edu>). There is presently no separate graduate program specifically for cognitive science.

## Undergraduate Program

Cognitive Science (<http://guide.berkeley.edu/archive/2015-16/undergraduate/degree-programs/cognitive-science>) : BA

## Graduate Program

There is no graduate Cognitive Science Program.

## Cognitive Science

COG SCI 1 Introduction to Cognitive Science 4 Units

Terms offered: Fall 2017, Spring 2017, Spring 2016

This course introduces the interdisciplinary field of cognitive science. Lectures and readings will survey research from artificial intelligence, psychology, linguistics, philosophy, and neuroscience, and will cover topics such as the nature of knowledge, thinking, remembering, vision, imagery, language, and consciousness. Sections will demonstrate some of the major methodologies.

### Rules & Requirements

**Credit Restrictions:** Students will receive no credit for Cognitive Science 1 after completing Cognitive Science N1 or Cognitive Science C1/Education C1. A deficient grade in Cognitive Science C1/Education C1 or Cognitive Science N1 may be removed by taking Cognitive Science 1.

### Hours & Format

**Fall and/or spring:** 15 weeks - 3 hours of lecture and 2 hours of laboratory per week

### Additional Details

**Subject/Course Level:** Cognitive Science/Undergraduate

**Grading/Final exam status:** Letter grade. Final exam required.

COG SCI 1B Introduction to Cognitive Science 3 Units

Terms offered: Fall 2017, Fall 2016

This course introduces the interdisciplinary field of cognitive science. Lectures and readings will survey research in such fields as artificial intelligence, psychology, linguistics, philosophy, and neuroscience, and will cover topics such as the nature of knowledge, thinking, remembering, vision, imagery, language, and consciousness.

### Rules & Requirements

**Credit Restrictions:** Students will receive no credit for N1 after taking Cognitive Science 1 or Cognitive Science C1/Education C1.

### Hours & Format

**Fall and/or spring:** 15 weeks - 3 hours of lecture per week

### Additional Details

**Subject/Course Level:** Cognitive Science/Undergraduate

**Grading/Final exam status:** Letter grade. Final exam required.

COG SCI N1 Introduction to Cognitive Science 3 Units

Terms offered: Summer 2017 First 6 Week Session, Summer 2017

Second 6 Week Session, Summer 2016 Second 6 Week Session

This course introduces the interdisciplinary field of cognitive science. Lectures and readings will survey research in such fields as artificial intelligence, psychology, linguistics, philosophy, and neuroscience, and will cover topics such as the nature of knowledge, thinking, remembering, vision, imagery, language, and consciousness. Sections will demonstrate some of the major methodologies.

### Rules & Requirements

**Credit Restrictions:** Students will receive no credit for N1 after taking Cognitive Science 1 or Cognitive Science C1/Education C1.

### Hours & Format

**Summer:** 6 weeks - 7.5 hours of lecture and 0 hours of laboratory per week

### Additional Details

**Subject/Course Level:** Cognitive Science/Undergraduate

**Grading/Final exam status:** Letter grade. Final exam not required.

**Formerly known as:** C1

**COG SCI 88 Data Science and the Mind 2 Units**

Terms offered: Fall 2017, Spring 2017, Fall 2016

How does the human mind work? We explore this question by analyzing a range of data concerning such topics as human rationality and irrationality, human memory, how objects and events are represented in the mind, and the relation of language and cognition. This class provides students with critical thinking and computing skills that will allow them to work with data in cognitive science and related disciplines.

**Rules & Requirements**

**Prerequisites:** This course is meant to be taken concurrently with Computer Science C8/Statistics C8/Information C8. Students may take more than one 88 (data science connector) course if they wish, ideally concurrent with or after having taken the C8 course

**Hours & Format**

**Fall and/or spring:** 15 weeks - 1 hour of laboratory, 0.5 hours of discussion, and 0.5 hours of lecture per week

**Additional Details**

**Subject/Course Level:** Cognitive Science/Undergraduate

**Grading/Final exam status:** Letter grade. Final exam required.

**COG SCI 98 Directed Group Study 1 - 4 Units**

Terms offered: Fall 2017, Spring 2017, Fall 2016

Seminar for the group study of selected topics. Topics may be initiated by students subject to the approval of the major advisor.

**Rules & Requirements**

**Credit Restrictions:** Enrollment is restricted; see the Introduction to Courses and Curricula section of this catalog.

**Repeat rules:** Course may be repeated for credit. Course may be repeated for credit when topic changes.

**Hours & Format**

**Fall and/or spring:** 15 weeks - 1-4 hours of directed group study per week

**Additional Details**

**Subject/Course Level:** Cognitive Science/Undergraduate

**Grading/Final exam status:** Offered for pass/not pass grade only. Final exam not required.

**COG SCI 99 Supervised Independent Study and Research 1 - 4 Units**

Terms offered: Spring 2017, Spring 2016, Spring 2015

Independent study and research by arrangement with faculty.

**Rules & Requirements**

**Prerequisites:** Restricted to freshmen and sophomores; consent of instructor

**Repeat rules:** Course may be repeated for credit. Course may be repeated for credit when topic changes.

**Hours & Format**

**Fall and/or spring:** 15 weeks - 3-12 hours of independent study per week

**Additional Details**

**Subject/Course Level:** Cognitive Science/Undergraduate

**Grading/Final exam status:** Offered for pass/not pass grade only. Final exam not required.

**COG SCI C100 Basic Issues in Cognition 3 Units**

Terms offered: Fall 2017, Summer 2017 Second 6 Week Session, Fall 2016

Theoretical foundations and current controversies in cognitive science will be discussed. Basic issues in cognition--including perception, imagery, memory, categorization, thinking, judgment, and development--will be considered from the perspectives of philosophy, psychology, computer science, and physiology. Particular emphasis will be placed on the nature, implications, and limitations of the computational model of mind.

**Rules & Requirements**

**Credit Restrictions:** Students will receive no credit for C120 after taking 120A.

**Hours & Format**

**Fall and/or spring:** 15 weeks - 2 hours of lecture and 1 hour of discussion per week

**Summer:**

6 weeks - 5 hours of lecture and 2.5 hours of discussion per week  
8 weeks - 3.5 hours of lecture and 2 hours of discussion per week

**Additional Details**

**Subject/Course Level:** Cognitive Science/Undergraduate

**Grading/Final exam status:** Letter grade. Final exam required.

**Also listed as:** PSYCH C120

**COG SCI C101 The Mind and Language 4 Units**

Terms offered: Summer 2017 8 Week Session, Summer 2016 10 Week Session, Summer 2016 8 Week Session, Spring 2016

Conceptual systems and language from the perspective of cognitive science. How language gives insight into conceptual structure, reasoning, category-formation, metaphorical understanding, and the framing of experience. Cognitive versus formal linguistics. Implications from and for philosophy, anthropology, literature, artificial intelligence, and politics.

**Hours & Format**

**Fall and/or spring:** 15 weeks - 3 hours of lecture and 1 hour of discussion per week

**Summer:** 8 weeks - 6 hours of lecture and 1.5 hours of discussion per week

**Additional Details**

**Subject/Course Level:** Cognitive Science/Undergraduate

**Grading/Final exam status:** Letter grade. Final exam not required.

**Instructors:** G. Lakoff, E. Sweetser

**Formerly known as:** 105

**Also listed as:** LINGUIS C105

**COG SCI C102 Scientific Approaches to Consciousness 3 Units**

Terms offered: Fall 2014, Spring 2013, Spring 2011

This course will examine the nature of human consciousness from the interdisciplinary perspective of cognitive science. It will cover topics from the philosophy of mind, cognitive linguistics, neuroscience, psychology, and computational models.

Recommended Courses: PSYCH C120/CogSci C100 OR Psych/CogSci C127

**Rules & Requirements**

**Prerequisites:** Required courses: PSYCH 1, PSYCH W1, PSYCH 2, OR CogSci 1

**Hours & Format**

**Fall and/or spring:** 15 weeks - 2 hours of lecture and 1 hour of discussion per week

**Additional Details**

**Subject/Course Level:** Cognitive Science/Undergraduate

**Grading/Final exam status:** Letter grade. Final exam required.

**Also listed as:** PSYCH C129

**COG SCI C104 The Mind, Language, and Politics 4 Units**

Terms offered: Fall 2011, Spring 2011, Fall 2009

An analysis of contemporary liberal and conservative thought and language, in terms of the basic mechanisms of mind: frames, prototypes, radial categories, contested concepts, conceptual metaphor, metonymy, and blends. The framing of political discourse. The logic of political thought. The purpose of the course is to provide students interested in political and social issues with the tools to analyze the framing of, and logic behind, contemporary political discourse.

**Hours & Format**

**Fall and/or spring:** 15 weeks - 3 hours of lecture and 1 hour of discussion per week

**Additional Details**

**Subject/Course Level:** Cognitive Science/Undergraduate

**Grading/Final exam status:** Letter grade. Final exam not required.

**Instructor:** G. Lakoff

**Also listed as:** LINGUIS C104

**COG SCI C126 Perception 3 Units**

Terms offered: Spring 2017, Spring 2016, Spring 2015

An introduction to principal theoretical constructs and experimental procedures in visual and auditory perception. Topics will include psychophysics; perception of color, space, shape, and motion; pattern recognition and perceptual attention.

**Rules & Requirements**

**Prerequisites:** Consent of instructor. 101 recommended

**Hours & Format**

**Fall and/or spring:** 15 weeks - 2 hours of lecture and 1 hour of discussion per week

**Additional Details**

**Subject/Course Level:** Cognitive Science/Undergraduate

**Grading/Final exam status:** Letter grade. Final exam required.

**Also listed as:** PSYCH C126

**COG SCI C127 Cognitive Neuroscience 3 Units**

Terms offered: Fall 2017, Spring 2017, Fall 2016

This course will examine research investigating the neurological basis of cognition. Material covered will include the study of brain-injured patients, neurophysiological research in animals, and the study of normal cognitive processes in humans with non-invasive behavioral and physiological techniques such as functional Magnetic Resonance Imaging (fMRI), electroencephalography (EEG), and transcranial magnetic stimulation (TMS). Topics to be covered include perception, attention, memory, language, motor control, executive control, and emotion.

**Rules & Requirements**

**Prerequisites:** Psych/MCB C61 OR Psych 110, or Psych C120/COG SCI C100, and relevant prerequisites. Courses may be taken simultaneously with Psych C127. Enrollment limited to students who are declared Psych, CogSci, MCB, or IB majors, or by permission of the instructor if the student has declared another major

**Hours & Format**

**Fall and/or spring:** 15 weeks - 2 hours of lecture and 1 hour of discussion per week

**Additional Details**

**Subject/Course Level:** Cognitive Science/Undergraduate

**Grading/Final exam status:** Letter grade. Final exam required.

**Also listed as:** PSYCH C127

**COG SCI 131 Computational Models of Cognition 4 Units**

Terms offered: Fall 2017, Fall 2016, Fall 2015

This course will provide advanced students in cognitive science and computer science with the skills to develop computational models of human cognition, giving insight into how people solve challenging computational problems, as well as how to bring computers closer to human performance. The course will explore three ways in which researchers have attempted to formalize cognition -- symbolic approaches, neural networks, and probability and statistics -- considering the strengths and weaknesses of each.

**Rules & Requirements**

**Prerequisites:** Calculus, discrete mathematics, C1, Computer Science 61A, or equivalents

**Credit Restrictions:** Student will receive no credit for Cognitive Science 131 after taking Cognitive Science C131/Psychology C123. A deficient grade in Cognitive C131/Psychology C123 may be removed by taking Cognitive Science 131.

**Hours & Format**

**Fall and/or spring:** 15 weeks - 3 hours of lecture and 1 hour of discussion per week

**Additional Details**

**Subject/Course Level:** Cognitive Science/Undergraduate

**Grading/Final exam status:** Letter grade. Alternative to final exam.

**COG SCI C140 Quantitative Methods in Linguistics 4 Units**

Terms offered: Fall 2017, Spring 2017, Spring 2016, Spring 2015

An introduction to research using quantitative analysis in linguistics and cognitive science. Students will learn how to use the R programming environment for statistical analysis and data visualization.

**Rules & Requirements**

**Prerequisites:** 100 or graduate student standing

**Hours & Format**

**Fall and/or spring:** 15 weeks - 3 hours of lecture and 1 hour of discussion per week

**Additional Details**

**Subject/Course Level:** Cognitive Science/Undergraduate

**Grading/Final exam status:** Letter grade. Final exam required.

**Instructor:** Gahl

**Also listed as:** LINGUIS C160

**COG SCI C142 Language and Thought 3 Units**

Terms offered: Summer 2017 First 6 Week Session, Spring 2017, Summer 2016, Spring 2016

This seminar explores the relation of language and thought. Is language uniquely human, and if so, what does this reveal about the human mind? Does the particular language you speak affect the way you think, or do human languages reflect a universal conceptual repertoire? The goal of this class is to familiarize you with a set of classic arguments on these themes, together with current research that evaluates these arguments, through weekly reading and discussion.

**Hours & Format**

**Fall and/or spring:** 15 weeks - 3 hours of seminar per week

**Summer:** 6 weeks - 7.5 hours of seminar per week

**Additional Details**

**Subject/Course Level:** Cognitive Science/Undergraduate

**Grading/Final exam status:** Letter grade. Final exam required.

**Instructor:** Regier

**Also listed as:** LINGUIS C142

**COG SCI C147 Language Disorders 3 Units**

Terms offered: Summer 2016 First 6 Week Session, Summer 2016 Second 6 Week Session, Summer 2015 10 Week Session, Summer 2015 Second 6 Week Session, Spring 2013

An introduction to experimental and theoretical research on language disorders, particularly acquired aphasia in adults. Major course themes include the relationship between normal and pathological language, and the usefulness of linguistic analysis for empirical research. Topics include phonetic, phonological, morphological, semantic, syntactic, and pragmatic aspects of language disorders in mono- and multilingual speakers of typologically diverse languages.

**Rules & Requirements**

**Prerequisites:** Linguistics 100 or consent of the instructor

**Hours & Format**

**Fall and/or spring:** 15 weeks - 3 hours of lecture per week

**Summer:** 6 weeks - 7.5 hours of lecture per week

**Additional Details**

**Subject/Course Level:** Cognitive Science/Undergraduate

**Grading/Final exam status:** Letter grade. Final exam required.

**Instructor:** Gahl

**Also listed as:** LINGUIS C147

**COG SCI 190 Special Topics in Cognitive Science 3 Units**

Terms offered: Fall 2017, Fall 2016, Spring 2009  
Selected topics in the study of Cognitive Science.

**Rules & Requirements**

**Prerequisites:** Consent of instructor

**Repeat rules:** Course may be repeated for credit as topic varies. Course may be repeated for credit when topic changes.

**Hours & Format**

**Fall and/or spring:** 15 weeks - 2 hours of seminar per week

**Additional Details**

**Subject/Course Level:** Cognitive Science/Undergraduate

**Grading/Final exam status:** Letter grade. Final exam not required.

**COG SCI H195A Special Study for Honors Candidates 1 - 3 Units**

Terms offered: Fall 2017, Spring 2017, Fall 2016  
Independent study and preparation of an honors thesis under the supervision of a faculty member.

**Rules & Requirements**

**Prerequisites:** Open only to senior cognitive science majors in the honors program

**Repeat rules:** Course may be repeated for a maximum of 6 units. Course may be repeated for a maximum of 6 units.

**Hours & Format**

**Fall and/or spring:** 15 weeks - 0 hours of independent study per week

**Additional Details**

**Subject/Course Level:** Cognitive Science/Undergraduate

**Grading/Final exam status:** Letter grade. Final exam not required.

**COG SCI H195B Special Study for Honors Candidates 1 - 3 Units**

Terms offered: Fall 2017, Spring 2017, Fall 2016  
Independent study and preparation of an honors thesis under the supervision of a faculty member.

**Rules & Requirements**

**Prerequisites:** Open only to senior cognitive science majors in the honors program

**Repeat rules:** Course may be repeated for a maximum of 6 units. Course may be repeated for a maximum of 6 units.

**Hours & Format**

**Fall and/or spring:** 15 weeks - 0 hours of independent study per week

**Additional Details**

**Subject/Course Level:** Cognitive Science/Undergraduate

**Grading/Final exam status:** Letter grade. Final exam not required.

**COG SCI 197 Academic Internship Credit 1 - 3 Units**

Terms offered: Not yet offered  
Academic internship credit for students pursuing an internship related to their studies in the Cognitive Science Program. Limited to Cognitive Science declared majors with at least 60 units, and a 2.0 GPA.

**Rules & Requirements**

**Repeat rules:** Course may be repeated for credit when topic changes.

**Hours & Format**

**Fall and/or spring:** 15 weeks - 2-7 hours of independent study per week

**Summer:** 10 weeks - 4-11 hours of independent study per week

**Additional Details**

**Subject/Course Level:** Cognitive Science/Undergraduate

**Grading/Final exam status:** Offered for pass/not pass grade only. Final exam not required.

**COG SCI 198 Directed Group Study 1 - 4 Units**

Terms offered: Fall 2017, Spring 2017, Fall 2016

Seminar for the group study of selected topics. Topics may be initiated by students subject to the approval of the major advisor.

**Rules & Requirements**

**Prerequisites:** Upper division standing and consent of instructor

**Repeat rules:** Course may be repeated for credit. Course may be repeated for credit when topic changes.

**Hours & Format**

**Fall and/or spring:** 15 weeks - 1-4 hours of directed group study per week

**Additional Details**

**Subject/Course Level:** Cognitive Science/Undergraduate

**Grading/Final exam status:** Offered for pass/not pass grade only. Final exam not required.

**COG SCI 199 Independent Study in Research 1 - 4 Units**

Terms offered: Fall 2017, Spring 2017, Fall 2016

Independent study and research by arrangement with faculty.

**Rules & Requirements**

**Prerequisites:** Restricted to juniors and seniors

**Repeat rules:** Course may be repeated for credit. Course may be repeated for credit when topic changes.

**Hours & Format**

**Fall and/or spring:** 15 weeks - 1-4 hours of independent study per week

**Summer:** 8 weeks - 1.5-7.5 hours of independent study per week

**Additional Details**

**Subject/Course Level:** Cognitive Science/Undergraduate

**Grading/Final exam status:** Offered for pass/not pass grade only. Final exam not required.

**COG SCI 201 Graduate Seminar on the Mind and Language 4 Units**

Terms offered: Spring 2016, Spring 2015, Spring 2014

Thought appears to be grounded in the sensorimotor system, and to grow out of the nature of the physical brain and body; human reason also makes extensive and fundamental use of imaginative mechanisms such as metaphor and metonymy. The readings in this course review that evidence, much of which comes from the study of how people categorize and reason using categories. The course will include both discussions and research projects appropriate to students in each of the disciplines.

**Rules & Requirements**

**Prerequisites:** Graduate standing or consent of instructor

**Hours & Format**

**Fall and/or spring:** 15 weeks - 4 hours of seminar per week

**Additional Details**

**Subject/Course Level:** Cognitive Science/Graduate

**Grading:** Letter grade.

**COG SCI 300 Teaching Cognitive Science 1 - 2 Units**

Terms offered: Fall 2009, Spring 2009, Fall 2008

This course will provide training in a variety of teaching techniques, will review relevant pedagogical issues, and will assist undergraduate students in mastering their initial teaching experiences.

**Rules & Requirements**

**Repeat rules:** Course may be repeated for credit. Course may be repeated for credit when topic changes.

**Hours & Format**

**Fall and/or spring:** 15 weeks - 1-2 hours of seminar per week

**Additional Details**

**Subject/Course Level:** Cognitive Science/Professional course for teachers or prospective teachers

**Grading:** Offered for satisfactory/unsatisfactory grade only.