COGNITIVE SCIENCE, BACHELOR OF SCIENCE

College of Letters & Science

The Major Programs

The Cognitive Science major is designed to provide a broad interdisciplinary approach to the study of mind that includes courses from different departments and attracts students with a variety of interests. It emphasizes a multifaceted approach to the study of mind that integrates concepts and techniques from psychology, artificial intelligence, linguistics, neurology, philosophy and other relevant fields.

For students interested in the liberal arts the Cognitive Science major can be pursued as a Bachelor of Arts (A.B.) program. Alternatively, it can be pursued as a Bachelor of Science (B.S.) program for students with a stronger interest in the mathematical, neurological and computational foundations of the discipline. The main objective of both programs is to give the student a broad grounding in the integrated sciences of the mind and to connect approaches from different fields. Students must complete a number of core courses for the degree, as well as a number of specialty courses on such wide-ranging topics as logic for artificial intelligence, computational linguistics, cognitive neuroscience, animal cognition and the psychology of music.

Career Pathways

A degree in Cognitive Science provides broad intellectual foundations useful for careers in a variety of areas, including teaching, business, social work/counseling and the information technology industry. Undergraduate education in cognitive science also prepares the student for graduate study in appropriate subfields of psychology, linguistics, philosophy and informatics. It is also suitable training for pre-medicine, pre-law, and pre-management students.

Bachelor of Science (B.S.) program students select to pursue either the Computational Emphasis (Emphasis 1) **or** the Neuroscience Emphasis (Emphasis 2).

Major Advisor

Staff advisors are located in the Blue Ridge Office Building. For information about how to contact a major advisor, see Major Advising (https://yellowcluster.ucdavis.edu/advising/undergraduate/major-advising/).

The major requirements below are in addition to meeting University Degree Requirements (https://catalog.ucdavis.edu/undergraduate-education/university-degree-requirements/) & College Degree Requirements (https://catalog.ucdavis.edu/undergraduate-education/college-degree-requirements/); unless otherwise noted. The minimum total units required for both the Computational and Neuroscience emphases are 107.

Computational Emphasis

Code	Title	Units
Preparatory Subject Matter		
Cognitive Science:		
CGS 001/PHI 010	Introduction to Cognitive Science	4
Introduction to Mathematical Abstraction		
ECS 020	Discrete Mathematics For Computer Science	4
Programming		
Choose a series:		12
ECS 032A	Introduction to Programming	
or ECS 032AV	Introduction to Programming	
AND		
ECS 032B	Introduction to Data Structures	
AND		
ECS 034	Software Development in UNIX & C++ (prerequisite is ECS 032C)	
OR		
ECS 036A & ECS 036B & ECS 036C	Programming & Problem Solving and Software Development & Object-Oriented Programming in C++ and Data Structures, Algorithms, & Programming	
Linguistics		
LIN 001	Introduction to Linguistics	4
or LIN 001Y	Introduction to Linguistics	
Calculus		
Choose a series:		12
MAT 017A & MAT 017B & MAT 017C	Calculus for Biology & Medicine and Calculus for Biology & Medicine and Calculus for Biology & Medicine	
OR		
MAT 019A & MAT 019B & MAT 019C	Calculus for Data-Driven Applications and Calculus for Data-Driven Applications and Calculus for Data-Driven Applications	
OR		
MAT 021A & MAT 021B & MAT 021C	Calculus and Calculus and Calculus	
Linear Algebra & MATLAB		*4*
MAT 022A & 022AL	Linear Algebra and Linear Algebra Computer Laboratory	
OR		
MAT/BIS 027A	Linear Algebra with Applications to Biology	
Philosophy		
PHI 012	Introduction to Symbolic Logic	4
PHI 013G	Minds, Brains, & Computers with Discussion (Discontinued for winter 2026) **	4
Psychology		
PSC 001	General Psychology	4
or PSC 001V	General Psychology	
or PSC 001Y	General Psychology	
Research Methods		
PSC 041	Research Methods in Psychology	4
or PSC 041V	Research Methods in Psychology	
Statistics		
STA 013	Elementary Statistics	4
or STA 013V	Elementary Statistics	
or STA 013Y	Elementary Statistics	

or STA 100	Applied Statistics for Biological Sciences	
Preparatory Subject Matter Subtotal		**60**

Depth Subject Matter [2]

Important: Each class may only be used to satisfy one Cognitive Science major requirement. The same course cannot be used for multiple groups.

Take each of the courses below:		*8*
PSC 100	Introduction to Cognitive Psychology	
or PSC 100Y	Introduction to Cognitive Psychology	
PHI 112	Intermediate Symbolic Logic	
Group A: Cognitive Science Topical Courses		*4*
CGS Topical Course: choose one upper division course from this list. (https://ucdavis.box.com/s/qvabknkdo6tuazt836bq3uycctznzjjc/) [1]		
Group B: Computation		
Choose three from Group B:		12
ECS 120	Theory of Computation	
ECS 170	Introduction to Artificial Intelligence	
ECS 171	Machine Learning	
LIN 177	Computational Linguistics	
PHI 133	Logic, Probability, & Artificial Intelligence	
Group C: Neuroscience		
Choose one from Group C:		4
CGS 107/ PSC 133/ECN 107	Neuroeconomics/Reinforcement Learning & Decision Making	
LIN 175	Biological Basis of Language	
PSC 101	Introduction to Biological Psychology [2]	
PSC 135	Cognitive Neuroscience: The Biological Foundations of the Mind [2]	
PSC 139	Advanced Cognitive Neuroscience	
PSC 145	Developmental Cognitive Neuroscience	
Choose one from Group D or E:		4
Group D: Philosophy		
PHI 103	Philosophy on Mind	
PHI 104	The Evolution of Mind	
PHI 129	Knowledge & the A Priori	
PHI 136	Formal Epistemology	
Group E: Linguistics		
LIN 103A	Linguistic Analysis I: Phonetics, Phonology, Morphology	
or LIN 103AV	Linguistic Analysis I: Phonetics, Phonology, & Morphology	
LIN 103B	Linguistic Analysis II: Morphology, Syntax, Semantics	
LIN 150	Languages of the World	
LIN 182	Multilingualism	
Group F: Psychology		
Choose four from Group F:		15-18
PSC 101	Introduction to Biological Psychology [2]	
PSC 103A	Statistical Analysis of Psychological Data	
PSC 103B	Statistical Analysis of Psychological Data	
PSC 113	Developmental Psychobiology	
PSC 121	Physiological Psychology	
PSC/NPB 124	Comparative Neuroanatomy	

PSC 130	Human Learning & Memory	
PSC 131	Perception	
PSC 135	Cognitive Neuroscience: The Biological Foundations of the Mind [2]	
PSC 136	Psychology of Music	
PSC 137	Neurobiology of Learning & Memory	
PSC 140	Developmental Psychology	
or PSC 140V	Developmental Psychology	
or PSC 140Y	Developmental Psychology	
PSC 141	Cognitive Development	
Depth Subject Matter Subtotal		**47-50**
Total Units		**107-110**

1

For a list of approved *CGS Topical Course*s, please see the major worksheet (https://ucdavis.app.box.com/file/458212968122/?s=iu3cby5n5aimx4xvh5vkn26scb1bcqq4).

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Important: Each class may only be used to satisfy one Cognitive Science major requirement. The same course cannot be used for multiple groups.

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Course(s) discontinued; see your advisor for course options.

Neuroscience Emphasis

Code	Title	Units
Preparatory Subject Matter		
Cognitive Science		
CGS 001/PHI 010	Introduction to Cognitive Science	4
Biological Science		
BIS 002B	Introduction to Biology: Principles of Ecology & Evolution	5
BIS 002C	Introduction to Biology: Biodiversity & the Tree of Life	5
BIS 002A	Introduction to Biology: Essentials of Life on Earth (recommended to take after BIS 002B and BIS 002C)	5
Linguistics		
LIN 001	Introduction to Linguistics	4
or LIN 001Y	Introduction to Linguistics	
Mathematics		
Choose a series:		12
MAT 017A & MAT 017B & MAT 017C	Calculus for Biology & Medicine and Calculus for Biology & Medicine and Calculus for Biology & Medicine	
OR		
MAT 019A & MAT 019B & MAT 019C	Calculus for Data-Driven Applications and Calculus for Data-Driven Applications and Calculus for Data-Driven Applications	
OR		
MAT 021A & MAT 021B & MAT 021C	Calculus and Calculus and Calculus	
Philosophy		

PHI 013G	Minds, Brains, & Computers with Discussion (Discontinued for winter 2026) [**]	4

Physics

Choose a series:		12-15
PHY 007A & PHY 007B & PHY 007C	General Physics and General Physics and General Physics	
OR		
PHY 009A & PHY 009B & PHY 009C	Classical Physics and Classical Physics and Classical Physics	

Psychology

PSC 001	General Psychology	4
or PSC 001V	General Psychology	
or PSC 001Y	General Psychology	

Research Methods

PSC 041	Research Methods in Psychology	4
or PSC 041V	Research Methods in Psychology	

Statistics

STA 013	Elementary Statistics	4
or STA 013Y	Elementary Statistics	
or STA 100	Applied Statistics for Biological Sciences	
Preparatory Subject Matter Subtotal		63-66

Depth Subject Matter [2]

Important: Each class may only be used to satisfy one Cognitive Science major requirement. The same course cannot be used for multiple groups.

Take each of these courses below:		9
NPB 100	Neurobiology	
PSC 103A	Statistical Analysis of Psychological Data	

Group A: Cognitive Science Topical Courses 4

CGS Topical Course: choose one upper division course from this list. (https://ucdavis.box.com/s/qvabknkdo6tuazt836bq3uyccctznzjjc/) [1]	

Group B: Computation

Choose one from Group B:		4-5
LIN 177	Computational Linguistics	
NPB 167	Computational Neuroscience (offered very irregularly)	

Group C: Neuroscience

Choose 12-13 units from Group C:		12-13
CGS 107/ PSC 133/ECN 107	Neuroeconomics/Reinforcement Learning & Decision Making	
LIN 175	Biological Basis of Language	
NPB 161	Developmental Neurobiology (3 units; Discontinued for winter 2026) [**]	
NPB 162	Neural Mechanisms of Behavior (3 units)	
NPB 163	Systems Neuroscience	
NPB 164	Mammalian Vision (Discontinued for winter 2026) [**]	
NPB 165	Neurobiology of Speech Perception (3 units)	
PSC 101	Introduction to Biological Psychology [2]	

PSC 121	Physiological Psychology [2]	
PSC 123/NPB 152	Hormones & Behavior (3 units)	
PSC 135	Cognitive Neuroscience: The Biological Foundations of the Mind [2]	
PSC 139	Advanced Cognitive Neuroscience	
PSC 145	Developmental Cognitive Neuroscience	
Choose two from Groups D or E:		8

Group D: Philosophy

PHI 103	Philosophy on Mind
PHI 104	The Evolution of Mind
PHI 129	Knowledge & the A Priori
PHI 136	Formal Epistemology

Group E: Linguistics

LIN 103A	Linguistic Analysis I: Phonetics, Phonology, Morphology
or LIN 103AV	Linguistic Analysis I: Phonetics, Phonology, & Morphology
LIN 103B	Linguistic Analysis II: Morphology, Syntax, Semantics
LIN 150	Languages of the World
LIN 182	Multilingualism

Group F: Psychology

Choose two from Group F:		7
PSC 100	Introduction to Cognitive Psychology	
or PSC 100Y	Introduction to Cognitive Psychology	
PSC 101	Introduction to Biological Psychology [2]	
PSC 113	Developmental Psychobiology	
PSC 121	Physiological Psychology [2]	
PSC/NPB 124	Comparative Neuroanatomy	
PSC 130	Human Learning & Memory	
PSC 131	Perception	
PSC 132	Language & Cognition	
PSC 135	Cognitive Neuroscience: The Biological Foundations of the Mind [2]	
PSC 136	Psychology of Music	
PSC 137	Neurobiology of Learning & Memory	
PSC 140	Developmental Psychology	
or PSC 140V	Developmental Psychology	
or PSC 140Y	Developmental Psychology	
PSC 141	Cognitive Development	
Depth Subject Matter Subtotal		44-46
Total Units		**107-112**

[1]

For a list of approved *CGS Topical Course*s, please see the major worksheet (https://ucdavis.app.box.com/file/458205152398/?s=7ielx1z8rp4i3qq5ajzxe5hzbmw2wyz3).

[2]

Important: Each class may only be used to satisfy one Cognitive Science major requirement. The same course cannot be used for multiple groups.

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Course(s) discontinued; see your advisor for course options.