

# COGNITIVE SCIENCE MAJOR

Students must also complete the Undergraduate Registration Requirement (<https://catalogs.northwestern.edu/undergraduate/requirements-policies/undergraduate-registration-requirement/>) and the degree requirements of their home school.

**NOTE: This Catalog describes Weinberg College BA requirements that pertain to students who matriculated at Northwestern after spring quarter 2023. Refer to the Archives (<https://catalogs.northwestern.edu/archives/>) if you are following BA requirements described in the 2018-2019 through 2022-2023 editions.**

## Course Title

### Major Requirements (14 units)

#### 4 required introductory courses:

COG_SCI 110-0	Introduction to Cognitive Science
COMP_SCI 110-0 or COMP_SCI 111-0	Introduction to Computer Programming Fundamentals of Computer Programming
STAT 202-0 or PSYCH 201-0	Introduction to Statistics and Data Science Statistical Methods in Psychology
COG_SCI 202-0	Evaluating Evidence

#### 1 required proseminar

COG_SCI 366-0	Cognitive Science Proseminar
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#### 5 Theme courses, one from each of the five themes listed below.

##### Theme: Brains & Bodies

COG_SCI 210-0	Language and the Brain
LING 250-0	Sound Patterns in Human Language
MUS_THRY 251-0	Intro to Music Cognition
NEUROSCI 326-0	Neurobiology of Learning and Memory
PSYCH 221-0	Introduction to Neuroscience

##### Theme: Learning over Lifetimes

COG_SCI 211-0	Learning, Representation & Reasoning
PSYCH 228-0	Cognitive Psychology
PSYCH 244-0	Developmental Psychology

##### Theme: Models & Machines

COG_SCI 207-0	Introduction to Cognitive Modeling
COMP_SCI 348-0	Introduction to Artificial Intelligence
LING 260-0	Formal Analysis of Words & Sentences
LING 334-0	Introduction to Computational Linguistics
PHIL 225-0	Minds and Machines
PHIL 325-0	Philosophy of Mind

##### Theme: Reasoning & Rhetoric

LING 270-0	Meaning
PHIL 255-0	Theory of Knowledge
POLI_SCI 335-0	Political Psychology
PSYCH 333-0	Psychology of Thinking
PSYCH 373-0	Decision Making

##### Theme: Collective Cognition

ANTHRO 377-0	Psychological Anthropology
COG_SCI 345-0	Presenting Ideas & Data
LOC 214-0	Culture and Cognition
LOC 308-0	Redesigning Everyday Organizations
LOC 313-0	Learning and Thinking in Organizations
PSYCH 344-0	Cultural Psychology

#### 4 Electives chosen from the Theme lists above or from the Electives listed below

- Of the 9 Theme and Elective courses (5 Theme courses plus 4 Electives) at least five must be at the 300-level or above. Other 300- and 400-level courses beyond those listed here may be counted as Electives with consent of the cognitive science adviser.
- Independent study is strongly recommended. COG\_SCI 399-0 or another independent study approved by the cognitive science adviser may count as an Elective course.
- For students pursuing honors, the second quarter Senior Thesis Seminar (COG\_SCI 398-2) may count as an Elective course.
- At most 3 courses counted toward the cognitive science major may be double-counted toward another major. Courses used to meet major requirements may not be double-counted toward a minor.

## Electives

Students following the major requirements in this catalog year may choose any of the elective courses listed below regardless of academic area. Students following requirements in a prior catalog year should refer to that catalog for the required allocation of courses among designated advanced elective areas.

## Elective Courses

Course	Title
ANTHRO 360-0	Language and Culture
ANTHRO 361-0	Talk as Social Action
ANTHRO 389-0	Ethnographic Methods and Analysis
BIOL_SCI 302-0	Fundamentals of Neurobiology
CSD 301-0	Anatomy and Physiology of the Vocal Mechanism
CSD 302-0	Anatomy and Physiology of the Peripheral Hearing Mechanism
CSD 303-0	Brain and Cognition
CSD 306-0	Psychoacoustics
CSD 309-0	Culture, Language and Learning
CSD 310-0	Biological Foundations of Speech and Music
CSD 342-0	Language and Cognition in Atypical Development
CSD 373-0	Introduction to Learning Disabilities
CSD 376-0	Diagnostic & Remedial Approaches for Children With Learning Problems
CSD 382-0	Autism Spectrum Disorder
CSD 388-0	Attention Deficit Disorder and Related Disorders
CSD 392-0	Language Development and Usage
CSD 406-0	Medical Aspects of Audiology
CSD 444-0	Development and Disorders of Mathematics
CSD 457-0	Language Science
COMP_SCI 325-0	Artificial Intelligence Programming
COMP_SCI 337-0	Natural Language Processing
COMP_SCI 338-0	Practicum in Intelligent Information Systems
COMP_SCI 344-0	Design of Computer Problem Solvers
COMP_SCI 349-0	Machine Learning
COMP_SCI 371-0	Knowledge Representation and Reasoning
COMP_SCI 372-0	Designing and Constructing Models with Multi-Agent Languages
ECON 330-0	Behavioral Economics
LING 300-0	Topics in Linguistics
LING 315-0	Experimental Approaches to Word Form Processing
LING 316-0	Experimental Syntax
LING 317-0	Experimental Pragmatics

LING 321-0	Bilingualism
LING 330-0	Research Methods in Linguistics
LING 341-0	Language Typology
LING 342-0	Structure of Various Languages
LING 350-0	Fundamentals of Laboratory Phonology
LING 360-0	Fundamentals of Syntax
LING 370-0	Fundamentals of Meaning
LING 371-0	Reference
LING 372-0	Pragmatics
LING 373-0	Implicature
LING 450-1	Laboratory Phonology I
LING 460-2	Syntactic Analysis II
LRN_SCI 301-0	Design of Learning Environments
LRN_SCI 401-0	Knowledge Representation for the Learning Sciences
LRN_SCI 425-0	Introduction to Design for the Learning Sciences
LRN_SCI 426-0	Design of Technological Tools for Thinking and Learning
LRN_SCI 429-0	Design of Learning Environments
MUSIC_ED 437-0	Psychology of Music Teaching & Learning
NEUROSCI 320-0	Animal Behavior
NEUROSCI 360-0	Neuroscience of Brain Disorders
NEUROSCI 377-0	Neurobiology of Sensation and Perception
PHIL 250-0	Elementary Logic II
PHIL 327-0	Philosophy of Psychology
PHIL 330-0	Practical Reasoning and Choice
PHIL 350-0	Advanced Logic
PHIL 351-0	Advanced Topics in Philosophical Logic
PHIL 353-0	Philosophy of Language
PSYCH 324-0	Perception
PSYCH 327-0	Brain and Cognition
PSYCH 328-0	Brain Damage and the Mind
PSYCH 336-0	Consciousness
PSYCH 370-0	Cognitive Development
PSYCH 372-0	Language and Cognition
PSYCH 374-0	Human Memory
PSYCH 461-0	Reasoning and Representation
PSYCH 466-0	Analogy and Similarity
<i>Also relevant sections of:</i>	
ANTHRO 390-0	Topics In Anthropology
CSD 369-0	Special Topics in Communication Sciences and Disorders
COMP_SCI 396-0	Special Topics in Computer Science
LRN_SCI 451-0	Topics in Learning Sciences
MUS_THRY 335-0	Selected Topics in Music Theory
MUS_THRY 336-0	Selected Topics in Music Cognition
MUS_THRY 435-0	Selected Topics in Music Theory
MUS_THRY 436-0	Selected Topics in Music Cognition
PHIL 410-0	Seminar: Special Topics in Philosophy
PHIL 426-0	Seminar in Philosophy of Mind
PSYCH 391-0	Advanced Seminar in Cognition or Neuroscience
PSYCH 460-0	Special Topics in Cognition
PSYCH 470-0	Topics in Brain, Behavior, and Cognition

the guidance of a faculty mentor and present the proposal, along with the names of the mentor and a second faculty reader, to the program committee for review. After committee approval of the proposal, students normally enroll in COG\_SCI 398-1 Senior Thesis Seminar in fall and COG\_SCI 398-2 Senior Thesis Seminar in winter of senior year. With the permission of the director of undergraduate studies, 1 quarter of COG\_SCI 399-0 Independent Study may be substituted for one of either COG\_SCI 398-1 Senior Thesis Seminar or COG\_SCI 398-2 Senior Thesis Seminar.

Students whose projects, theses, and grades meet program criteria are recommended to the college for graduation with honors. For more information consult the director of undergraduate studies and see the section on *Honors in Cognitive Science* on the Cognitive Science Undergraduate page.

## Honors in Cognitive Science

Majors with strong academic records and an interest in pursuing honors should contact the director of undergraduate studies in early spring of junior year. Qualifying students prepare a thesis proposal under