
COGNITIVE SCIENCE BS

Cognitive Science

College of Arts and Humanities
Department of Philosophy
227 Armstrong Hall • 507-389-2012

Cognitive Science Program Director: Richard Liebendorfer.

Biology Concentration Advisor: Geoffrey Goellner
Computer Science Concentration Advisor: Rebecca Bates
Philosophy Concentration Advisor: Richard Liebendorfer
Psychology Concentration Advisor: Bradley Arsznov
Cognitive Science Program Core Faculty: Dawn Albertson (Psychology), Bradley Arsznov (Psychology), Rebecca Bates (Computer Science), Michael Bentley (Biology), Geoffrey Goellner (Biology), Moses Langley (Psychology), Karla Lassonde (Psychology), Richard Liebendorfer (Philosophy), Guarionex Salvia (Computer Science), Daniel Toma (Biology), Sun Kyeong Yu (Philosophy), Julie Wulfemeyer (Philosophy)

Cognitive Science is an interdisciplinary inquiry concerned with understanding the nature and development of such intelligent capacities as perception, language, reasoning, learning and problem-solving, whether these capacities are realized in biological or artificial systems. Such inquiry is by its very nature interdisciplinary, integrating methodological, theoretical and practical foci of Biology, Computer Science, Philosophy and Psychology into a single course of study.

Academic Map/Degree Plan at www.mnsu.edu/programs/#All

POLICIES/INFORMATION

The cognitive science major is a broad major and does not require that a student complete a minor in addition to the major. The major requires approximately 71-79 credits (depending on area of concentration) including prerequisites. As prerequisites for the major students must take CHEM 201, MATH 121, PSYC 201, **OR** STAT 354. Some of prerequisite requirements also fulfill General Education goal areas. Some of the concentrations have additional prerequisites (see course descriptions for more information). The program requirements below should be read carefully.

Each Cognitive Science major will concentrate in one of the four participating disciplines: Biology, Computer Science, Philosophy and Psychology. The concentration typically requires 24 credits of work. In addition to the concentration each student will take core courses from each of the other three participating disciplines. Each core will typically require 12 credits of course work, a total of 36 credits. A student need not do the core for her or his area of concentration since the core is already included in the concentration.

The structure of the major insures that students have a solid grounding in each of the four disciplines as well as a specific concentration in one area that draws on the interdisciplinary foundation. Graduates of the program will be prepared for a variety of post-baccalaureate options.

- They will be prepared for any of the careers open to graduates with degrees in one of the participating disciplines.
- They will be prepared for graduate study in traditional programs in Biology, Computer Science, Psychology or Philosophy.
- They will also be prepared for study in one of the many recently developed graduate Cognitive Science programs as well as graduate study in related programs such as cognition, brain, and behavior, cognitive neuroscience, biopsychology and human-computer interaction.

Those who choose to study the law, a path frequently chosen by philosophy majors, will be well suited for legal practice concerned with the variety of legal complexities associated with the development of new technology.

Admission to the major is granted by the Cognitive Science Program. Minimum admission requirements are:

- a minimum of 32 earned semester hours.
- a minimum cumulative GPA of 2.5

Contact the Cognitive Science Program Director or the Program Advisors in one of the four participating departments.

Grading Policy. All coursework applied towards the major must be taken for a letter grade except for courses offered only as P/N. A minimum grade of "C-" is

required in all courses which are to be applied towards the major. In addition, a minimum grade of "C-" is required for all prerequisite courses where dictated by individual department policies. Grades of "D" are not accepted by the program for Prerequisites to the major, major common core and major restricted elective courses.

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Degree completion = 120 credits

Required General Education

BIOL	105	General Biology I (4)
MATH	121	Calculus I (4)
<i>Choose 5 Credits</i>		
CHEM	111	Chemistry of Life Process Part II (Organic & Biochemistry) (5)
CHEM	201	General Chemistry I (5)

Prerequisites to the Major

CS	110	Computer Science I (4)
PSYC	206	Introduction to Cognitive Science (4)
<i>Choose 3 - 4 Credits</i>		
HLTH	475	Biostatistics (3)
PSYC	201	Statistics for Psychology (4)
STAT	154	Elementary Statistics (4)
STAT	354	Concepts of Probability & Statistics (3)

Major Common Core

BIOL	220	Human Anatomy (4)
BIOL	324	Neurobiology (3)
BIOL	330	Principles of Human Physiology (4)
CS	111	Computer Science II (4)
CS	230	Introduction to Intelligent Systems (4)
PHIL	101W	Philosophical Problem: The Mind-Body Problem (3)
PHIL	475	Philosophical Issues in Cognitive Science (3)
PSYC	211W	Research Methods and Design (4)
PSYC	321	Brain and Behavior (4)
PSYC	325	Introduction to Cognitive Psychology (4)

Major Restricted Electives

In addition to the common core courses, students will select one of the four core areas as their discipline of emphasis and complete 3-4 specialized courses in that area.

Computer Science Electives (choose 3 - 4 Credits)

CS	430	Artificial Intelligence (3)
IT	482	Human Computer Interaction (4)

Philosophy Electives Choose 6 Credits

PHIL	311	Symbolic Logic (3)
PHIL	410	Philosophy of Language (3)
PHIL	474	Philosophy of the Mind (3)
PHIL	476	Philosophy of Perception (3)
PHIL	477	Animal Minds (3)
PHIL	480	Philosophy of Science (3)
PHIL	481	Philosophy of Biology (3)

Major Emphasis: Biology

BIOL	106	General Biology II (4)
BIOL	211	Genetics (4)
<i>Choose 3 - 4 Credits</i>		
BIOL	320	Cell Biology (4)
BIOL	424	Developmental Biology (3)
BIOL	435	Histology (4)
BIOL	436	Animal Behavior (4)
BIOL	438	General Endocrinology (3)
BIOL	460	Introduction to Toxicology (3)
BIOL	466	Principles of Pharmacology (3)
BIOL	479	Molecular Biology (4)

Major Emphasis: Computer Science

CS	305	Algorithmic Structures (4)
CS	498W	Senior Thesis (4)

Choose 3 - 4 Credits

CS	315	Introduction to Cryptographic Methods (4)
CS	330	Introduction to Neural Computation (4)
CS	430	Artificial Intelligence (3)
IT	482	Human Computer Interaction (4)

Major Emphasis: Philosophy

PHIL	497	Philosophy-Cognitive Science Thesis (3)
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Choose 3 Credits

Choose a course not used to satisfy Core Area 3

PHIL	410	Philosophy of Language (3)
PHIL	474	Philosophy of the Mind (3)
PHIL	476	Philosophy of Perception (3)
PHIL	477	Animal Minds (3)
PHIL	480	Philosophy of Science (3)
PHIL	481	Philosophy of Biology (3)

Choose 6 Credits

Choose a course not already chosen above or used to satisfy Core Area 3

PHIL	311	Symbolic Logic (3)
PHIL	410	Philosophy of Language (3)
PHIL	420	Epistemology (3)
PHIL	430	Metaphysics (3)
PHIL	437	Contemporary Philosophy (3)
PHIL	455	Existentialism & Phenomenology (3)
PHIL	474	Philosophy of the Mind (3)
PHIL	476	Philosophy of Perception (3)
PHIL	477	Animal Minds (3)
PHIL	480	Philosophy of Science (3)
PHIL	481	Philosophy of Biology (3)

Major Emphasis: Psychology

PSYC	421	Behavior Neuroscience (4)
PSYC	423	Cognitive Neuroscience (4)

Choose 4 Credits

PSYC	413	Sensation & Perception (4)
PSYC	414	Learning (4)
PSYC	415	Human Memory (4)
PSYC	420	Psychopharmacology (4)
PSYC	430	Advanced Topics in Biological Psychology (4)
PSYC	450	Advanced Cognitive Psychology (4)

Required Minor: None.