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 Arszniov

Cognitive Science Program Core Faculty: Dawn Albertson (Psychology), Bradley Arszniov (Psychology), Rebecca Bates (Computer Science), Michael Bentley (Biology), Geoffrey Goellner (Biology), Moses Langley (Psychology), Karla Lassonde (Psychology), Richard Liebendorfer (Philosophy), Guaronex 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 and major 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.

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.

COGNITIVE SCIENCE BS

Required General Education

BIOL 105 General Biology I (4)
MATH 121 Calculus I (4)

Choose 5 Credits

CHEM 111 Chemistry of Life Process Part II (Organic & Biochemistry) (5)
CHEM 201 General Chemistry I (5)

Prerequisites to the Major

CS 110 Introduction to Computer Science I (4)
PSYC 206 Introduction to Cognitive Science (4)

Choose 3 - 4 Credits

PHIL 101W Philosophical Issues in Cognitive Science (3)
STAT 154 Elementary Statistics (4)
STAT 354 Concepts of Probability & Statistics (3)

Major Common Core

BIOL 211 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 Issues in Cognitive Science (3)
PHIL 475 Philosophical Issues in Cognitive Science (3)
PSYC 201 Statistics for Psychology (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 105 General Biology II (4)
BIOL 211 Genetics (4)

Choose 3 - 4 Credits

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)

Choose 3 Credits
Choose a course not used to satisfy Core Area 3
PHIL  410  Philosophy of Language (3)
PHIL  424  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.