

2016 Fall Course Offerings

Cognitive Science

Director: Professor Barbara Malt



Major, minor and graduate certificate declaration forms are available at the
Office of Interdisciplinary Programs: 31 Williams Hall, Suite 101

DISCIPLINARY CORE COURSES

PSYC, COGS 117-10 Cognitive Psychology CRN 41640 (SS) 4 credits

The architecture and dynamics of the human mind: How we acquire knowledge through perception, represent and activate it in memory, and use it to communicate, make decisions, solve problems, and reason creatively. Prerequisite: PSYC 1 or COGS 7. Optional 1 credit recitation (PSYC 183) may accompany this course (recommended but not required for COGS majors.) **Professor O'Seaghda**
T, R 2:35-3:50 p.m.

PHIL, COGS 250-10 Philosophy of Mind CRN 43736 (HU) 4 credits

An exploration of the mind-body problem. Are the body and mind distinct substances (dualism); or is there only body (materialism); or only mind (idealism)? Other views to be considered include behaviorism (the view that behavior can be explained without recourse to mental states), and the view that the mind is a complex computer. Prerequisite: One HU course in Philosophy. **Professor Bickhard**
M, W; 2:35-3:50 p.m.

MAJOR ELECTIVES

Artificial Intelligence and Formal Models

CSE 017 Programming and Data Structures (MA) 3 credits

Algorithmic design and implementation in a high level, object oriented language, such as Java. Classes, subclasses, recursion, searching, sorting, linked lists, trees, stacks, queues. Multiple Sections available, refer to on-line course schedule

CSE, EMC 042-10 Game Design CRN 44125 3 credits

Modern topics in game design: Finite State Machines, iterative design process, systems and interactivity, designing rules for digital games, emergence in games, games as Schemas of Uncertainty, games as Information Theory Schemas, games as Information Systems, games as Cybernetic Systems. The course does not count as a technical elective for majors in Computer Science, Computer Science and Business, or Computer Engineering. **Professor Munoz-Avila** T, R; 10:45 - 12:00 p.m.

CSE 262-10 Programming Languages CRN 40845 3 credits

Use, structure and implementation of several programming languages. **Professor Loew** M, W, F; 1:10 - 2:00 p.m.

CSE 262-11 Programming Languages CRN 43533 3 credits

Use, structure and implementation of several programming languages. **Professor Loew** M, W, F; 10:10 - 11:00 a.m.

PHIL, MATH 303-10 Mathematical Logic CRN 44028/44029 (MA) 4 credits

Detailed proofs for the basic mathematical results relating the syntax and semantics of first-order logic (predicate logic): the Soundness and Completeness (and Compactness) Theorems, followed by a brief exposition of the celebrated limitative results of Gödel, Turing, and Church on incompleteness and undecidability. The material is conceptually rigorous and mathematically mature; the necessary background is a certain degree of mathematical sophistication or a basic knowledge of symbolic logic. *Instructor permission required.* **Professor Lee** M, W, F; 10:10 - 11:00 a.m.

CSE 360-10 Introduction to Mobile Robotics CRN 44096 3 credits

Algorithms employed in mobile robotics for navigation, sensing, and estimation. Common sensor systems, motion planning, robust estimation, bayesian estimation techniques, Kalman and Particle filters, localization and mapping. **Professor Spletzer**
T, R; 9:20 - 10:35 a.m.

Language, Culture, and Meaning

MLL, COGS, ANTH 140-10 Introduction to Linguistics CRN 43084 (SS) 4 credits

Relationship between language and mind; formal properties of language; language and society; how languages change over time. May not be taken pass/fail. **Professor Lee** M, W 12:45 – 2:00

PSYC 351-10 Children's Thinking CRN 43663 (SS) 4 credits

This course examines the development of children's thinking from infancy through adolescence. We will discuss current research and theories on the content of children's knowledge and how mental abilities develop. We will also consider the implications of research on children's thinking for real-world questions about parenting, education, and policy-making. Topics include memory, concepts, social cognition, language, reading, mathematics, and individual and cultural differences. **Professor Brandone** T, R; 1:10 - 2:25 p.m.

Cognition and Neuroscience

BIOS 382-10 Endocrinology of Behavior CRN 40039 (NS) 3 credits

Hormonal effects upon animal and human behavior. Emphasis on neuroendocrinology of steroid hormone involvement in reproductive behaviors. **Professor Schneider** T, R; 1:10 - 2:25 p.m.

PSYC 347-10 Cognitive Neuroscience of Memory CRN 43662 (SS) 4 credits

This seminar explores the brain systems and neural mechanisms involved in the formation and retrieval of memories. Topics include mechanisms of forgetting, amnesia and hippocampus, emotional memory systems, superior autobiographical memory, role of sleep, and effects of stress on memory. **Professor Hupbach** T, R; 2:35 - 3:50 p.m.

Additional courses that can be petitioned for elective credit

PSYC 096-10 Introduction to Human Neuroscience CRN 43767 (NS) 4 credits

In this introductory course, we will uncover how our brains are able to give rise to the complexities of human thought and behavior. We will examine the neural bases of seeing, hearing, sleep, dreaming, sexual behavior, emotion, aggression, behavioral disorders, learning, and memory. **Professor Carlisle** M, W; 2:35 - 3:50 p.m.

SENIOR THESIS

COGS 301 Senior Project in Cognitive Science: Proposal 3 credits

Senior year integration of the material from cognitive science begins with the proposal of a substantial review or research project spanning at least two cognitive science disciplines under the direction of a Cognitive Science faculty member. Students must enroll for a total of three credits which may be split between the sections of a primary and secondary adviser. Consent of program director required. *Instructor permission required.*

COGS 399 Senior Project in Cognitive Science: Thesis 3 credits

Research during senior year culminating in senior thesis advised by a member of the Cognitive Science faculty. Execution and written report of project proposed and approved in COGS 301. Theses submitted for honors will be evaluated by a committee of at least three cognitive science faculty. Prerequisite: COGS 301 and consent of the program director. *Instructor permission required.*

ADDITIONAL COURSES

COGS 161 Supervised Research 2-4 credits

Research under the direct supervision of a faculty member in the cognitive science program. Students must arrange the particular project with a faculty member before enrolling. *Instructor permission required.*

COGS 195 Independent Study CRN 44110 1 credit

Independent study work under the supervision of a Cognitive Science Faculty member. *Instructor permission required.*

COGS 196 Independent Study CRN 44111 2 credits

Independent study work under the supervision of a Cognitive Science Faculty member. *Instructor permission required.*

COGS 361 Independent Research 2-4 credits

Independent research in cognitive science with a faculty advisor. Students must arrange the particular project with a faculty advisor before enrolling. *Instructor permission required.*

COGS 395 Special Topics in Cognitive Science CRN 43737, 4 credits / CRN 43738 3 credits

Topics vary from semester to semester. Topics are presented at an advanced level. Previous course work in cognitive psychology and consent of faculty sponsor is required. *Instructor permission required.*

COGS 405 Individual Study in Cognitive Science 1-6 credits

Study of a topic not covered in regular course offerings. By arrangement with a consulting faculty member. May be repeated for credit. *Instructor permission required.*

COLLATERAL REQUIREMENTS

CSE 001-10 Breadth of Computing CRN 42430 2 credits

Broad overview of computer science, computer systems, and computer applications. Interactive Web page development. Includes laboratory. Not available to students who have taken CSE 012 or ENGR 010.
T, R; 7:55 - 9:10 a.m.

CSE 001-11 Breadth of Computing CRN 43597 2 credits

Broad overview of computer science, computer systems, and computer applications. Interactive Web page development. Includes laboratory. Not available to students who have taken CSE 012 or ENGR 010.
M, W, F; 9:10 - 10:00 a.m.

CSE 002 Fundamentals of Programming 2 credits

Problem-solving and object-oriented programming using Java. Includes laboratory. No prior programming experience needed.

MATH 021-Multiple Sections Calculus I (MA) 4 credits

Multiple sections available, refer to on-line course schedule

MATH 051-Multiple Sections Survey of Calculus (MA) 4 credits

Multiple sections available, refer to on-line course schedule

2016 Summer Course Offerings

COGS 161 Supervised Research 2-4 credits

Research under the direct supervision of a faculty member in the cognitive science program. Students must arrange the particular project with a faculty member before enrolling. *Instructor permission required.*

PSYC, COGS 176-10 Cognitive Neuroscience CRN 21031 (NS) 4 credits

Perception and cognitive neuroscience as the link between mental processes and their biological bases. Visual and auditory perception; the control of action; neuropsychological syndromes of perception, language, memory, and thought; neural network (connectionist) models of mental processes. Prerequisite: PSYC 1 or COGS 7. May not be taken pass/fail. **Professor Hupbach**
Summer session 1 - M, T, W, R; 10:00 - 11:35 p.m.

PSYC 314-10 Social Cognition CRN (SS) 3-4 credits

Examines the cognitive processes through which people make sense of social groups, individual others, themselves, and the world. Topics include judgment and decision making, attitudes and persuasion, ordinary personology, stereotyping and prejudice, and the self.
Staff Summer session 1 - M, T, W, R; 12:00 - 1:35 p.m.

COGS 361 Independent Research 2-4 credits

Independent research in cognitive science with a faculty advisor. Students must arrange the particular project with a faculty advisor before enrolling. *Instructor permission required.*

COGS 405 Individual Study in Cognitive Science 1-6 credits

Study of a topic not covered in regular course offerings. By arrangement with a consulting faculty member. May be repeated for credit. *Instructor permission required.*