

# Department of Cognitive Sciences

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## Mark Steyvers, Department Chair

2201 Social & Behavioral Sciences Gateway

949-824-6692

<http://www.cogsci.uci.edu/>

Cognitive Science is a multidisciplinary field integrating behavioral research, computational models, and neuroscience. The Department of Cognitive Sciences at UC Irvine has a tradition of excellence in quantitative approaches to understanding the brain, perception, cognition, and behavior. The department maintains its historic strengths in mathematical psychology, and has expanded to include computational approaches to studying cognition. The department has also grown a strong and broad research program and graduate concentration in cognitive neuroscience, with expertise ranging from language and memory to brain-computer interfaces. The department continues to specialize in vision and auditory research, and has newer research areas in the language sciences, cognitive development, and cognitive robotics.

## Undergraduate Information

Students should be aware that psychology courses are offered in several different departments and programs. The B.S. in Psychology incorporates more science content, as the physical and biological sciences play a critical role in deeper study of the mind and brain. The B.S. in Cognitive Sciences is structured to provide students with a challenging introduction to the broad field of Cognitive Sciences that is strongly grounded in theory emphasizing experimental and computational methods. The B.A. in Psychology will be sunset by the end of Spring 2024. Students interested in other areas of psychology are advised to consult the course listings in the School of Social Ecology (<http://catalogue.uci.edu/schoolofsocialecology/>) and the School of Biological Sciences (<http://catalogue.uci.edu/charliedunlopschoolofbiologicalsciences/>) sections.

- Cognitive Sciences, B.S.
- Cognitive Sciences, Ph.D.
- Hearing and Speech Sciences, Minor
- Psychology, B.A.
- Psychology, B.S.
- Psychology, Minor

## Faculty

Bruce G. Berg, Ph.D. Indiana University, *Professor of Cognitive Sciences* (audition, auditory attention, psychophysics of complex sounds, computational models of hearing)

Aaron Bornstein, Ph.D. New York University, *Assistant Professor of Cognitive Sciences* (memory, decision-making, reinforcement learning, neuroimaging, computational cognitive neuroscience)

Alyssa Brewer, Ph.D. Stanford University, *Associate Professor of Cognitive Sciences; Language Science* (visual, auditory, somatosensory/pain perception and attention, sensory deficits and neurological disorders, computational neuroimaging)

Nadia Chernyak, Ph.D. Cornell University, *Assistant Professor of Cognitive Sciences; Psychological Science* (cognitive development, social cognition, prosocial behavior, moral cognition, agency and free will, conceptual development)

Thomas M. D'Zmura, Ph.D. University of Rochester, *Professor of Cognitive Sciences* (vision, hearing, language, brain-computer interfaces)

Barbara A. Doshier, Ph.D. University of Oregon, *UCI Distinguished Professor of Cognitive Sciences* (human information processing, memory retrieval, attention, visual perception)

Emily D. Grossman, Ph.D. Vanderbilt University, *Professor of Cognitive Sciences* (visual perception, neuroimaging)

Gregory S. Hickok, Ph.D. Brandeis University, *Distinguished Professor of Cognitive Sciences; Language Science* (neuroanatomy of language, neural plasticity, neuroimaging, cognitive neuroscience)

Jeffrey L. Krichmar, Ph.D. George Mason University, *Professor of Cognitive Sciences; Computer Science* (computational neuroscience, robotics, artificial intelligence, neural networks)

Michael D. Lee, Ph.D. University of Adelaide, *Professor of Cognitive Sciences* (computational models and bayesian methods in decision making, representation, categorization, individual differences, and the wisdom of the crowd)

Mimi Liljeholm, Ph.D. University of California, Los Angeles, *Associate Professor of Cognitive Sciences* (reinforcement learning, structure learning, reasoning, decision-making, addiction, social cognition)

Sara Mednick, Ph.D. Harvard University, *Professor of Cognitive Sciences* (memory consolidation, sleep, pharmacology, aging, brain stimulation)

Megan Peters, Ph.D. University of California, Los Angeles, *Assistant Professor of Cognitive Sciences* (perception, metacognition, consciousness, computational modeling, computational cognitive neuroscience)

Zygmunt Pizlo, Ph.D. University of Maryland at College Park, *Falmagne Endowed Chair and Professor of Cognitive Sciences* (human and machine vision, 3D shape, symmetry, virtual reality, robotics, problem solving)

Virginia Richards, Ph.D. University of California, Berkeley, *Professor of Cognitive Sciences* (auditory perception and cognition, human psychophysics)

Jeffrey Rouder, Ph.D. University of California, Irvine, *Falmagne Endowed Chair and Professor of Cognitive Sciences* (mathematical and statistical models of perception and cognition, bayesian mixed models, psychometrics)

Kourosh Saberi, Ph.D. University of California, Berkeley, *Professor of Cognitive Sciences* (conscious systems, evolutionary game theory, nature of reality, machine learning, artificial intelligence)

Barbara W. Sarnecka, Ph.D. University of Michigan, *Professor of Cognitive Sciences; Logic and Philosophy of Science* (cognitive development, language and conceptual change, writing and scientific communication)

Ramesh Srinivasan, Ph.D. Tulane University, *Professor of Cognitive Sciences; Biomedical Engineering* (perception, attention, decision-making, cognitive and clinical neuroscience)

Mark Steyvers, Ph.D. Indiana University, *Department Chair and Professor of Cognitive Sciences; Computer Science; Psychological Science* (higher-order cognition, learning, metacognition, hybrid human-AI systems, computational modeling)

Joachim S. Vandekerckhove, Ph.D. University of Leuven, *Professor of Cognitive Sciences; Logic and Philosophy of Science; Statistics* (response time modeling, model fitting, computational statistics, psychometrics, bayesian statistics)

Charles E. Wright, Ph.D. University of Michigan, *Professor of Teaching of Cognitive Sciences* (cognitive psychology, human motor control, fitts task, aimed movements, handwriting, immersive virtual reality, 1/f noise, quantitative models)

## Affiliate Faculty

Drew Bailey, Ph.D. University of Missouri, *Professor of Education; Cognitive Sciences; Psychological Science*

Elizabeth Chrastil, Ph.D. Brown University, *Assistant Professor of Neurobiology and Behavior; Cognitive Sciences*

Nikil D. Dutt, Ph.D. University of Illinois at Urbana–Champaign, *UCI Distinguished Professor of Computer Science; Cognitive Sciences; Electrical Engineering and Computer Science* (embedded systems, computer architecture, electronic design automation, software systems, brain-inspired architectures and computing)

Charles C. Fowlkes, Ph.D. University of California, Berkeley, *Professor of Computer Science; Cognitive Sciences* (artificial intelligence, computer vision, machine learning, computational biology)

Susanne M. Jaeggi, Ph.D. University of Bern, *Professor of Education; Cognitive Sciences* (working memory, executive functions, cognitive training, lifespan development aging, individual differences)

Elizabeth F. Loftus, Ph.D. Stanford University, *UCI Distinguished Professor of Psychological Science; Cognitive Sciences; Criminology, Law and Society; School of Law* (cognitive psychology, human memory, psychology and law)

David C. Lyon, Ph.D. Vanderbilt University, *Department Vice Chair and Professor of Anatomy and Neurobiology; Cognitive Sciences*

Bryce A. Mander, Ph.D. Northwestern University, *Assistant Professor of Psychiatry and Human Behavior; Cognitive Sciences; Pathology and Laboratory Medicine*

John Middlebrooks, Ph.D. University of California, San Francisco, *Professor of Otolaryngology; Biomedical Engineering; Cognitive Sciences; Neurobiology and Behavior*

Cailin O'Connor, Ph.D. University of California, Irvine, *Professor of Logic and Philosophy of Science; Cognitive Sciences*

P. Kyle Stanford, Ph.D. University of California, San Diego, *Professor of Logic and Philosophy of Science; Cognitive Sciences; Philosophy*

Craig Stark, Ph.D. Carnegie Mellon University, *James L. McGaugh Chair in the Neurobiology of Learning and Memory and Professor of Neurobiology and Behavior; Cognitive Sciences*

Hal S. Stern, Ph.D. Stanford University, *Chancellor's Professor of Statistics; Cognitive Sciences*

Fan-Gang Zeng, Ph.D. Syracuse University, *Director of Hearing Research and Professor of Otolaryngology; Anatomy and Neurobiology; Biomedical Engineering; Cognitive Sciences*

## Cognitive Sciences Courses

### **COGS 10A. Exploratory Data Analysis. 4 Units.**

Learn multiple ways of visualizing data, of transforming data, looking for consistencies and patterns in data, and interpreting these patterns to reach conclusions. Serves as first introduction to computer programming using the R language.

Same as PSYC 10A.

Restriction: Cognitive Sciences Majors have first consideration for enrollment. Psychology Majors have first consideration for enrollment. Hearing and Speech Sciences Minors have first consideration for enrollment.

(Va)

### **COGS 10B. Probability and Inference. 4 Units.**

An introduction to probability and statistics. Emphasis on thorough understanding of the probabilistic and logical basis of formal statistical inference, and the concept of statistical evidence. Applications in R.

Prerequisite: PSYC 10A or COGS 10A. PSYC 10A with a grade of C- or better. COGS 10A with a grade of C- or better

Same as PSYC 10B.

Restriction: Cognitive Sciences Majors have first consideration for enrollment. Hearing and Speech Sciences Minors have first consideration for enrollment. Psychology Majors have first consideration for enrollment.

(Va)

### **COGS 10C. Statistical Models. 4 Units.**

Students learn about standard procedures in statistics for the social sciences, with a focus on linear models for discovering the underlying structure in data. Applications in R.

Prerequisite: PSYC 10A or COGS 10A. PSYC 10A with a grade of C- or better. COGS 10A with a grade of C- or better

Same as PSYC 10C.

Restriction: Cognitive Sciences Majors have first consideration for enrollment. Hearing and Speech Sciences Minors have first consideration for enrollment. Psychology Majors have first consideration for enrollment.

(Vb)

### **COGS 14M. MATLAB Programming. 4 Units.**

MATLAB is a mathematical software package for solving quantitative problems often encountered in experimental psychology. Topics include rudiments of programming, statistical analysis of data, matrix algebra, signal processing, graphic visualization, and simulated models of cognitive and perceptual processes.

Same as PSYC 14M.

Restriction: Cognitive Sciences Majors have first consideration for enrollment. Psychology Majors have first consideration for enrollment.

### **COGS 14P. Scientific Python for Research. 4 Units.**

Introduces Python for data analysis and modeling encountered in cognitive science and neuroscience. Topics include data structures, execution control, graphic visualization, and interaction with sound and display interfaces. Application in statistical analysis, model simulation, and stimulus presentation and experimental control.

Same as PSYC 14P.

Restriction: Cognitive Sciences Majors have first consideration for enrollment. Psychology Majors have first consideration for enrollment.

### **COGS 60N. Neurobiology of Cognition. 4 Units.**

Introduces the neurobiological components of human cognition. Topics include discussion of the cortical structures and functions that underlie these behaviors. Emphasis placed on the development and organization of the healthy brain.

Same as PSYC 60N.

Restriction: Cognitive Sciences Majors have first consideration for enrollment. Psychology Majors have first consideration for enrollment.

**COGS 89. Special Topics in Lower-Division Cognitive Sciences. 4 Units.**

Studies in selected areas of cognitive science at the lower-division level. Topics addressed vary each quarter.

Prerequisite: Prerequisites vary.

Repeatability: Unlimited as topics vary.

Restriction: Cognitive Sciences Majors have first consideration for enrollment. Psychology Majors have first consideration for enrollment.

**COGS H101A. Honors Seminar in Psychology and Cognitive Sciences I. 4 Units.**

Focuses on the research activities and honors thesis research projects of each student and the research of various Cognitive Sciences faculty. Students discuss their research interests in the early and later stages of their projects. Research projects and write-ups required.

Grading Option: Pass/no pass only.

Same as PSYC H101A.

Restriction: Cognitive Sciences Honors students only. Psychology Honors students only.

**COGS H101B. Honors Seminar in Psychology and Cognitive Sciences II. 4 Units.**

Focuses on the research activities and honors thesis research projects of each student and the research of various Cognitive Sciences faculty. Students discuss their research interests in the early and later stages of their projects. Research projects and write-ups required.

Prerequisite: PSYC H101A or COGS H101A

Grading Option: Pass/no pass only.

Same as PSYC H101B.

Restriction: Cognitive Sciences Honors students only. Psychology Honors students only.

**COGS H101C. Honors Seminar in Psychology and Cognitive Sciences III. 4 Units.**

Focuses on the research activities and honors thesis research projects of each student and the research of various Cognitive Sciences faculty. Students discuss their research interests in the early and later stages of their projects. Research projects and write-ups required.

Prerequisite: PSYC H101B or COGS H101B

Same as PSYC H101C.

Restriction: Cognitive Sciences Honors students only. Psychology Honors students only.

**COGS 105. Introduction to Statistical Learning. 4 Units.**

Introduction to statistical learning as a tool for scientific research. Topics include linear regression, logistic regression, model selection, cross-validation, ridge and Lasso regularization, classification trees, ensemble methods, random forests, unsupervised learning, PCA, k-means clustering, Gaussian mixture models, and PLS regression.

Prerequisite: COGS 14P or PSYC 14P or ICS 31 or MATH 9 and ((COGS 10B or PSYC 10B) and (COGS 10C or PSYC 10C) or STATS 110) and MATH 2B. COGS 10B with a grade of C- or better. PSYC 10B with a grade of C- or better. COGS 10C with a grade of C- or better. PSYC 10C with a grade of C- or better

Restriction: Cognitive Sciences Majors only.

Concurrent with COGS 205C.

**COGS 106. Computational Lab Skills. 4 Units.**

Teaches programming tools, skills, and conventions for collaborative work in computational cognitive science. Topics covered include program structure, version control, random number generation, plotting, basic model fitting, and numerical optimization methods.

Prerequisite: COGS 14M or PSYC 14M or COGS 14P or PSYC 14P or ICS 31 and ((COGS 10B or PSYC 10B) and (COGS 10C or PSYC 10C) or STAT 110). COGS 10B with a grade of C- or better. PSYC 10B with a grade of C- or better. COGS 10C with a grade of C- or better. PSYC 10C with a grade of C- or better

Restriction: Cognitive Sciences Majors only.

Concurrent with COGS 205B.

**COGS 107. Cognitive Modeling. 4 Units.**

Cognitive process models analyzed using computational Bayesian methods. Formal statistical specification of models, parameter estimation, model evaluation, and research applications. Covers multinomial process trees, signal detection theory, Thurstone ranking models, item-response theory, decision models, and reaction time models.

Prerequisite: COGS 14M or PSYC 14M or COGS 14P or PSYC 14P or ICS 31 and ((COGS 10B or PSYC 10B) and (COGS 10C or PSYC 10C)) or STAT 110. COGS 10B with a grade of C- or better. PSYC 10B with a grade of C- or better. COGS 10C with a grade of C- or better. PSYC 10C with a grade of C- or better

Restriction: Cognitive Sciences Majors have first consideration for enrollment.

**COGS 108. Neural Analytics. 4 Units.**

Introduces the theoretical foundations and practical applications of neural data analysis. Topics include models of neural signals, neural time series analysis, and machine learning applications in cognitive neuroscience.

Prerequisite: COGS 14M or PSYC 14M or COGS 14P or PSYC 14P or ICS 31 and ((COGS 10B or PSYC 10B) and (COGS 10C or PSYC 10C)) or STAT 110. COGS 10B with a grade of C- or better. PSYC 10B with a grade of C- or better. COGS 10C with a grade of C- or better. PSYC 10C with a grade of C- or better

Restriction: Cognitive Sciences Majors have first consideration for enrollment.

**COGS 109. Cognitive Sciences Research Seminar. 4 Units.**

Read and discuss examples of the primary research leading to the concepts covered in Psychology Fundamentals. Focuses on how this research is conducted and how inferences from it are drawn.

Prerequisite: (PSYC 9A and PSYC 9B and PSYC 9C) or (PSCI 11A and PSCI 11B and PSCI 11C)

Restriction: Cognitive Sciences Majors only.

**COGS 112A. Experimental Psychology. 4 Units.**

Emphasis on design of experiments and analysis of results. Experiments are conducted in laboratory sections.

Corequisite: COGS 112LA or PSYCH 112LA. COGS 112LA is the corequisite for COGS 112A. PSYCH 112LA is the corequisite for PSYCH 112A. Prerequisite: ((PSYC 9A and PSYC 9B and PSYC 9C) or (PSCI 11A and PSCI 11B and PSCI 11C) and (PSYC 10B or COGS 10B) and (PSYC 10C or COGS 10C)). PSYC 10B with a grade of C- or better. COGS 10B with a grade of C- or better. PSYC 10C with a grade of C- or better. COGS 10C with a grade of C- or better

Same as PSYC 112A.

Restriction: Cognitive Sciences Majors have first consideration for enrollment. Psychology Majors have first consideration for enrollment.

**COGS 112BW. Advanced Experimental Psychology. 4 Units.**

Design and analysis of multivalent, factorial, and correlational studies. Students prepare proposals for independent research.

Prerequisite: PSYC 112A and PSYC 112LA. Satisfactory completion of the Lower-Division Writing requirement.

Same as PSYC 112BW.

Restriction: Cognitive Sciences Majors have first consideration for enrollment. Psychology Majors have first consideration for enrollment.

**(Ib)****COGS 112C. Research in Experimental Psychology. 4 Units.**

Each student conducts a research project in experimental psychology. The projects are discussed in a seminar format. Written reports on each project are submitted at the end of the quarter.

Corequisite: PSYC 112LC

Prerequisite: PSYC 112B and PSYC 112LB

Same as PSYC 112C.

Restriction: Cognitive Sciences Majors have first consideration for enrollment. Psychology Majors have first consideration for enrollment.

**COGS 112LA. Experimental Psychology Laboratory. 2 Units.**

Required laboratory section and co-requisite for PSYCH 112A.

Corequisite: COGS 112A or PSYCH 112A. COGS 112A is the corequisite for COGS 112LA. PSYCH 112A is the corequisite for PSYCH 112LA

Same as PSYC 112LA.

Restriction: Cognitive Sciences Majors have first consideration for enrollment. Psychology Majors have first consideration for enrollment.

**COGS 112LB. Advanced Experimental Psychology Laboratory. 2 Units.**

Required laboratory section for PSYCH 112B and PSYCH 112BW.

Same as PSYC 112LB.

Restriction: Cognitive Sciences Majors have first consideration for enrollment. Psychology Majors have first consideration for enrollment.

**COGS 112LC. Research in Experimental Psychology.**

Required laboratory section and co-requisite for PSYCH 112C.

Corequisite: PSYC 112C

Same as PSYC 112LC.

**COGS 112LN. fMRI Research Laboratory. 2 Units.**

Required laboratory section and corequisite for COGS 112N/PSYCH 112N.

Corequisite: COGS 112N and PSYC 112N and COGS 112N is the corequisite for COGS 112LN. PSYCH 112N is the corequisite for PSYCH 112LN.

Same as PSYC 112LN.

Restriction: Cognitive Sciences Majors have first consideration for enrollment. Psychology Majors have first consideration for enrollment.

**COGS 112LP. Research in Perception and Psychophysics Laboratory. 2 Units.**

Required laboratory section and co-requisite for COGS 112P.

Corequisite: COGS 112P or PSYCH 112P. COGS 112P is the corequisite for COGS 112LP. PSYCH 112P is the corequisite for PSYCH 112LP.

Same as PSYC 112LP.

Restriction: Cognitive Sciences Majors have first consideration for enrollment. Psychology Majors have first consideration for enrollment.

**COGS 112LR. Cognitive Robotics Laboratory. 2 Units.**

Required laboratory section and corequisite for PSYCH 112R.

Corequisite: COGS 112R or PSYCH 112R. COGS 112R is corequisite for COGS 112LR. PSYCH 112R is corequisite for PSYCH 112LR.

Same as PSYC 112LR.

Restriction: Cognitive Sciences Majors have first consideration for enrollment. Psychology Majors have first consideration for enrollment.

**COGS 112N. Introduction to fMRI Research. 4 Units.**

Introduction to functional magnetic resonance imaging as a tool in cognitive neuroscience. Covers inferences about brain activity using MRI, evaluates experimental design considerations, and univariate and multivariate statistical analysis approaches.

Corequisite: COGS 112LN or PSYCH 112LN. COGS 112LN is the corequisite for COGS 112N. PSYCH 112LN is the corequisite for PSYCH 112N.

Prerequisite: (PSYC 9A and PSYC 9B and PSYC 9C) or (PSCI 11A and PSCI 11B and PSCI 11C) and (COGS 10B or PSYC 10B) and (COGS 10C or PSYC 10C). COGS 10B with a grade of C- or better. PSYC 10B with a grade of C- or better. COGS 10C with a grade of C- or better. PSYC 10C with a grade of C- or better

Same as PSYC 112N.

Restriction: Cognitive Sciences Majors have first consideration for enrollment. Psychology Majors have first consideration for enrollment.

**COGS 112P. Research in Perception and Psychophysics. 4 Units.**

Introduction to design and practice of experiments: students perform auditory, visual, tactile, or other experiments. Emphasis on methodology, finding and reading previous research, generating research ideas, statistical analysis.

Corequisite: COGS 112LP or PSYCH 112LP. COGS 112LP is the corequisite for COGS 112P. PSYCH 112LP is the corequisite for PSYCH 112P.

Prerequisite: (PSYC 9A and PSYC 9B and PSYC 9C) or (PSCI 11A and PSCI 11B and PSCI 11C) and (PSYC 10B or COGS 10B) and (PSYC10C and COGS 10C). PSYC 10B with a grade of C- or better. COGS 10B with a grade of C- or better. PSYC10C with a minimum score of C-. COGS 10C with a grade of C- or better

Same as PSYC 112P.

Restriction: Cognitive Sciences Majors have first consideration for enrollment. Psychology Majors have first consideration for enrollment.

**COGS 112R. Cognitive Robotics. 4 Units.**

Introduces concepts on experimental design, embodiment, robot construction, and computer programming. Concepts of embodied intelligence and case studies of cognitive robotics are covered in lecture. Simple robots are constructed and programmed to carry out different behavioral experiments in lab.

Corequisite: COGS 112LR or PSYCH 112LR. COGS 112LR is the corequisite for COGS 112R. PSYCH 112LR is the corequisite for PSYCH 112R.

Prerequisite: (PSYC 9A and PSYC 9B and PSYC 9C) or (PSCI 11A and PSCI 11B and PSCI 11C) and (PSYC 10B or COGS 10B) and (PSYC 10C or COGS 10C). PSYC 10B with a grade of C- or better. COGS 10B with a grade of C- or better. PSYC 10C with a grade of C- or better. COGS 10C with a grade of C- or better

Same as PSYC 112R.

Restriction: Cognitive Sciences Majors have first consideration for enrollment. Psychology Majors have first consideration for enrollment.

**COGS 130A. Perception and Sensory Processes. 4 Units.**

A general introduction to the scientific study of sensory processes and perceptual phenomena, with special emphasis in the visual systems.

Prerequisite: (PSYC 7A or PSCI 9) or (PSYC 9A or PSCI 11A)

Same as PSYC 130A.

Overlaps with PSYC 131A, PSYC 131B.

Restriction: Cognitive Sciences Majors have first consideration for enrollment. Psychology Majors have first consideration for enrollment.

**COGS 130N. Neuroscience of Perception. 4 Units.**

Introduces the principles that human perception is determined by the properties of brain circuitry and that these brain circuits evolved to interpret the properties of the physical environment to explore human perception from peripheral sensory organs to cortical processing.

Prerequisite: PSYC 7A or PSCI 9 or PSYC 9A or PSCI 11A

Same as PSYC 130N.

Restriction: Cognitive Sciences Majors have first consideration for enrollment. Psychology Majors have first consideration for enrollment.

**COGS 131A. Vision. 4 Units.**

Visual perception and the anatomy and physiology of the visual system. Topics include the retina and the visual pathway; visual sensitivity; color vision; spatial vision; motion perception; and the development of the visual system.

Same as BIOL N182, PSYC 131A.

Overlaps with PSYC 130A.

Restriction: Upper-division students only. School of Biological Sciences students have first consideration for enrollment. Cognitive Sciences Majors have first consideration for enrollment. Psychology Majors have first consideration for enrollment.

**COGS 131B. Hearing. 4 Units.**

Auditory perception, the anatomy and physiology of the auditory system, and the physics of sound. Topics include neural transduction of sound, sensitivity, sound localization, complex sound perception, and hearing loss.

Prerequisite: (PSYC 9A or PSCI 11A) and (PSYC 9B or PSCI 11B)

Same as PSYC 131B.

Overlaps with PSYC 130A.

Restriction: Cognitive Sciences Majors have first consideration for enrollment. Psychology Majors have first consideration for enrollment.



**COGS 139. Special Topics in Perception and Sensory Processes. 4 Units.**

Studies in selected areas of perception and sensory processes. Topics addressed vary each quarter.

Prerequisite: Prerequisites vary.

Repeatability: Unlimited as topics vary.

Same as PSYC 139.

Restriction: Cognitive Sciences Majors have first consideration for enrollment. Psychology Majors have first consideration for enrollment.

**COGS 140J. Judgment and Decision Making. 4 Units.**

The psychology of human decision making. Theories, models, experiments, and data that inform how people make choices, judgments, and other decisions. Topics include optimality and bias, mental simulation, learning and feedback, expertise, emotional effects, and group decision making.

Prerequisite: PSYC 9A and PSYC 9B

Same as PSYC 140J.

Restriction: Cognitive Sciences Majors have first consideration for enrollment. Psychology Majors have first consideration for enrollment.

**COGS 140L. Learning and Decision Making. 4 Units.**

The psychological and neural bases of learning about and interacting with the world. Topics include shaping of behavior by rewards and punishments, abstraction of relational information, goal-directed versus habitual decision strategies, social knowledge transmission, and behavioral and substance addictions.

Prerequisite: (PSYC 7A or PSCI 9) or (PSYC 9A or PSCI 11A)

Same as PSYC 140L.

Restriction: Cognitive Sciences Majors have first consideration for enrollment. Psychology Majors have first consideration for enrollment.

**COGS 140M. Human Memory. 4 Units.**

Developments in the area of memory; history of memory research; theories of the nature of memory. Visual memory, recognition memory, high-speed scanning, free recall, short-term memory, mnemonics, retrieval, relationship of memory to thinking. Selected theoretical formulations for memory.

Prerequisite: (PSYC 7A or PSCI 9) or (PSYC 9B or PSCI 11B)

Same as PSYC 140M.

Restriction: Cognitive Sciences Majors have first consideration for enrollment. Psychology Majors have first consideration for enrollment.

**COGS 160A. Introduction to Cognitive Neuroscience. 4 Units.**

Introduction to the neural basis of human perceptual, motor, and cognitive abilities. Topics include sensory perception, motor control, memory, language, attention, emotion, frontal lobe function, functional brain imaging, and neuropsychological disorders.

Prerequisite: (PSYC 7A or PSCI 9) or ((PSYC 9A or PSCI 11A) and (PSYC 9B or PSCI 11B))

Same as PSYC 160A.

Restriction: Cognitive Sciences Majors have first consideration for enrollment. Psychology Majors have first consideration for enrollment.

**COGS 160D. Brain Disorders and Behavior. 4 Units.**

Examines the localization of human brain functions and the effects of neurological disorders on psychological functions such as perception, motor control, language, memory, and decision-making.

Prerequisite: (PSYC 7A or PSCI 9) or ((PSYC 9A or PSCI 11A) and (PSYC 9B or PSCI 11B)) or BIOL 35 or BIOL N110 or BIOL N115A

Same as BIOL N165, PSYC 160D.

Restriction: Biological Sciences Majors have first consideration for enrollment. Cognitive Sciences Majors have first consideration for enrollment. Psychology Majors have first consideration for enrollment.



**COGS 201A. Cognitive Sciences Research Seminar. 1.3 Unit.**

Weekly reports and colloquia by faculty, students, and visitors.

Grading Option: Satisfactory/unsatisfactory only.

Restriction: Graduate students only. Cognitive Neuroscience Majors only. Cognitive Sciences Majors only.

**COGS 201B. Cognitive Sciences Research Seminar. 1.3 Unit.**

Weekly reports and colloquia by faculty, students, and visitors.

Grading Option: Satisfactory/unsatisfactory only.

Restriction: Graduate students only. Cognitive Neuroscience Majors only. Cognitive Sciences Majors only.

**COGS 201C. Cognitive Sciences Research Seminar. 1.4 Unit.**

Weekly reports and colloquia by faculty, students, and visitors.

Grading Option: Satisfactory/unsatisfactory only.

Restriction: Graduate students only. Cognitive Neuroscience Majors only. Cognitive Sciences Majors only.

**COGS 202A. Proseminar in the Cognitive Sciences. 1 Unit.**

Introduction to the conceptual foundations and basic research results in the cognitive sciences for first-year graduate students.

Grading Option: Satisfactory/unsatisfactory only.

Restriction: Graduate students only. Cognitive Neuroscience Majors only. Cognitive Sciences Majors only.

**COGS 203A. Statistical Models for Cognitive Sciences I . 4 Units.**

Logic and set theory are covered during the first three weeks, using an interactive computer system. The remaining seven weeks are devoted to probability theory and cover elementary concepts from samples spaces to Chebychev's Inequality and the moment generating function.

Restriction: Graduate students only.

**COGS 203B. Statistical Models for Cognitive Sciences II . 4 Units.**

An introduction to statistical estimation and statistical inference. Topics include sufficiency and the Rao-Blackwell Theorem, completeness and the Lehmann-Scheffe Theorem. The method of maximum likelihood is explored in some detail. Inference in linear models covers regression and analysis of variance.

Restriction: Graduate students only.

**COGS 203C. Statistical Models for Cognitive Sciences III . 4 Units.**

Discussion of the fundamentals of statistical inference and computational implementations of common statistical models.

Restriction: Graduate students only.

**COGS 203D. Applied Mathematics for Cognitive Sciences. 4 Units.**

Covers the basics of linear systems analysis, focusing on linear algebra, Fourier analysis, differential equations, and elementary signal processing. Applications in Cognitive Science and Cognitive Neuroscience research are developed.

Restriction: Graduate students only.

**COGS 204A. Seminar in Professional Development. 1 Unit.**

Development of professional skills. Focuses on grant writing and submission process, responsible conduct of research, and ethics training.

Grading Option: Satisfactory/unsatisfactory only.

Restriction: Graduate students only. Cognitive Neuroscience Majors only. Cognitive Sciences Majors only. Psychology Majors only.

**COGS 204B. Seminar in Professional Development. 1 Unit.**

Development of professional skills. Focus on scientific presentations and preparation.

Grading Option: Satisfactory/unsatisfactory only.

Restriction: Graduate students only. Cognitive Neuroscience Majors only. Cognitive Sciences Majors only. Psychology Majors only.

**COGS 204C. Seminar in Professional Development. 1 Unit.**

Development of professional skills. Focuses on career opportunities, interests and information, and community outreach.

Grading Option: Satisfactory/unsatisfactory only.

Restriction: Graduate students only. Cognitive Neuroscience Majors only. Cognitive Sciences Majors only. Psychology Majors only.

**COGS 205A. Introduction to Programming. 4 Units.**

Introduces rudiments of programming, statistical analysis and probability theory, graphic visualization, GUI design, spectral analysis, and simulation models using MATLAB, a software package for solving quantitative problems often encountered in experimental psychology.

Restriction: Graduate students only.

**COGS 205B. Computational Lab Skills for Cognitive Scientists I. 4 Units.**

Provides an in-depth introduction to writing MATLAB programs to run auditory and visual experiments. Topics covered include program structure, stimulus generation, presentation, and data collection.

Restriction: Graduate students only.

**COGS 205C. Introduction to Statistical Learning. 4 Units.**

Introduction to statistical learning for scientific research. Topics include linear regression, logistic regression, model selection, cross-validation, ridge and Lasso regularization, classification trees, ensemble methods, random forests, unsupervised learning, PCA, k-means clustering, Gaussian mixture models, and PLS regression.

Prerequisite: Required: Knowledge of calculus, computer programming, and undergraduate-level statistics.

Restriction: Graduate students only. Cognitive Neuroscience Majors only. Cognitive Sciences Majors only.

Concurrent with COGS 105.

**COGS 205D. Neural Networks and Machine Learning. 4 Units.**

An introduction and review of the current state of the art in neural networks and machine learning with specific emphasis of applications to behavioral and neuroscience data analysis and modeling.

Restriction: Graduate students only.

**COGS 210A. Cognitive and Brain Sciences I: Topics in Perception. 4 Units.**

Discusses models of cognition and evidence linking cognition and the brain. Focus is on visual, auditory, and somatic perception and bottom-up mechanisms of attention.

Repeatability: Unlimited as topics vary.

Restriction: Graduate students only.

**COGS 210B. Cognitive and Brain Sciences II: Topics in Cognition. 4 Units.**

Discusses models of cognition and evidence linking cognition and the brain. Focus is on emotion, top-down attention, goal-directed behavior, categorization, judgment, and decision-making.

Repeatability: Unlimited as topics vary.

Restriction: Graduate students only.

**COGS 210C. Cognitive and Brain Sciences III: Topics in Learning and Development. 4 Units.**

Discusses experimental data, formal models of learning, and evidence linking learning and development to its neural substrates. Topics include Pavlovian and instrumental conditioning, language acquisition, causal reasoning, perceptual learning, category formation, and structure learning.

Repeatability: Unlimited as topics vary.

Restriction: Graduate students only.

**COGS 213. The Mind/Body Problem. 4 Units.**

Multidisciplinary, drawing on information from the fields of quantum physics, computer vision, artificial intelligence, cognition, neurophysiology, philosophy, and psychophysics.

Restriction: Graduate students only.

**COGS 214. Bayesian Cognitive Modeling. 4 Units.**

Considers a range of statistical methods of data analysis and simple cognitive models using the Bayesian graphical modeling framework.

Restriction: Graduate students only.

**COGS 218. Hearing. 4 Units.**

Examines auditory sensation and perception using psychophysical and neuroscientific perspectives. Covers physical aspects of sound; subcortical auditory processing; aspects of sensation and perception such as sensitivity, sound localization, and complex-sound recognition; neuroscientific studies of cortical function; and abnormal auditory processing.

Restriction: Graduate students only.

**COGS 229. Special Topics in Human Cognition. 1.3-4 Units.**

Current research in brain/ behavior relationships, human memory, and learning theory is presented.

Repeatability: Unlimited as topics vary.

Restriction: Graduate students only.

**COGS 235. Analysis of Neural Time Series. 4 Units.**

Hands-on introduction to techniques for the analysis of neural time series data, with a primary focus on the electroencephalogram (EEG). Topics may include the physiological basis of EEG, time-frequency analysis, spatial filtering, and methods of assessing connectivity.

Same as BME 235.

Restriction: Graduate students only.

**COGS 237. Advanced Bayesian Cognitive Modeling. 4 Units.**

Considers a range of advanced cognitive process models including models of signal detection, memory retention, category learning, stimulus representation, and reasoning using the Bayesian graphical modeling framework.

Prerequisite: COGS 214. COGS 214 with a grade of B- or better

Restriction: Graduate students only.

**COGS 239. Special Topics in Methodology and Models. 1.3-4 Units.**

Current research in cognitive sciences methodologies, concepts, and models is presented.

Repeatability: Unlimited as topics vary.

Restriction: Graduate students only.

**COGS 259. Special Topics in Human Performance. 1.3-4 Units.**

Current research in the human issues involved with sensation, perception, and cognition.

Repeatability: Unlimited as topics vary.

Restriction: Graduate students only.

**COGS 261N. Cortical Neuroscience. 4 Units.**

Physiology of the cerebral cortex, theoretical neuroscience, and the neural basis of perception.

Restriction: Graduate students only.

**COGS 262. Functional Neuroanatomy. 4 Units.**

It is impossible to truly understand human behavior without some understanding of the physical structure that enables behavior. Examines recent findings in functional neuroanatomy through lectures and papers discussing links between particular behaviors and specific brain structures.

Restriction: Graduate students only.

**COGS 265. Introduction to Functional MRI. 4 Units.**

Describes the fundamentals of imaging the human brain function using functional Magnetic Resonance Imaging (fMRI). Topics include basic fMRI physics, experimental design, and data acquisition and analysis.

Restriction: Graduate students only.

**COGS 268A. Computational Neuroscience. 4 Units.**

Introduction to computational neuroscience. Mathematical models of single neurons, neural circuits, thalamocortical systems, and cortical mass action can stimulate single-unit, local field potential, and EEG dynamics. These models are used to investigate mechanisms of sensation, motor control, attention, and consciousness.

Restriction: Graduate students only.

**COGS 268R. Cognitive Robotics. 4 Units.**

Introduces concepts for studying cognitive function by embedding brain models on robotic platforms. Topics include robot construction, computer programming, and the notion of embodiment. Students construct simple robots and program these robots to perform different behaviors.

Restriction: Graduate students only.

**COGS 269. Special Topics in Cognitive Neuroscience. 1.3-4 Units.**

Current research in cognitive neuroscience.

Repeatability: Unlimited as topics vary.

Restriction: Graduate students only.

**COGS 289. Special Topics in Sensation and Perception. 1.3-4 Units.**

Current research in the reception and processing of visual and auditory stimuli presented.

Repeatability: Unlimited as topics vary.

Restriction: Graduate students only.

**COGS 290. Dissertation Research. 1-12 Units.**

Dissertation research with Cognitive Science faculty.

Repeatability: May be repeated for credit unlimited times.

Restriction: Graduate students only. Cognitive Neuroscience Majors only. Cognitive Sciences Majors only.

**COGS 299. Individual Study. 4-12 Units.**

Individual research with Cognitive Science faculty.

Repeatability: May be repeated for credit unlimited times.

Restriction: Graduate students only.

## Psychology Courses

**PSYCH 7A. Introduction to Psychology. 4 Units.**

Introduction to field of psychology, addressing the application of scientific methods to the study of human development, learning, memory, problem solving, perception, biological mechanisms, emotions and motivation, personality, psychopathology, and effects of diverse social and cultural contexts on human behavior.

Same as PSCI 9.

Overlaps with PSYCH 9A, PSYCH 9B, PSYCH 9C, PSCI 11A, PSCI 11B.

Restriction: Criminology, Law and Society Majors have first consideration for enrollment. Public Health Sciences Majors have first consideration for enrollment. Public Health Policy Majors have first consideration for enrollment. Social Ecology Majors have first consideration for enrollment. Urban Studies Majors have first consideration for enrollment. PSCI 9 and PSYCH 7A may not be taken for credit if taken concurrently with or after PSCI 11A, PSCI 11B, PSCI 11C, PSYCH 9A, PSYCH 9B, or PSYCH 9C.

(III)

**PSYCH 9A. Psychology Fundamentals. 4 Units.**

Part of a three-course series that provides a comprehensive introduction to psychology. Required for students majoring in Cognitive Sciences, Psychological Science, and Psychology. Topics include the science of psychology, research methods, biology and behavior, consciousness, sensation, and perception.

Same as PSCI 11A.

Restriction: Lower-division students only. Cognitive Sciences Majors have first consideration for enrollment. Psychological Science Majors have first consideration for enrollment. Psychology Majors have first consideration for enrollment. Psychology and Social Behavior Majors have first consideration for enrollment. PSCI 9 and PSYCH 7A may not be taken for credit if taken after PSCI 11A, PSCI 11B, PSCI 11C, PSYCH 9A, PSYCH 9B, or PSYCH 9C.

(III)

**PSYCH 9B. Psychology Fundamentals. 4 Units.**

Part of a three-course series that provides a comprehensive introduction to psychology. Required for students majoring in Cognitive Sciences, Psychological Science, or Psychology. Topics include learning and memory, thinking, language and intelligence, human development, emotion, and motivation.

Same as PSCI 11B.

Restriction: Lower-division students only. Cognitive Sciences Majors have first consideration for enrollment. Criminology, Law and Society Majors have first consideration for enrollment. Psychological Science Majors have first consideration for enrollment. Psychology Majors have first consideration for enrollment. Psychology and Social Behavior Majors have first consideration for enrollment. Public Health Policy Majors have first consideration for enrollment. Public Health Sciences Majors have first consideration for enrollment. Social Ecology Majors have first consideration for enrollment. Urban Studies Majors have first consideration for enrollment.

(III)

**PSYCH 9C. Psychology Fundamentals. 4 Units.**

Part of a three-course series that provides a comprehensive introduction to psychology. Required for students majoring in Cognitive Sciences, Psychological Science, or Psychology. Topics include personality psychology, social psychology, abnormal and clinical psychology, and health psychology.

Same as PSCI 11C.

Restriction: Lower-division students only. Cognitive Sciences Majors have first consideration for enrollment. Criminology, Law and Society Majors have first consideration for enrollment. Psychological Science Majors have first consideration for enrollment. Psychology Majors have first consideration for enrollment. Psychology and Social Behavior Majors have first consideration for enrollment. Public Health Policy Majors have first consideration for enrollment. Public Health Sciences Majors have first consideration for enrollment. Social Ecology Majors have first consideration for enrollment. Urban Studies Majors have first consideration for enrollment.

(III)

**PSYCH 10A. Exploratory Data Analysis. 4 Units.**

Learn multiple ways of visualizing data, of transforming data, looking for consistencies and patterns in data, and interpreting these patterns to reach conclusions. Serves as first introduction to computer programming using the R language.

Same as COGS 10A.

Restriction: Cognitive Sciences Majors have first consideration for enrollment. Psychology Majors have first consideration for enrollment. Hearing and Speech Sciences Minors have first consideration for enrollment.

(Va)

**PSYCH 10B. Probability and Inference. 4 Units.**

An introduction to probability and statistics. Emphasis on thorough understanding of the probabilistic and logical basis of formal statistical inference, and the concept of statistical evidence. Applications in R.

Prerequisite: PSYCH 10A or COGS 10A. PSYCH 10A with a grade of C- or better. COGS 10A with a grade of C- or better

Same as COGS 10B.

Restriction: Cognitive Sciences Majors have first consideration for enrollment. Hearing and Speech Sciences Minors have first consideration for enrollment. Psychology Majors have first consideration for enrollment.

**(Va)**

**PSYCH 10C. Statistical Models. 4 Units.**

Students learn about standard procedures in statistics for the social sciences, with a focus on linear models for discovering the underlying structure in data. Applications in R.

Prerequisite: PSYCH 10A or COGS 10A. PSYCH 10A with a grade of C- or better. COGS 10A with a grade of C- or better

Same as COGS 10C.

Restriction: Cognitive Sciences Majors have first consideration for enrollment. Hearing and Speech Sciences Minors have first consideration for enrollment. Psychology Majors have first consideration for enrollment.

**(Vb)**

**PSYCH 14M. MATLAB Programming. 4 Units.**

MATLAB is a mathematical software package for solving quantitative problems often encountered in experimental psychology. Topics include rudiments of programming, statistical analysis of data, matrix algebra, signal processing, graphic visualization, and simulated models of cognitive and perceptual processes.

Same as COGS 14M.

Restriction: Cognitive Sciences Majors have first consideration for enrollment. Psychology Majors have first consideration for enrollment.

**PSYCH 14P. Scientific Python for Research. 4 Units.**

Introduces Python for data analysis and modeling encountered in cognitive science and neuroscience. Topics include data structures, execution control, graphic visualization, and interaction with sound and display interfaces. Application in statistical analysis, model simulation, and stimulus presentation and experimental control.

Same as COGS 14P.

Restriction: Cognitive Sciences Majors have first consideration for enrollment. Psychology Majors have first consideration for enrollment.

**PSYCH 21A. Adolescent Psychology. 4 Units.**

Focuses on psychosocial dynamics of today's adolescents in America emphasizing the quest for identity, independence, values, and sexual orientation. The influence of society, family, school, and peers is analyzed. Strategies for helping troubled adolescents are discussed.

Overlaps with PSCI 112D.

**(III)**

**PSYCH 46A. Introduction to Human Memory. 4 Units.**

Covers the core concepts of modern research and theorizing about human memory, including structural subdivisions (e.g., perceptual memory, short-term memory, long-term memory), different measures of memory (e.g., recall, reorganization), and some practical applications of memory research (e.g., mnemonics).

**(III)**

**PSYCH 56L. Acquisition of Language. 4 Units.**

What children say, what they mean, and what they understand. Theories about the learning of language by one-, two-, and three-year-olds. Comparison of kinds of data on which these theories are based.

Same as LSCI 51.

**(III)**

**PSYCH 60N. Neurobiology of Cognition. 4 Units.**

Introduces the neurobiological components of human cognition. Topics include discussion of the cortical structures and functions that underlie these behaviors. Emphasis placed on the development and organization of the healthy brain.

Same as COGS 60N.

Restriction: Cognitive Sciences Majors have first consideration for enrollment. Psychology Majors have first consideration for enrollment.

**PSYCH 78A. Self-Identity and Society. 4 Units.**

Studies sociological contributions to theory and research in social psychology, with focus on the social influences on personality, attitudes, beliefs, and behavior; socialization, human groups, and social interaction.

Same as SOCIOL 31.

**(III)****PSYCH 89. Special Topics in Lower-Division Psychology. 4 Units.**

Studies in selected areas of psychology at the lower-division level. Topics addressed vary each quarter.

Prerequisite: Prerequisites vary.

Repeatability: Unlimited as topics vary.

**PSYCH H101A. Honors Seminar in Psychology and Cognitive Sciences I. 4 Units.**

Focuses on the research activities and honors thesis research projects of each student and the research of various Cognitive Sciences faculty. Students discuss their research interests in the early and later stages of their projects. Research projects and write-ups required.

Grading Option: Pass/no pass only.

Same as COGS H101A.

Restriction: Cognitive Sciences Honors students only. Psychology Honors students only.

**PSYCH H101B. Honors Seminar in Psychology and Cognitive Sciences II. 4 Units.**

Focuses on the research activities and honors thesis research projects of each student and the research of various Cognitive Sciences faculty. Students discuss their research interests in the early and later stages of their projects. Research projects and write-ups required.

Prerequisite: PSYCH H101A or COGS H101A

Grading Option: Pass/no pass only.

Same as COGS H101B.

Restriction: Cognitive Sciences Honors students only. Psychology Honors students only.

**PSYCH H101C. Honors Seminar in Psychology and Cognitive Sciences III. 4 Units.**

Focuses on the research activities and honors thesis research projects of each student and the research of various Cognitive Sciences faculty. Students discuss their research interests in the early and later stages of their projects. Research projects and write-ups required.

Prerequisite: PSYCH H101B or COGS H101B

Same as COGS H101C.

Restriction: Cognitive Sciences Honors students only. Psychology Honors students only.

**PSYCH 112A. Experimental Psychology. 4 Units.**

Emphasis on design of experiments and analysis of results. Experiments are conducted in laboratory sections.

Corequisite: COGS 112LA or PSYCH 112LA. COGS 112LA is the corequisite for COGS 112A. PSYCH 112LA is the corequisite for PSYCH 112A.

Prerequisite: ((PSYCH 9A and PSYCH 9B and PSYCH 9C) or (PSCI 11A and PSCI 11B and PSCI 11C) and (PSYCH 10B or COGS 10B) and (PSYCH 10C or COGS 10C)). PSYCH 10B with a grade of C- or better. COGS 10B with a grade of C- or better. PSYCH 10C with a grade of C- or better. COGS 10C with a grade of C- or better

Same as COGS 112A.

Restriction: Cognitive Sciences Majors have first consideration for enrollment. Psychology Majors have first consideration for enrollment.



**PSYCH 112BW. Advanced Experimental Psychology. 4 Units.**

Design and analysis of multivalent, factorial, and correlational studies. Students prepare proposals for independent research.

Prerequisite: PSYCH 112A and PSYCH 112LA. Satisfactory completion of the Lower-Division Writing requirement.

Same as COGS 112BW.

Restriction: Cognitive Sciences Majors have first consideration for enrollment. Psychology Majors have first consideration for enrollment.

**(Ib)**

**PSYCH 112C. Research in Experimental Psychology. 4 Units.**

Each student conducts a research project in experimental psychology. The projects are discussed in a seminar format. Written reports on each project are submitted at the end of the quarter.

Corequisite: PSYCH 112LC

Prerequisite: PSYCH 112B and PSYCH 112LB

Same as COGS 112C.

Restriction: Cognitive Sciences Majors have first consideration for enrollment. Psychology Majors have first consideration for enrollment.

**PSYCH 112LA. Experimental Psychology Laboratory. 2 Units.**

Required laboratory section and co-requisite for PSYCH 112A.

Corequisite: COGS 112A or PSYCH 112A. COGS 112A is the corequisite for COGS 112LA. PSYCH 112A is the corequisite for PSYCH 112LA

Same as COGS 112LA.

Restriction: Cognitive Sciences Majors have first consideration for enrollment. Psychology Majors have first consideration for enrollment.

**PSYCH 112LB. Advanced Experimental Psychology Laboratory. 2 Units.**

Required laboratory section for PSYCH 112B and PSYCH 112BW.

Same as COGS 112LB.

Restriction: Cognitive Sciences Majors have first consideration for enrollment. Psychology Majors have first consideration for enrollment.

**PSYCH 112LC. Research in Experimental Psychology.**

Required laboratory section and co-requisite for PSYCH 112C.

Corequisite: PSYCH 112C

Same as COGS 112LC.

**PSYCH 112LM. Research Methods in Psychology Laboratory. 2 Units.**

Required laboratory section and co-requisite for PSYCH 112M.

Corequisite: PSYCH 112M

Restriction: Psychology Majors have first consideration for enrollment.

**PSYCH 112LN. fMRI Research Laboratory. 2 Units.**

Required laboratory section and corequisite for COGS 112N/PSYCH 112N.

Corequisite: COGS 112N and PSYCH 112N and COGS 112N is the corequisite for COGS 112LN. PSYCH 112N is the corequisite for PSYCH 112LN.

Same as COGS 112LN.

Restriction: Cognitive Sciences Majors have first consideration for enrollment. Psychology Majors have first consideration for enrollment.

**PSYCH 112LP. Research in Perception and Psychophysics Laboratory. 2 Units.**

Required laboratory section and co-requisite for COGS 112P.

Corequisite: COGS 112P or PSYCH 112P. COGS 112P is the corequisite for COGS 112LP. PSYCH 112P is the corequisite for PSYCH 112LP.

Same as COGS 112LP.

Restriction: Cognitive Sciences Majors have first consideration for enrollment. Psychology Majors have first consideration for enrollment.

**PSYCH 112LR. Cognitive Robotics Laboratory. 2 Units.**

Required laboratory section and corequisite for PSYCH 112R.

Corequisite: COGS 112R or PSYCH 112R. COGS 112R is corequisite for COGS 112LR. PSYCH 112R is corequisite for PSYCH 112LR.

Same as COGS 112LR.

Restriction: Cognitive Sciences Majors have first consideration for enrollment. Psychology Majors have first consideration for enrollment.

**PSYCH 112M. Research Methods in Psychology. 4 Units.**

Research methods in psychology for majors who wish to fulfill this requirement separately from upper-division writing. Covers both experimental and descriptive research methods, analysis of results, and reading the psychological literature. Research experience is provided in laboratory sections.

Corequisite: PSYCH 112LM

Prerequisite: ((PSYCH 9A and PSYCH 9B and PSYCH 9C) or (PSCI 11A and PSCI 11B and PSCI 11C) and (PSYCH 10B or COGS 10B) and (PSYCH 10C or COGS 10C)). PSYCH 10B with a grade of C- or better. COGS 10B with a grade of C- or better. PSYCH 10C with a grade of C- or better. COGS 10C with a grade of C- or better

Restriction: Cognitive Sciences Majors have first consideration for enrollment. Psychology Majors have first consideration for enrollment.

**PSYCH 112N. Introduction to fMRI Research. 4 Units.**

Introduction to functional magnetic resonance imaging as a tool in cognitive neuroscience. Covers inferences about brain activity using MRI, evaluates experimental design considerations, and univariate and multivariate statistical analysis approaches.

Corequisite: COGS 112LN or PSYCH 112LN. COGS 112LN is the corequisite for COGS 112N. PSYCH 112LN is the corequisite for PSYCH 112N.

Prerequisite: (PSYCH 9A and PSYCH 9B and PSYCH 9C) or (PSCI 11A and PSCI 11B and PSCI 11C) and (COGS 10B or PSYCH 10B) and (COGS 10C or PSYCH 10C). COGS 10B with a grade of C- or better. PSYCH 10B with a grade of C- or better. COGS 10C with a grade of C- or better. PSYCH 10C with a grade of C- or better

Same as COGS 112N.

Restriction: Cognitive Sciences Majors have first consideration for enrollment. Psychology Majors have first consideration for enrollment.

**PSYCH 112P. Research in Perception and Psychophysics. 4 Units.**

Introduction to design and practice of experiments: students perform auditory, visual, tactile, or other experiments. Emphasis on methodology, finding and reading previous research, generating research ideas, statistical analysis.

Corequisite: COGS 112LP or PSYCH 112LP. COGS 112LP is the corequisite for COGS 112P. PSYCH 112LP is the corequisite for PSYCH 112P.

Prerequisite: (PSYCH 9A and PSYCH 9B and PSYCH 9C) or (PSCI 11A and PSCI 11B and PSCI 11C) and (PSYCH 10B or COGS 10B) and (PSYCH 10C and COGS 10C). PSYCH 10B with a grade of C- or better. COGS 10B with a grade of C- or better. PSYCH 10C with a minimum score of C-. COGS 10C with a grade of C- or better

Same as COGS 112P.

Restriction: Cognitive Sciences Majors have first consideration for enrollment. Psychology Majors have first consideration for enrollment.

**PSYCH 112R. Cognitive Robotics. 4 Units.**

Introduces concepts on experimental design, embodiment, robot construction, and computer programming. Concepts of embodied intelligence and case studies of cognitive robotics are covered in lecture. Simple robots are constructed and programmed to carry out different behavioral experiments in lab.

Corequisite: COGS 112LR or PSYCH 112LR. COGS 112LR is the corequisite for COGS 112R. PSYCH 112LR is the corequisite for PSYCH 112R.

Prerequisite: (PSYCH 9A and PSYCH 9B and PSYCH 9C) or (PSCI 11A and PSCI 11B and PSCI 11C) and (PSYCH 10B or COGS 10B) and (PSYCH 10C or COGS 10C). PSYCH 10B with a grade of C- or better. COGS 10B with a grade of C- or better. PSYCH 10C with a grade of C- or better. COGS 10C with a grade of C- or better

Same as COGS 112R.

Restriction: Cognitive Sciences Majors have first consideration for enrollment. Psychology Majors have first consideration for enrollment.

**PSYCH 119. Special Topics in Research Methodologies. 1-4 Units.**

Studies in selected areas of research methodologies. Topics addressed vary each quarter.

Prerequisite: Prerequisites vary.

Repeatability: Unlimited as topics vary.

Restriction: Psychology Majors have first consideration for enrollment.

**PSYCH 120A. Abnormal Psychology. 4 Units.**

Introduction to psychopathology and behavioral deviations, and the concepts of theories regarding these conditions.

Prerequisite: PSYCH 7A or PSCI 9 or PSYCH 9C or PSCI 11C

Overlaps with PSCI 102C.

Restriction: Cognitive Sciences Majors have first consideration for enrollment. Psychology Majors have first consideration for enrollment.

**PSYCH 120D. Developmental Psychology. 4 Units.**

A general introduction to the study of the physical, intellectual, social, and emotional development of the child from birth to adulthood.

Prerequisite: PSYCH 7A or PSCI 9 or PSYCH 9A or PSCI 11A

Overlaps with PSCI 111D.

Restriction: Cognitive Sciences Majors have first consideration for enrollment. Nursing Science Majors have first consideration for enrollment. Psychology Majors have first consideration for enrollment.

**PSYCH 120H. History of Psychology. 4 Units.**

A history of the development of various schools and systems of psychological thought.

Prerequisite: (PSYCH 7A or PSCI 9) or (PSYCH 9A or PSCI 11A) and (PSYCH 9B or PSCI 11B) and (PSYCH 9C or PSCI 11C)

Restriction: Cognitive Sciences Majors have first consideration for enrollment. Psychology Majors have first consideration for enrollment.

**PSYCH 120P. Personality Theories. 4 Units.**

A survey of the evolution of personality theory during this century. An overview of major perspectives in the field, with special attention to Freud, Jung, and Adler.

Prerequisite: PSYCH 7A or PSCI 9 or PSYCH 9C or PSCI 11C

Overlaps with PSCI 170S.

Restriction: Cognitive Sciences Majors have first consideration for enrollment. Psychology Majors have first consideration for enrollment.

**PSYCH 121S. Psychology of Sleep and Consciousness. 4 Units.**

Covers the physiology, neurochemistry, and neuroanatomy associated with sleep, contemporary sleep theory, REM and NREM, phenomenology, sleep disorders, examination of differences between conscious and unconscious cognitive function, the history of sleep and dream theories from ancient time to present day.

Restriction: Cognitive Sciences Majors have first consideration for enrollment. Psychology Majors have first consideration for enrollment.

**PSYCH 122C. Clinical Psychology. 4 Units.**

Provides overview of the clinical psychology field including theories and techniques used in counseling and testing.

Overlaps with PSCI 150C.

Restriction: Cognitive Sciences Majors have first consideration for enrollment. Psychology Majors have first consideration for enrollment.

**PSYCH 122I. Organizational/Industrial Psychology. 4 Units.**

Introduction to applied psychology in organizations, including personnel testing, selection, training and evaluation, job and classification analysis, job satisfaction and motivation, organizational development, leadership, market research, and consumer psychology. Potential ethical problems are discussed.

Prerequisite: (PSYCH 7A or PSCI 9) or (PSYCH 9A or PSCI 11A) or (PSYCH 9B or PSCI 11B) or (PSYCH 9C or PSCI 11C)

Restriction: Cognitive Sciences Majors have first consideration for enrollment. Psychology Majors have first consideration for enrollment.

**PSYCH 122P. Clinical Psychophysiology. 4 Units.**

Psychophysiology investigates the relationships between physiological processes and psychological phenomena. Technologies examined include reaction times, heart rate variability, EEGs, ERPs, magnetoencephalography, and eye tracking. Applications include diagnosis, the longitudinal assessment, and the identification of individuals at risk of disease onset.

Prerequisite: BIO SCI N110 or BIO SCI N115A or PSYCH 9A or PSCI 11A

Same as BIO SCI N118.

**(II)****PSYCH 123P. Topics in Philosophy of Psychology. 4 Units.**

Selected topics in the philosophy of psychology, e.g., the nature of psychological explanation, reductionism, issues in cognitive, behavioral, and neuroscience.

Repeatability: Unlimited as topics vary.

Same as PHILOS 143, LPS 143.

Restriction: Philosophy Majors have first consideration for enrollment. Psychology Majors have first consideration for enrollment.

**PSYCH 124S. Sports Psychology. 4 Units.**

Discusses the field of sports psychology with an emphasis on clinical practice including motivation, goal setting, performance skills, and mental skills. Discusses and utilizes a wide range of techniques designed to enhance performance and manage problems among athletes.

Prerequisite: (PSYCH 7A or PSCI 9) or (PSYCH 9C or PSCI 11C)

Overlaps with PSCI 139H.

Restriction: Psychology Majors have first consideration for enrollment. Cognitive Sciences Majors have first consideration for enrollment.

**PSYCH 124V. Psychology of Violence. 4 Units.**

Discusses the psychology of violence and aggression with an emphasis on understanding the psychological, social, and physiological roots of violent and aggressive behavior. Psychological treatment techniques and strategies for prevention of aggressive and violent behavior are also discussed.

Prerequisite: PSYCH 7A or PSCI 9 or PSYCH 9C or PSCI 11C

Restriction: Psychology Majors have first consideration for enrollment.

**PSYCH 127P. Personality Disorders. 4 Units.**

The history of personality disorder classification; defining characteristics of each disorder; the causes, courses, and outcomes of personality disorders; and information regarding assessment, prevention, and treatments of these disorders.

Prerequisite: PSCI 11C or PSYCH 9C

Same as PSCI 168C.

Restriction: Psychological Science Majors only. Psychology Majors only. Social Ecology Majors only.

**PSYCH 129. Special Topics in General Psychology. 4 Units.**

Studies in selected areas of general psychology. Topics addressed vary each quarter.

Prerequisite: Prerequisites vary.

Repeatability: Unlimited as topics vary.

Restriction: Cognitive Sciences Majors have first consideration for enrollment. Psychology Majors have first consideration for enrollment.

**PSYCH 130A. Perception and Sensory Processes. 4 Units.**

A general introduction to the scientific study of sensory processes and perceptual phenomena, with special emphasis in the visual systems.

Prerequisite: (PSYCH 7A or PSCI 9) or (PSYCH 9A or PSCI 11A)

Same as COGS 130A.

Overlaps with PSYCH 131A, PSYCH 131B.

Restriction: Cognitive Sciences Majors have first consideration for enrollment. Psychology Majors have first consideration for enrollment.

**PSYCH 130N. Neuroscience of Perception. 4 Units.**

Introduces the principles that human perception is determined by the properties of brain circuitry and that these brain circuits evolved to interpret the properties of the physical environment to explore human perception from peripheral sensory organs to cortical processing.

Prerequisite: PSYCH 7A or PSCI 9 or PSYCH 9A or PSCI 11A

Same as COGS 130N.

Restriction: Cognitive Sciences Majors have first consideration for enrollment. Psychology Majors have first consideration for enrollment.

**PSYCH 131A. Vision. 4 Units.**

Visual perception and the anatomy and physiology of the visual system. Topics include the retina and the visual pathway; visual sensitivity; color vision; spatial vision; motion perception; and the development of the visual system.

Same as BIO SCI N182, COGS 131A.

Overlaps with PSYCH 130A.

Restriction: Upper-division students only. School of Biological Sciences students have first consideration for enrollment. Cognitive Sciences Majors have first consideration for enrollment. Psychology Majors have first consideration for enrollment.

**PSYCH 131B. Hearing. 4 Units.**

Auditory perception, the anatomy and physiology of the auditory system, and the physics of sound. Topics include neural transduction of sound, sensitivity, sound localization, complex sound perception, and hearing loss.

Prerequisite: (PSYCH 9A or PSCI 11A) and (PSYCH 9B or PSCI 11B)

Same as COGS 131B.

Overlaps with PSYCH 130A.

Restriction: Cognitive Sciences Majors have first consideration for enrollment. Psychology Majors have first consideration for enrollment.

**PSYCH 139. Special Topics in Perception and Sensory Processes. 4 Units.**

Studies in selected areas of perception and sensory processes. Topics addressed vary each quarter.

Prerequisite: Prerequisites vary.

Repeatability: Unlimited as topics vary.

Same as COGS 139.

Restriction: Cognitive Sciences Majors have first consideration for enrollment. Psychology Majors have first consideration for enrollment.

**PSYCH 140C. Cognitive Science. 4 Units.**

Introduction to the investigations of the structure and function of the mind, from viewpoints of computation, neuroscience, philosophy, and cognitive psychology. Topics include perception, attention, knowledge representations, learning and memory, action, reasoning, and language.

Prerequisite: (PSYCH 7A or PSCI 9) and (PSYCH 9A or PSCI 11A) and (PSYCH 9B or PSCI 11B)

Restriction: Cognitive Sciences Majors have first consideration for enrollment. Psychology Majors have first consideration for enrollment.

**PSYCH 140J. Judgment and Decision Making. 4 Units.**

The psychology of human decision making. Theories, models, experiments, and data that inform how people make choices, judgments, and other decisions. Topics include optimality and bias, mental simulation, learning and feedback, expertise, emotional effects, and group decision making.

Prerequisite: PSYCH 9A and PSYCH 9B

Same as COGS 140J.

Restriction: Cognitive Sciences Majors have first consideration for enrollment. Psychology Majors have first consideration for enrollment.

**PSYCH 140L. Learning and Decision Making. 4 Units.**

The psychological and neural bases of learning about and interacting with the world. Topics include shaping of behavior by rewards and punishments, abstraction of relational information, goal-directed versus habitual decision strategies, social knowledge transmission, and behavioral and substance addictions.

Prerequisite: (PSYCH 7A or PSCI 9) or (PSYCH 9A or PSCI 11A)

Same as COGS 140L.

Restriction: Cognitive Sciences Majors have first consideration for enrollment. Psychology Majors have first consideration for enrollment.

**PSYCH 140M. Human Memory. 4 Units.**

Developments in the area of memory; history of memory research; theories of the nature of memory. Visual memory, recognition memory, high-speed scanning, free recall, short-term memory, mnemonics, retrieval, relationship of memory to thinking. Selected theoretical formulations for memory.

Prerequisite: (PSYCH 7A or PSCI 9) or (PSYCH 9B or PSCI 11B)

Same as COGS 140M.

Restriction: Cognitive Sciences Majors have first consideration for enrollment. Psychology Majors have first consideration for enrollment.

**PSYCH 143P. Human Problem Solving. 4 Units.**

Modern developments in the psychology of human problem solving. Topics include concept identification, arithmetic, sets, logic puzzles, story problems, group problem solving, and theorem proving.

Prerequisite: (PSYCH 7A or PSCI 9) or (PSYCH 9B or PSCI 11B)

Restriction: Cognitive Sciences Majors have first consideration for enrollment. Psychology Majors have first consideration for enrollment.

**PSYCH 146MW. Writing about Memory. 4 Units.**

Covers a broad range of texts, literary, philosophical, and scientific, each probing the nature of memory and its meaning in human life. Readings are drawn from across many disciplines and many perspectives.

Prerequisite: PSYCH 7A or PSYCH 9B or PSCI 9 or PSCI 11B. Satisfactory completion of the Lower-Division Writing requirement.

Restriction: Psychology Majors have first consideration for enrollment.

(Ib)

**PSYCH 149. Special Topics in Cognition and Learning. 4 Units.**

Studies in selected areas of cognition and learning. Topics addressed vary each quarter.

Prerequisite: Prerequisites vary.

Repeatability: Unlimited as topics vary.

Restriction: Psychology Majors have first consideration for enrollment.

**PSYCH 150. Psychology of Language. 4 Units.**

Examines language using the tools of experimental psychology. From sounds to words to spoken and written sentences, explores how language is used in real time, and how its use reveals how it is represented in the mind.

Prerequisite: PSYCH 7A or PSCI 9 or PSYCH 9B or PSCI 11B or LSCI 3

Same as LSCI 155.

Restriction: Cognitive Sciences Majors have first consideration for enrollment. Language Science Majors have first consideration for enrollment. Psychology Majors have first consideration for enrollment.

**PSYCH 157M. Computational Methods for Language Research. 4 Units.**

Focuses on computational methods useful for language research. Students become familiar with software and programming languages used for extracting information from electronic datasets and for creating basic simulations of linguistic cognition. No prior programming experience assumed.

Prerequisite: PSYCH 150 or LSCI 155 or PSYCH 156A or LSCI 151

Same as PSYCH 157M.

**PSYCH 159. Special Topics in Language. 4 Units.**

Studies in selected areas of language sciences. Topics addressed vary each quarter.

Prerequisite: Prerequisites vary.

Repeatability: Unlimited as topics vary.

Restriction: Cognitive Sciences Majors have first consideration for enrollment. Psychology Majors have first consideration for enrollment.

**PSYCH 160A. Introduction to Cognitive Neuroscience. 4 Units.**

Introduction to the neural basis of human perceptual, motor, and cognitive abilities. Topics include sensory perception, motor control, memory, language, attention, emotion, frontal lobe function, functional brain imaging, and neuropsychological disorders.

Prerequisite: (PSYCH 7A or PSCI 9) or ((PSYCH 9A or PSCI 11A) and (PSYCH 9B or PSCI 11B))

Same as COGS 160A.

Restriction: Cognitive Sciences Majors have first consideration for enrollment. Psychology Majors have first consideration for enrollment.

**PSYCH 160D. Brain Disorders and Behavior. 4 Units.**

Examines the localization of human brain functions and the effects of neurological disorders on psychological functions such as perception, motor control, language, memory, and decision-making.

Prerequisite: (PSYCH 7A or PSCI 9) or ((PSYCH 9A or PSCI 11A) and (PSYCH 9B or PSCI 11B)) or BIO SCI 35 or BIO SCI N110 or BIO SCI N115A

Same as BIO SCI N165, COGS 160D.

Restriction: Biological Sciences Majors have first consideration for enrollment. Cognitive Sciences Majors have first consideration for enrollment. Psychology Majors have first consideration for enrollment.

**PSYCH 161. Language and the Brain . 4 Units.**

Research analysis on biological bases of human linguistic capacity. Development, focusing on hemispheric specialization, plasticity; localization of specific linguistic functions in adults, with emphasis on study of aphasias; relation of linguistic capacity to general cognitive capacity, considering research on retardation.

Prerequisite: (PSYCH 7A or PSY BEH 9 or PSYCH 9A or PSY BEH 11A) and (PSYCH 9B or PSY BEH 11B or BIO SCI 35 or BIO SCI N110 or BIO SCI N115A)

Same as BIO SCI N160, LSCI 158.

Restriction: Cognitive Sciences Majors have first consideration for enrollment. Biological Sciences Majors have first consideration for enrollment. Psychology Majors have first consideration for enrollment.

**PSYCH 161H. Hearing and the Brain. 4 Units.**

An overview of brain mechanisms of hearing, including perception of simple sounds, speech, and music. Begins with sound itself, and looks at processing by the ear, auditory pathways, auditory cortex, and beyond. Also auditory development, learning, and clinical issues.

Prerequisite: PSYCH 160A or BIO SCI 93 or BIO SCI H93

Same as BIO SCI N147.

Restriction: Cognitive Sciences Majors have first consideration for enrollment. Biological Sciences Majors have first consideration for enrollment. Psychology Majors have first consideration for enrollment.

Concurrent with NEURBIO 260.

**PSYCH 162N. Human Neuropsychology. 4 Units.**

A survey of human brain disorders using a clinical case study approach to illustrate fundamental issues in studying brain and behavior. Topics include sensory deficits, attentional neglect, amnesia, cortical organization, clinical psychopathology, and more.

Prerequisite: BIO SCI N110 or BIO SCI N115A or PSYCH 9A or PSCI 11A

Same as BIO SCI N173, PSCI 163C.

Restriction: School of Biological Sciences students have first consideration for enrollment. Cognitive Sciences Majors have first consideration for enrollment. Psychological Science Majors have first consideration for enrollment. Psychology and Social Behavior Majors have first consideration for enrollment. Psychology Majors have first consideration for enrollment.



**PSYCH 169. Special Topics in Cognitive Neuroscience . 4 Units.**

Studies in selected areas of cognitive neuroscience. Topics addressed vary each quarter.

Prerequisite: Prerequisites vary.

Repeatability: Unlimited as topics vary.

Restriction: Psychology Majors have first consideration for enrollment.

**PSYCH 173A. Psychological Anthropology. 4 Units.**

Cultural differences and similarities in personality and behavior. Child-rearing practices and consequent adult personality characteristics, biocultural aspects of child development and attachment, culture and behavior evolutionary models, politically linked personality, cognitive anthropology, psychology of narrative forms, comparative national character studies.

Prerequisite: ANTHRO 2A or (PSYCH 7A or PSCI 9) or (PSYCH 9A and PSYCH 9B and PSYCH 9C) or (PSCI 11A and PSCI 11B and PSCI 11C)

Same as ANTHRO 132A.

Restriction: Anthropology Majors have first consideration for enrollment. Anthropology Minors have first consideration for enrollment. Cognitive Sciences Majors have first consideration for enrollment. Medical Anthropology Minors have first consideration for enrollment. Psychology Majors have first consideration for enrollment.

**PSYCH 174E. African American Psychology. 4 Units.**

Historical overview of the development of black psychology and the African American frame of reference. Topics include personality development, psychological assessment, issues in education, black mental health, and the role of the African American psychologist in the community.

Same as AFAM 153.

**PSYCH 174H. Chicano/Latino Families. 4 Units.**

Introduction to the research, literature, and issues surrounding the topic of Chicano/Latino families including cultural history, contemporary issues, organization of family, traditions, lifestyles, values, beliefs, generational differences, gender issues, ethnic identity, evolution of demographic patterns, current economic and political standings.

Same as CHC/LAT 170, PSCI 166S, SOC SCI 165.

**PSYCH 176A. Political Psychology. 4 Units.**

Examination of how psychological theory and research may be used to better understand political thought and behavior. Drawing on theories of learning, cognition, and personality, discusses such topics as the formation of political attitudes, and the process of political decision-making.

Same as POL SCI 128C.

Restriction: Majors only. POL SCI 128C may not be taken for credit if taken after POL SCI 137C.

**PSYCH 177D. Deviance. 4 Units.**

Perspectives on deviance and criminality in behavior, institution, community, and myth. The suitability of contemporary theories of deviant behavior.

Same as SOCIOL 156, CRM/LAW C107.

Restriction: Criminology, Law and Society Majors have first consideration for enrollment. Social Ecology Majors have first consideration for enrollment. Sociology Majors have first consideration for enrollment. Psychology Majors have first consideration for enrollment.

**PSYCH 177F. Forensic Psychology: Advanced Seminar. 4 Units.**

Focuses on the psychology of criminal offending, particularly violent behavior. Examines violence, sexual offending, and mental disorder related to crime with regard to clinical assessment and treatment; mental health services within forensic institutions.

Prerequisite: (PSCI 9 or PSCI 11C or PSYCH 7A or PSYCH 9C) and PSCI 102C and (PSCI 178S or CRM/LAW C149)

Same as CRM/LAW C136, PSCI 156C.

Restriction: Psychological Science Majors have first consideration for enrollment. Criminology, Law and Society Majors have first consideration for enrollment. Psychology and Social Behavior Majors have first consideration for enrollment. Psychology Majors have first consideration for enrollment. Social Ecology Majors have first consideration for enrollment.

**PSYCH 178N. Social Psychology of Networks. 4 Units.**

Review of network methods used in small group and organizational research. Discussion of social psychological literature relevant to the network of study of cognitive social structure, exchange/communication, identity negotiation, and social control. Case study of network datasets exemplifies research issues.

Same as SOCIOL 135.

Restriction: Psychology Majors have first consideration for enrollment. Sociology Majors have first consideration for enrollment.

**PSYCH 198. Directed Group Study. 1-4 Units.**

Directed study with Cognitive Sciences faculty.

Repeatability: May be repeated for credit unlimited times.

**PSYCH 199. Independent Study. 1-4 Units.**

Independent research with Cognitive Sciences faculty.

**PSYCH 245M. Computational Models of Language Learning. 4 Units.**

Focuses on computational models of native language learning, exploring how probabilistic learning and inference fare on difficult case studies within language acquisition. In all cases, grounds the learning models in available empirical data and considers their psychological plausibility.

Prerequisite: LSCI 251. LSCI 251 with a grade of B- or better

Same as LSCI 206C.

Restriction: Graduate students only.

Concurrent with LSCI 106M.