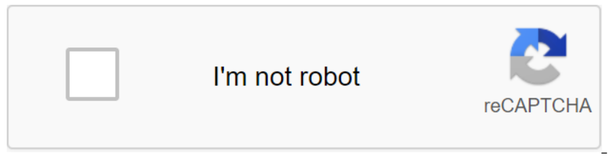

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Cogs 160 ucsd

Autumn, 2009: Cogs 1 (Introduction to Cognitive Science) Ledden Auditorium Winter 2010, 107b, Systemic Neurology, Solis 107 Winter 2010, 201, Systemic Neurology (Grad. Level), CSB 003 Autumn 2010, CogSci 160, Sleep to Attention 107b, Winter 2011, Systemic Neurology, TuTh 8:00am-9:20am Pepper Canyon Hall, rm 106 201, Winter 2011, Systemic Neurology (Graduate Level), TuTh 12:30am-1:50amB CS003, W 9:00am-9:50am CSB 003 Space and time in Brain COGS 107b, Winter 2012, Systemic Neurology, TuTh 8:00am-9:20am Center Hall, rm 101 COGS 201, Winter 2012, Neurology Systems, TuTh 12:30am-Hall 1:50am Cognitive Science Bldg, rm 003 Spr. 2012, COGS 176, From Sleep to Attention, Peterson Hall 104-MWF 2-2:50p COGS 107b, Winter 2013, Systemic Neurology, TuTh 9:30am-10:50am Peterson Hall , rm 108 COGS 201, Winter 2013, Systems Neuroscience, TuTh 12:30am-1:50am Cognitive Science Bldg, rm 180 Cogs 260, Winter 2013, Systems Neuroscience, TBA, TBA COGS 177, Winter 2013, Space and Time in the Brain, MWF 11:00am-11:50am Cognitive Science Bldg, rm 001 COGS 201, Winter 2014, Systems Neuroscience (Grad Level), T/Th 12:00p - 1:20p Cognitive Science Bldg, rm 003 COGS 176: From Sleep to Attention, Winter 2019 COGS 107b, Winter 2014, Systems Neuroscience, TuTh 2:00p - 3:30p York 2722 COGS 107b, Winter 2015, Systems Neuroscience, TuTH 8:00am - 9:20am PCYNH 106 COGS 201, Systems Neuroscience (grad level), Winter 2015, TuTH 3:30pm - 4:50pm CSB 003 COGS 177, Space and Time in the Brain, Winter 2015, TuTH 5:00pm - 6:20pm HSS 2321 COGS 201 (section only) , Systemic Neuroscience (hail level), Winter 2016, W 2:00pm - 3:20 p.m. CSB 272 COGS 201: Systemic Neuroscience (hail level), Winter 2019 COGS 177: Space and time in the brain, Winter 2018 COGS 107b: Systemic Neurology, Winter 2019, Tu/T 12:30-1:50pm COGS 107b: Systemic Neurology, Winter 2019, Tu/Th 3:30-4:50pm These are preliminary charts. Classes and/or instructors may change or be cancelled. Please consult the official Schedule of Classes on TritonLink every quarter. New social challenges, cultural values and technological opportunities are changing design, and vice versa. The workshop explores this increased scale, real participation and devastating impact. Guest speakers from the University of California, San Diego and beyond share cutting-edge research on interaction, design, and learning. 2 units, only P/NP classes. Meet on Wednesdays from 4 p.m. to 5 p.m. Premise: The upper division of the standing course covers the basics of design tools supporting creativity for a variety of fields such as graphic design, information visualization, and so on. The main component is working with the team on a quarter-long programming project. The student can use any platform (web, iOS, android, etc.) and language (javascript, Java, C, etc.) that they are most familiar with. 11 or DSC 30 or COGS 18) and (COGS 1 or COGS 187A or DSGN 1) Request for registration by sending a request to EASy (easy.ucsd.edu) Why do people, individually and in groups, attribute natural events to supernatural agents? How does the human brain accept religious beliefs, even in the face of conflicting evidence? We'll look at how cognitive, developing and cultural factors work together to make people believe in the supernatural. COGS 87 (B00): The memorable life of Professor Andrea Chiba Stress and anxiety is the color of all aspects of life, including how we feel about and relate to ourselves and others. Mindfulness is the practice of cultivating the awareness of the present moment, without judgment, to our experience. Through the cultivation of mindfulness, we will have an understanding of the causes of our stress and anxiety. Through neuroscience, traditions of wisdom, including Buddhism, and meditation practice, we will learn to understand and treat the difficulties of life with greater openness, compassion, and acceptance, thereby greatly enhancing our sense of well-being. This course is a mixed Practical/Seminar course designed to provide practical experience in research in infancy and early childhood. Students learn skills and are assigned responsibilities based on the project to which they are assigned. Students also participate in the magazine club and prepare brief presentations and reports for the end of the quarter. It's a three-quarter sequence. Content, skills and responsibilities evolve and expand every quarter. Students work with a supervisor who oversees learning and progress in tasks. Backgrounds: GPA 3.3 or better; commitment to this COGS 160 for 3 quarters; instructor's permission based on interview and availability. Request enrollment, contact Dr. Deak (gdeak@ucsd.edu). COGS 160 (B00): Neuroimaging Cognition Professor Anastasia Kiyonaga Introduction to Functional Magnetic Resonance Imaging (MRI) Methods of Cognitive Neuroscience Research. This course will cover the main aspects of physics and biological principles underlying MRI and MRI, the technical aspects of experimental design and data collection for MRI, and basic approaches to data processing and analysis. Premise: COGS 107B or COGS 107C or PSYC 106 or PSYC 108 Registration Request by submitting an EASy (easy.ucsd.edu) request this course explores how drugs interact with the brain/mind and culture. It covers evolutionary and historical perspectives, brain chemistry, pharmacology, placebo waiting and effects, and patterns of dependence. It also provides biopsychosocial examination of widely used and abused substances. Premise: The top division standing this class will cover a wide range of machine learning algorithms. It is based on the previous impact of students on machine learning. It covers new artificial intelligence ranging from the thematic models used in the analysis of text data on genetic algorithms. Preconditions: COGS 109 or COGS 118A or COGS 118B Enrollment Request by submitting an EASy (easy.ucsd.edu) Design Course in which students will use computational laptops to perform research data analysis and to test hypotheses in large neuroscience data sets, including differences between unique types of neurons, using text-based neurotivisms. Premise: COGS 18 and COGS 118C This course is an introduction to strengthening learning, under the fields of machine learning are concerned about how artificial agents learn to act in the world in order to maximize reward. Topics include MDPs, Policy Iteration, TD Training, Training, Approximation Features, Deep RL. Backgrounds: (COGS 18 or CSE 11 or CSE 8B) and (MATH 18 or MATH 31AH) and (MATH 180A) and (COGS 108 or COGS 109 or COGS 118B or CSE 1 50A or CSE 150B or CSE 151A or CSE 151B or CSE 158 or ECE 174 or ECE 175A) Courses and requirements for training programs and degrees described in the present, can be modified or removed without notice. Courses To describe courses not found in the UC San Diego General Catalog 2020-21, please contact the department for more information. COO IN 1. Introduction to Cognitive Science (4) the team taught a course highlighting the development of the field and the wide range of topics covered in the core. Examples include addiction, analogy, animal cognition, human-computer interaction, language, neuroimaging, neural networks, reasoning, robots and real applications. COO IN 2. Cognitive Neuroeconomics (4) This course is an introduction to neuroscience for the principles of economic decision making. The themes of this course focus on the basic cognitive and neural mechanisms that govern the solutions underlying traditional economic models. COOVE 3. Introduction to the computing system (4) covers the fundamental concepts that underpin all programming languages, and provides an introduction to important information about algorithms and data structures. Students design and implement web applications using HTML5, CSS3, JavaScript, and Photoshop. Previous programming experience is not required. KOB 8. A hands-on computer science course (4) An introductory level that will give students an insight into the fundamental concepts of algorithmic thinking and design. The course will provide first-person students with hands-on experience programming web scanner and simple physical robots. KOB 9. Introduction to Data Science (4) Data Concepts and their role in science will be introduced, as well as the ideas behind data processing, text mining, machine learning and graph theory, and how scientists and companies use these techniques to uncover new insights into human cognition. 10. The Cognitive Effects of Technology (4) This course examines the relationship between cognition and technology in terms of cognitive science. We address the issues important to our increasingly technological society: How does technology shape our minds? How do we know about our minds the shape of technology? KOB 11. Minds and Brains (4) How a damaged and normal brain affects how people solve problems, remember or forget, pay attention to things; how they affect our emotions, and how we use language in everyday life. KOB 12. Language, Culture and Cognition (4) Do people who speak different languages think? Is learning new languages changing the way you think? Are some thoughts unthinkable without language? The course will combine ideas and conclusions from psychology, linguistics, anthropology, neuroscience and philosophy. COOVE 13. Field Techniques: Exploring Cognition in the Wild (4) This course introduces students to several methods for researching cognition and behavior in the wild. Students learn about ethnography, video shooting (video collection, coding, and analysis), design and surveying, and how to move from observations to modeling. COB 14A. Introduction to research methods (4) Introduction to the scientific method. Methods of acquisition of knowledge, research questions, hypotheses, operational definitions, variables, control. Observation, measurement levels, reliability, reliability. Experiments and design: between groups, within subjects, quasi-experimental, factor, peer-to-peer. Correlational and observational studies. Ethics in research. COGS 14B. Introduction to statistical analysis (4) Introduction to descriptive and inference statistics. Tables, graphs, central trend indicators and variability. Distributions, estimates, correlations, regression. Probability, sampling, logic of output statistics, hypothesis testing, decision theory. T-test, single- and two-dry Anova, non-parametric tests (Chi-square). Backgrounds: COGS 14A. COGS 15. What is :!?: Unentherrated Introduction to language (4) This course uses the study of swearing to introduce topics in the language: how children learn, why it changes over time, and how people pronounce and understand it. Students who feel that they may be offended by the study of oath and other taboo expressions may not find this course appropriate for them. KOB 17. Neurobiology of cognition (4) Introduction to the organization and function of the nervous system. Topics include molecular, cellular, developing, systemic and behavioral neurobiology. In particular, the structure and function of neurons, peripheral and central nervous systems, sensory, motor and control systems, learning mechanisms and memory. (Students cannot obtain credit for both BILD12 and COGS 17. for the marshall and Roosevelt colleges, as well as Warren's petition.) COOVE 18. Introduction to Python (4) This class will teach fundamental programming skills and practices of Python, including the Python zen. Students will focus on scientific computing and learn how to write functions and tests, as well as how to fine code with the Jupyter Notebook programming environment. Students with limited computing experience can take COGS 3 to prepare. COO IN 20. Exploring the musical mind (4) (crosslist with MUS 20.) How to turn complex sounds into understandable and meaningful music? What physiological, neurological, cognitive and cultural systems are involved? Why do we make music in such a variety of ways around the world? Does music have evolutionary or environmental significance? What is the connection between music, movement and emotions? This course explores the contemporary understanding of how we hear and how we become musical and invites students to listen to new music in a new way. Students cannot obtain credit for both COGS 20 and MUS 20. KOB 87. The First Year Student Seminar (1) First Year Student Seminar Program is designed to give new students the opportunity to explore an intellectual topic with a teacher in a small workshop setting. First year Student seminars are offered on all campuses of departments and colleges, and topics vary from quarter to quarter. Enrollment is limited to fifteen to twenty students, with preference given to admission for the first year of students. KOB 90. Student Seminar (1) Special topics in cognitive science are discussed. Only P/NP scores. (It can be repeated when topics change.) KOB 91. SCANS Presents (1) Department of Faculty and Students in Cognitive and Neuroscience (SCANS) offer this workshop exploring issues in cognitive science. It includes informal presentations of faculty studies, studies of topics not covered in the curriculum, and discussions about postgraduate and careers. (It can be repeated when topics change.) KOB 92. Sustainability in the face of adversity (2) Psychological sustainability will be dealt with both scientifically and pragmatically. Students will study how cognitive and behavioral factors contribute to their ability to cope with the stresses of life and get out of them more strongly than before. Only P/NP. KOB 99. Independent study (2 or 4) Independent literature or laboratory research by arrangement with and led by the Department of Cognitive Sciences Lecturer. The prerequisites: Lower Standing Department, completion of thirty units of UC San Diego Bachelor, Minimum UC San Diego GPA 3.0, and completed and approved form of special research. KOB 100. Cyborgs now and in the future (4) encompasses the theories of located, distributed, acceptance and embodied cognition. Explains how cyborgs are a natural consequence embodied minds embedded in the niches of cultural form; how mental systems can be distributed among other people and things. Backgrounds: COGS 1 or COGS 10. COGS 101A. Sensation and Perception (4) Introduction to experimental cognition research with a focus on sensation and perception. Backgrounds: COGS 1. COGS 101B. Learning, Memory and Attention (4) Study of Experimental Study of Learning, Memory and Attention. Topics include conditioning, automatism, divided attention, memory systems and the nature of mental representation. Backgrounds: COGS 1. Recommended: COGS 101A. COGS 101C. Language (4) Introduction to the structure of natural language, as well as cognitive processes that emphasize its acquisition, understanding and production. This course covers the results of linguistics, computer science, psychology and cognitive neuroscience to provide a comprehensive look at the abilities of human language. Backgrounds: COGS 1 and 14A. COGS 102A. Cognitive Perspectives (4) Explores the modern theoretical framework of high-level human cognition that emphasizes how we interact with the material, social and cultural world. Topics include philosophy and the history of cognitive science, the role of artifacts, and how cognition transcends personality. Backgrounds: COGS 1 and COGS 10. COGS 102B. Cognitive ethnography (4) examines memory, reasoning, language, culture, planning and interaction directly in everyday, real-world settings. The focus is on ethnographic methods, their history and their application. Coursework includes projects in which students make observations of real activities and analyze their cognitive value. Premise: COGS 102A. COGS 102C. Cognitive Design Studio (6) This design course is dedicated to the learning and application of the human-centered cognitive design process. Students work in teams to develop and evaluate a prototype application or reorganize an existing system. Emphasizes contextual query, user research, idea, iterative design and evaluation. Premise: COGS 102B. COGS 107A. Neuroanatomy and Physiology (4) This first course in sequence focuses on the principles of brain organization, from neurons to functional network circuits. It explores developmental plasticity, neural communication, cellular communication, complex signaling, and how these different dimensions form the functional systems of the brain. Backgrounds: COGS 1 or COGS 17. COGS 107B. Systems Neuroscience (4) This course focuses on the electrical dynamics of neurons and how their models relate to perception, thought, and action. The neural patterns of activity underlying vision, touch, listening, proprioception and head orientation are discussed in detail. Also considered motor control, sleep/wake production state, action planning, training, attention, spatial cognition and function of the cerebellum, basal basal and the hippocampus. Premise: COGS 107A. COGS 107C. Cognitive Neuroscience (4) This course examines research examining neural foundations for human mental processes, including the processing of affective, social, linguistic and vistospace information, as well as memory, attention and executive functions. The development of the brain and brain aging, as well as the nature of intelligence and creativity, are also discussed. Backgrounds: COGS 107B and its backgrounds. KOB 108. Data Science in Practice (4) Data Science is multidisciplinary, covering computer science, statistics, cognitive science and psychology, data visualization, artificial intelligence and machine learning, among others. This course teaches critical skills needed to pursue a career in data science through practical programming and experimental tasks. Backgrounds: CSE 11 or CSE 8A or COGS 18 or DSC 10 or MAE 8. COGS 109. Data Modeling and Analysis (4) Impact of basic computational techniques useful throughout cognitive science. The computational basic statistics, simulations of people's learning, developing population, agents of communication and linguistics based on enclosures will be considered. Backgrounds: COGS 14B, MATH 18 or MATH 31AH, and COGS 18 or CSE 7 or CSE 8A or CSE 11. COGS 110. Developing Mind (4) (crosslist with HDS 121.) This course examines changes in the thinking and perception of the physical and social world from birth to childhood. Evidence of significant changes in information coding, mental perceptions and problem solving is drawn from psychological research, cross-cultural research and cognitive sciences. Cross-list course. The HDS 121 was taken away from HDP 121. Students can get credit for one of the following: COGS 110, HDS 121, or HDP 121. Backgrounds: COGS 1 or HDP 1 or HDS 1. KOB 115. Neurological Development and Cognitive Change (4) This course provides an overview of neurological development and explores the link between physiological changes and experiences for a child from prenatal to adolescence. Background: BILD 10 or BILD 12 or COGS 107A or COGS 107B or COGS 17 or HDP 110. COGS 118A. Controlled machine learning algorithms (4) This course introduces mathematical formulations and algorithmic implementations of the main controlled machine learning methods. Topics in 118A include regression, nearest area, tree-making, vector support machine and ensemble classifiers. COGS 118A-B can be taken in any order. Backgrounds: COGS 18 or CSE 8B or CSE 11 and MATH 18 or MATH 31AH and MATH 20E and MATH 180A and COGS 108 or COGS 109 or COGS 118B or CSE 150 or CSE 151 or CSE 158 or ECE 174 or ECE 175 or 175 Instructor or Consent. COGS 118B. Introduction to Machine Learning II (4) This course, with COGS 118A, forms a rigorous introduction to machine learning Topics in 118B include an estimate of the maximum probability, probability, assess parameters, cluster, analyze key components, and some applications. COGS 118A-B can be taken in any order. Backgrounds: CSE 8B or CSE 11 and MATH 18 or MATH 31AH and MATH 20E and MATH 180A or Instructor's Consent. COGS 118C. Processing of neural signals (4) This course will cover the theoretical basis and practical application of signal processing to neural data. Topics include EEG/field potential methods (filtration, fourier (spectral) analysis, consistency) and peak train analysis (reverse correlation, spike sorting, multi-electronic recordings). Some applications for neural imaging (optical microscopy, MRI) will also be discussed. Backgrounds: MATH 18 or MATH 31AH, COGS 14B or PSYC 60, and COGS 108 or COGS 109. COGS 118D. Mathematical Statistics analysis of behavioral data (4) Statistical methods for analyzing behavioral data. A mathematically complex course covering both classical and Bayesian statistical methods of evaluation, hypothesis testing, regression and comparison of models. Focus on both mathematical understanding of statistical methods and general applications. Backgrounds: MATH 18 or MATH 31AH and MATH 180A or Instructor's consent. KOB 119. Programming for Experimental Research (4) This course will help students in behavioral sciences (cognitive sciences, psychology, linguistics, neuroscience, and related fields) learn how to program experiments and analyze and present data. Backgrounds: COGS 14B and MATH 18 or MATH 31AH and MAE 8. COGS 120. Interaction Design (5) (crosslist with CSE 170.) introduces fundamental methods and principles for designing, implementing, and evaluating user interfaces. Topics: user-centric design, rapid prototyping, experimentation, direct manipulation, cognitive principles, visual design, social software, software. Learn from: working with the team on a quarter-long design project. Recommended training: basic familiarity with HTML. Students cannot obtain credit for both COGS 120 and CSE 170. Backgrounds: CSE 11 or CSE 8B or DSC 30 and COGS 1 or COGS 187A or DSGN 1. COGS 121. Human Computer Interaction Programming Studio (4) This course covers the basics of UI design and web system adoption. An important component is the completion of a substantial programming project in which students work together in small groups. Backgrounds: COGS 120 and CSE 8B or CSE 11 or DSC 30. COGS 122. Start-up Studio (4) explores the tools and processes for innovating new business concepts to address the challenges of people-technology interaction. Students will work with an interdisciplinary team to understand the unmet needs of users and create value that balances technical feasibility, financial viability and desirability. Backgrounds: DSGN 100 or COGS 187B or COGS 187A or COGS 120 or CSE 170. COGS 123. Social Social (4) This course explores the intersection of social behavior and computing systems. Students will study a range of organizational, technical, and business challenges related to social computing and learn how to use tools to analyze, design, and build online communities. Backgrounds: COGS 102C or COGS 120 or COGS 187A or COGS 187B or DSGN 1. KOB 124. In this advanced course-based project, we are studying modern research in human-computer communication (HCI) technical systems. Students will deconstruct the systems described in top-level HCI jobs and work in teams to create new technical systems of their own. Backgrounds: COGS 120 and COGS 121. COGS 125. Advanced Interaction Design (4) is a classroom studio for students who are passionate about immersing themselves deeply in design interactions and honing their design skills. Introduces social computing, input and interaction techniques, and information design. Students will regularly present work in the studio format. Backgrounds: CSE 11 or 8B and COGS 120 or CSE 170. KOB 126. Human-computer interaction (4) This course shows the area of human-computer interaction and the ideas and technologies that shaped its development. Backgrounds: COGS 120 or COGS 121 or CSE 170. KOB 127. The design of human-data interaction (4) represents the design of human-data interactions, combining human-computer interaction (HCI) and data science. Topics: user-centric design, prototyping, research data analysis, interactive data visualization, data narration. Teamwork on a quarter-long project. Backgrounds: CSE 11 or CSE 8B or DSC 30 and COGS 1 or COGS 187A or DSGN 1. COGS 143. Animal Cognition (4) explores the contrasts and parallels between primates and cetaceans in sensory limitations, neuroanatomy, field behavior and cognition in the lab, with a focus on the demands of competition and collaboration that helped shape the evolution of social cognition. Students cannot obtain credit for COGS 143 and COGS 143GS. Preconditions: the position of the top division. KOB 144. Social Cognition: Development and Evolutionary Perspective (4) This course presents the building blocks of social cognition in terms of development and evolution and focuses on how and when children develop these abilities and how humans are compared to other species such as large apes, birds and dogs. Backgrounds: COGS 14A-B. KOB 151. Analogy and conceptual systems (4) Human thought and meaning are deeply related to the ability to display conceptual domains on each other, causing common patterns and performing mental modeling. This course examines the main aspects of this cognitive activity, including metaphor, conceptual and embodied cognition. Preconditions: the position of the top division. KOB 152. Cognitive Basics of Mathematics (4) How the Human Mind/Brain Brain Mathematics: embodiment, innovation and creativity. The emergence and power of abstract concepts, such as infinity, infinitesimal, imaginary numbers or zero. Cognitive approaches that connect mathematics with human thought in general. Backgrounds: COGS 1 or PHIL 1 or PSYC 1 or EDS (20 or 30 or 31); top division standing. KOB 153. Understanding language (4) Processes and perceptions involved in language understanding - word processing, syntax, semantics and discourse - are considered in light of evidence of both psychological experimentation and computer simulation. Preconditions: the position of the top division. KOB 154. Communication disorders in children and adults (4) Neural basics of language use in normal adults, as well as neural foundations of language development and communication in normal children. Evidence of language and communication deficits in adults (especially aphasia and dementia) and children (specific language disorders, focal traumatic brain injury, retardation and autism). Preconditions: the position of the top division. KOB 155. gesture and cognition (4) Spontaneous gestures and their attitude to speech, cognition, brain and culture. The course covers, among other things, the development of gestures and languages, gesture and conceptual systems, coproduction of gesture and its brain bases, the evolution of language and sign behavior in special populations. Preconditions: the position of the top division. KOB 156. Language Development (4) Comprehensive survey of theory, methods and results of research on language development in children, ranging from the earliest stages of speech perception and communication at birth to refinement in narrative discourse and traditional fluency through secondary childhood and adolescence. Preconditions: the position of the top division and experience in developmental psychology and/or linguistics are recommended. KOGOV 157. Music and Reason (4) Explores how people (and other kinds) process music, including step, meter, emotions, motor aspects, references to language, brain activity. Students should have the experience of reading musical notation. Backgrounds: COGS 101A or COGS 101B or COGS 101C. COGS 160. The top part of the Seminar on Special Topics (4) Special topics in cognitive science are discussed. (It can be repeated when topics change.) Backgrounds: Department approval. KOB 163. Metabolic Brain Disorders (4) Studies show that cellular metabolic processes are about mediating normal and abnormal brain function. For example, neurocognitive disorders often occur when metabolic disorders such as insulin resistance, diabetes and obesity. Understanding these mechanisms will give an insight into new treatments for cognitive and neurological disorders. The course will cover topics about the role of abnormal cellular structure, genetic, epigenetic and pathogenic effects on synaptic signals. Preconditions: the position of the top division. Cogs Motivation Neurobiology (4) This course will focus on the principles of motivation, evaluation and reward covering a wide area of topics from synaptic learning rules to classroom learning. Recommended training: courses in basic biology, physiology, COGS 107A or 107B or 107C, or courses in education. Preconditions: the position of the top division. KOB 169. Genetic information for behavior: From single cells to mammals (4) Behavior draws on a wide range of genes acting as a complex source of information. Model organisms - bacteria, paramecium, C. elegans, Drosophila and mice - give insight into how genes affect both congenital and studied behaviors. Backgrounds: COGS 1 and 107A or instructor's permission. KOB 170. Brain waves through the scales (4) This course will provide an interactive and practical introduction to the rhythms and large-scale electrical potentials of the brain. Topics will include resonant neuronal properties, rhythmic interactions between neurons, coordination of activity between large populations of neurons, which is measured in local field potential (LFP) and electroencephalogram (EEG), benefits of temporarily coordinated neural activity, and relevant ideas about brain and cognitive disorders. Backgrounds: COGS 17 or BILD 12. KOB 171. Mirror Neural System (4) This class will study neuroanatomy, physiology and functional correlates of the system of mirror neurons of a person and its supposed role in social cognition, for example, understanding of action, empathy and the theory of the mind. We will look at the development, neuroimaging, electrophysiological, and clinical evidence, for and against this hypothesis. Preconditions: the position of the top division. KOB 172. Brain Disorders and Cognition (4) Review models of impaired and intact cognitive abilities present in brain-damaged patients in terms of damage to one or more components of the normal cognitive functioning model. Backgrounds: COGS 107A. COGS 174. Drugs: Brain, Mind and Culture (4) This course explores how drugs interact with the brain/mind and culture. It covers evolutionary and historical perspectives, brain chemistry, pharmacology, placebo waiting and effects, and patterns of dependence. It also provides biopsychosocial examination of widely used and abused substances. Preconditions: the position of the top division. KOB 175. Neuropsychological basis of alternative states of consciousness (4) This course will examine literature that correlates brain rhythms in a person's EEG with aspects of cognition, behavioral states, neuropsych-pharmacology and psychopathology to understand the psychological and neurophysiological basis of these experiences. Backgrounds: COGS 101A or COGS 107A. COGS 176. From Sleep to Attention (4) This course will combine the study of the nervous quiet and active sleep and their potential functions by studying the various mechanisms by which the brain mediates attention to the specific features of the world. Backgrounds: COGS 107A. COGS 177. Space and Time in the Brain (4) Course explores the features of neural dynamics that map spatial and temporal relationships. The lectures will cover intervals, displaying the position from point to observer, displaying the position of the observer in the world and connecting spatial and temporal coding in the hippocampus. Preconditions: the position of the top division. KOB 178. Genes, brains and behavior (4) Evidence of genetic mediation of behavioral and neural differences, mechanisms that can be mediators in these effects, and the role of the environment and experience are discussed. Backgrounds: COGS 107A-B or instructor's consent. KOB 179. Electrophysiology of Cognition (4) Review of the theory and practice of using electrical records (event-related brain potentials) to study cognition and behavior, including attention, language, mental chronometry, memory and plasticity. Backgrounds: COGS 107A or COGS 17. KOB 180. Decision-making in the brain (4) This course covers recent advances in understanding the neural mechanisms and computational principles underlying the brain's ability to make decisions. The role of various factors will be taken into account, as well as their neural coding, such as observation noise, reward, risk, internal uncertainty, emotional state, external stimuli. Backgrounds: BILD 12 or COGS 107B or PSYC 106 and MATH 31AH or MATH 18 and MATH 20B and COGS 108 or COGS 109 or COGS 18 or CSE 8A or CSE 11. KOB 181. Neural Networks and Deep Learning (4) This course will cover the basics of neural networks as well as recent developments in deep learning, including deep belief networks, abattoir neural networks, periodic neural networks, long-term memory and strengthening learning. We will explore the details of deep learning architectures with a focus on exploring complex models for these tasks, in particular image classification. Backgrounds: COGS 18 or CSE 11 or CSE 8B and MATH 18 or MATH 31AH and MATH 20E and MATH 180A and COGS 118A or COGS 118B or CSE 150 or CSE 151 or CSE 158 or ECE 174 or ECE 175A. CO 184GS. Simulation of cognition evolution (4) This interdisciplinary course integrates data on evolutionary theory, the backstory of hominids, primate behavior, comparative neuroanatomy, cognitive development and collaboration. After lectures, readings and discussion of literature, students create a detailed chronology of five million years of cognitive human evolution. Students cannot obtain credit for COGS 184 and COGS 184GS. Backgrounds: COGS 17 or COGS 107A or COGS 107B or COGS 107C or BILD 12. KOB 185. Advanced Machine Learning (4) This course is an advanced workshop and design course that follows machine learning training Advanced and new machine learning methods will be discussed and used. Premise: COGS 118B or COGS 118A. COGS 187A. Usability and Information Architecture (4) looks at the cognitive basis of successful web and multimedia design. Topics: information architecture, navigation, usability, graphic layout, transaction design, and ways to understand user interaction. Backgrounds: COGS 18 or CSE 11 or CSE 8A and COGS 10 or DSGN 1. COGS 187B. Practice in Professional Web Design (4) This course follows the basics of multimedia design taught in COGS 187A. Students will probe more deeply into selective topics such as animation, navigation, graphic display of information, and narrative coherence. Backgrounds: COGS 187A or instructor's consent. KOB 188. Artificial Intelligence Algorithms (4) This class will cover a wide range of machine learning algorithms. It is based on the previous impact of students on machine learning. It covers new artificial intelligence algorithms, ranging from thematic models used in text data analysis to genetic algorithms. Backgrounds: COGS 109 or COGS 118A or COGS 118B. COGS 189. Brain Computer Interfaces (4) This course will discuss signal processing, image recognition algorithms, and human-computer interaction issues in EEG-based brain-computer interfaces. Other types of brain-computer interfaces will also be discussed. Preconditions: COGS 108 or COGS 109 or COGS 118A or COGS 118B. COGS 190A. Preliminary Cognitive Science Project (4) This course prepares students for a cognitive science program. The aim is to improve the research project and teach students what a successfully written proposal entails. Students may be admitted to the Honor Program depending on the completion and progress in the course. For more information, see the Cognitive Science Program. The course must be taken to assess the letter. Preconditions: the position of the top division; instructor and department approval. COGS 190B. Honor Studies in Cognitive Sciences (4) This course will allow cognitive science honors students to study advanced subjects in cognitive science research. It will also provide an opportunity to develop a dissertation on the topic of your choice and to start work under the guidance of teachers. For more information, see the Cognitive Science Program. Backgrounds: COGS 190A and official admission to the Cognitive Science Honors Program; Department stamped. COGS 190C. Difference of the thesis in cognitive science (4) This course will provide honors candidates the opportunity to complete the study and prepare the thesis honors under the close guidance of the faculty. An oral presentation of a student's dissertation is required for Honours; In addition, the student must receive an A- or better grade in 190B and 190C to receive the honors. Read more about this in the Cognitive Science Honors honors section Premise: COGS 190B with class A- or better and formal admission to the Cognitive Science Honors Program. COB 190D. Preparation for the dissertation Presentation (1) This course is associated with the Honors Program (190A-B-C) and is required from honors by students during the spring quarter. Its purpose is to prepare students to present the results of the research to the audience. Particular attention will be paid to the oral presentation (organization, wording, schedule), but there will also be some discussion of written research reports. The format of the workshop is styled with rare short lectures in which students will practice oral presentations and provide constructive criticism to each other. Preconditions: must be simultaneously enrolled in 190B or 190C. COGS 195. Learning in Cognitive Science (4) Students, under the guidance of an instructor, lead labs or discuss sections, attend lectures, and meet regularly with an instructor to help prepare teaching materials and classroom work and exams. Applications must be submitted and approved by the department. Only P/NP scores. It can be taken on credit three times. Preconditions: the position of the top division; 3.0 GPA; instructor and department approval. COGS 197. Cognitive Science Internship (2 or 4) Student will conduct a practical research program in a controlled work environment. Topics that need to be explored may vary, but in each case the course will provide the skills to conduct these studies. Only P/NP scores. Can be taken on credit up to three times.

Preconditions: the position of the top division; 2.5 GPA; Department approval. KOGOV 198. Directed group research (2 or 4) This independent training course is for small groups of advanced students who want to complete a quarter reading or research project led by a teacher. Students should contact a teacher whose research interests them to discuss possible projects. Only P/NP scores. It can be taken on credit three times. Preconditions: the position of the top division; 2.5 GPA; the instructor's consent and the approval of the department. COGS 199. Special Project (2 or 4) This independent training course is for individual, advanced students who want to complete a quarter of a reading or research project led by a teacher. Students should contact a teacher whose research interests them to discuss possible projects. Only P/NP scores. It can be taken on credit three times. Preconditions: the position of the top division; 2.5 GPA; the instructor's consent and the approval of the department. COGS 200. Cognitive Science Workshop (4) This workshop highlights the conceptual basis of cognitive science, including presentation, processing mechanisms, language and the role of human interaction, culture and the environment. Current events in each area are seen as related questions in cognitive science. (Can be repeated for credit.) COGS 201. Neural Dynamics Dynamics (4) Examination of the neurophysiological and neuroanalogical basis for perception, cognition and learning. The lectures will focus on the dynamics of neural activity in cortical and subcortical structures associated with sensory processing, engine control, attention, arousal and memory. COGS 202. Cognitive Scientific Foundations: Computational Cognition Modeling (4) This course of research into the development of symbolic and cocommunicative models of cognition. Individual readings are covered from the late 1940s to the present. Topics include Turing machines, information theory, computational complexity, search, learning, symbolic artificial intelligence and neural networks. COGS 203. Cognitive Science Foundations: Theories and Techniques in The Study of Cognitive Phenomena (4) Research of various theoretical and methodological approaches to the study of human cognition. Topics include language structure, language processing, concept and category, presentation of knowledge, analogy and metaphor, reasoning, planning and action, problem solving, learning and experience, and emotions. COGS 205. Introduction to thesis study (4) This course is taken to focus students' attention on developing the topic of thesis and research proposal. Students prepare sketches of the dissertation proposal and make an oral public presentation of the proposed topic before the end of the third year. Only S/U. COGS 210A-B-C. Introduction to Research (4-4-4) This sequence is an intense research project. Under the guidance of the faculty students perform a thorough analysis of the problem and literature, conduct original research, prepare oral and written presentations. Students should strive for a report on the published quality. A evaluation of the letter is required. COGS 211A-B-C. Cognitive Science Research (2-2-2) Techniques for Design, Implementation and Evaluation of Cognitive Sciences Research are discussed. Students will present and comment on their own research projects. Discussions also include research presentations to different audiences, abstracts, reviews, grant process and scientific ethics. A evaluation of the letter is required. COGS 219. Programming for Behavioral Sciences (4) An Applied Practical Programming Course that focuses on the development, implementation and analysis of experiments. Topics include experimentation, incentive presentation, response collection, file manipulation, data analysis, mapping, and presentation. Course work includes both team and individual projects. Graduate students who have not programmed at all should talk to the professor in advance. COGS 220. Information Visualization (4) This workshop surveys ongoing research in the field of information visualization to prepare students for the conduct of original research. The focus is on the cognitive aspects design, dynamic representations, and computational methods. Topics change every time a course is offered. Offers. 225. Image Recognition (4) This course is designed to open doors for students who are interested in learning basic tools and technologies for classification and image recognition. We will focus on traditional computer vision techniques as well as GPU-powered deep learning techniques that are critical to modern image data analysis, such as large-scale image recognition, object detection, and video analysis. KOB 229. Design in general (1) (crosslist with CSE 219.) New social challenges, cultural values and technological possibilities are changing design, and vice versa. The workshop explores this increased scale, real participation and devastating impact. Guest speakers from the University of California, San Diego and beyond share cutting-edge research on interaction, design, and learning. Only S/U classes. Can be taken on credit up to eighteen times. COGS 230. Topics in human-computer interaction (4) (crosslist with CSE 216.) prepare students to conduct original HCI research by reading and discussing fundamental and cutting-edge scientific papers. Topics include design, social software, input techniques, mobile and ubiquitous computing. Student couples are running a quarter-long mini-research project that uses campus research efforts. Only literal grades. KOB 231. The Design Workshop on Human-CenterEd Programming Tools (4) Graduate level workshop exploring the design of software tools from a human perspective, relying primarily on recent scientific literature combined with classical theory in cognitive science and human-computer interaction. Coursework includes critical reading, discussion and programming projects. Only literal grades. Recommended preparation: COGS 120 or CSE 170. KOB 234. Distributed cognition (4) This course focuses on aspects of individual and socially distributed cognition. Empirical examples are taken from natural and experimental conditions that suggest, tacitly or explicitly, socially distributed knowledge among participants. The class looks at how locally managed, pragmatic conditions affect how decisions are made. KOB 238. Topics in cognitive linguistics (1-4) (crosslist with LIGN 238.) Are key concepts, empirical findings and recent changes in cognitive and functional linguistics. Language is considered dynamically in relation to conceptualization, discourse, meaning construction and cognitive processing. (Because the topics vary, can be repeated for credit.) COGS 241. Ethics and Survival Skills at the Academy (2) (cross-list with NEU 241.) Lectures, reading and discussions about responsible conduct and reporting of research, work with Science, social responsibilities and various career skills; The course is designed as an option to regulate existing federal regulations. Only S/U classes. KOB 243. Statistical output and analysis of data (2 or 4) This course careful treatment of hypothesis testing, statistical output, installation of models and methods of analysis of research data used in cognitive and neural sciences. Students will gain an understanding of the mathematical basics and practical experience of using these methods with Matlab. Cognitive science graduate students must enroll in four units and will need to do assignments and final draft. All other students can enroll in two units and will have to complete all assignments, but not the final project (or on request of the project and without assignments). KOB 252. Cognitive Science of Mathematics (4) Empirical Study of the Nature of Mathematics. How the human mind/brain creates abstract concepts such as infinity, infinitesimal, imaginary numbers or zero: embodiment, creativity, and history. Cognitive approaches that connect mathematics with human thought in general. KOB 260. A seminar on specific topics (1-4) specific topics in cognitive science is discussed. (It can be repeated when topics change.) KOB 277. Mirror in Social Cognition (4) The discovery of mirror neurons in the monkey's brain raised the possibility that the mirror is an example of mental modeling. In this seminar, we will look at the neural basis of social cognition and, in particular, the relationship between mirror processes and cognition. KOB 278. Genetics and individuality (4) Evidence on the strength and connection of genetic variants with behavioral and neural phenotypes will be considered. Integrative models of genetic and environmental interaction will be discussed. The Guest Faculty will describe its own work in this area. KOB 279. Electrophysiology cognition (4) (crosslist with NEU 279) This course studies the theory and practice of using recordings of electrical and magnetic brain activity to study cognition and behavior. It explores what brainwaves show about normal and abnormal perception, processing, decision-making, memory, preparation and understanding. Graduate students will be required to do additional readings for the material each week (different for each graduate) and submit an oral (as well as written page) critical analysis of the readings. Backgrounds: COGS 107A or PSYC 106; COGS 101A or PSYC 105. KOB 280. Neural oscillations (4) of brain rhythms play a crucial role in perception and cognition. What's it? Where did they come from? This course will explore the origin and function of neural oscillations and the role they play in neural computing, representation and cognition. Premise: Department approval. The Python/Matlab experience required before registration. KOB 283. Processing Large Visual Data (4) This course is designed for students interested in learning basic tools and technologies for working with big data images in the sense of collecting, scanning, processing and images, focusing on matching, hashing, deep learning, and online learning. KOB 290. Rotation of cognitive science laboratory (2) Rotation laboratories give students experience in various experimental methods used in cognitive science. Backgrounds: Instructor's consent. Only S/U. COGS 291. Laboratory Studies (1-4) Students participate in the discussion of reading the latest research in the field, appointed and directed by the instructor, as well as participate in the development and execution of original studies. Students must demonstrate verbal and written competence in presenting original studies. Preconditions: Instructor's consent and department approval. (Can be repeated for credit.) KOB 298. The director of independent research (1-12) Students study and study selected topics under the guidance of a faculty member. COGS 299. Dissertation Studies (1-12) Students are provided with directed research on their thesis topic of faculty consultants. KOB 500. Teaching Apprenticeship (1-4) This practicum for graduate students provides the experience of teaching students cognitive science courses. Only S/U. Only.