NEUROSCIENCE SPECIALIZATION  
Major code: CG29  
This area of specialization is intended for majors interested in neuroscience research or medicine. Allowed electives include courses in cognitive neuroscience, organic chemistry, biochemistry, and physiology.  

Cognitive Science  
COGS 119: Programming/Experimental Res.  
COGS 143: Animal Cognition  
COGS 154: Comm. Disorders Child/Adults  
COGS 160: Sem Special Topics (if topic applies)  
COGS 163: Metabolic Disorders of the Brain  
COGS 164: Neurobiology of Motivation  
COGS 169: Genetic Information for Behavior  
COGS 170: Brain Waves Across Scales  
COGS 171: Mirror neuron System  
COGS 172: Brain Disorders and Cognition  
COGS 174: Drugs: Brain, Mind, and Culture  
COGS 175: Neuropsychological/States of Consciousness  
COGS 176: From Sleep to Attention  
COGS 177: Space and Time in the Brain  
COGS 178: Genes, Brains, and Behavior  
COGS 179: Electrophysiology of Cognition  
COGS 180: Decision Making in the Brain  
COGS 184: Modeling the Evolution of Cognition  
Plus any COGS 107 not used for core sequence  

Biochemistry  
BIBC 100: Structural Biochemistry  
BIBC 102: Metabolic Biochemistry  

Biology-Animal Physiology and Neuroscience  
BIPN 100: Human Physiology I  
BIPN 105: Animal Physiology Lab  
BIPN 144: Developmental Neurobiology  
BIPN 146: Computational Neurobiology  
BIPN 148: Cellular Basis of Learning and Memory  

Chemistry  
CHEM 143B: Organic Chemistry Laboratory  
CHEM 143C: Organic Chemistry Laboratory  

Linguistics  
LIGN 180: Language Representation in the Brain  
LIGN 181: Language Processing in the Brain  

Psychology  
PSYC 123: Cognitive Control and Frontal Lobe Function  
PSYC 132: Hormones and Behavior  
PSYC 133: Circadian Rhythms – Biological Clock  
PSYC 150: Cognitive Neuroscience of Vision  
PSYC 168: Psych. Disorders of Childhood  
PSYC 169: Brain Damg and Ment. Func.  
PSYC 174: Visual Cognition  
PSYC 179: Drugs, Addds., & Ment. Disorder.  
PSYC 181: Drugs and Behavior  
PSYC 182: Illusions and the Brain  

MACHINE LEARNING AND NEURALCOMPUTATION SPECIALIZATION  
Major code: CG35  
This area of specialization is intended for majors interested in computational and mathematical approaches to modeling cognition or building cognitive systems, theoretical neuroscience, as well as software engineering and data science. Allowed electives include advanced courses in neural networks, artificial intelligence, and computer science.  

Cognitive Science  
COGS 109: Model. and Data Analysis  
COGS 118A: Intro to Machine Learning I *  
COGS 118B: Intro to Machine Learning II *  
COGS 118C: Neural Signal Processing *  
COGS 118D: Math. Stat. for Behavioral Data Analysis *  
COGS 160: Sem Special Topics (if topic applies)  
COGS 180: Modeling the Evolution of Cognition  
COGS 181: Neur. Net. Mod. of Cognition  
COGS 185: Adv. Machine Learning Methods  
COGS 188: Artificial Intelligence Algorithms  
COGS 189: Brain Computer Interfaces  

Biology-Animal Physiology and Neuroscience  
BIPN 100: Human Physiology I  

Computer Science and Engineering**  
CSE 100: Advanced Data Structures  
CSE 101: Design and Analysis of Algorithms  
CSE 102: Storage System Architectures  
CSE 105: Theory of Computability  
CSE 130: Program Lang. Prin. and Paradigms  
CSE 131: Compiler Construction  
CSE 150: Intro to AI: Search and Reasoning  
CSE 151: Intro to AI: Statistical Approaches  
CSE 160: Intro to Parallel Computation  

Linguistics  
LIGN 167: Deep Learning for Nat. Lang. Understanding  

Math  
MATH 170A: Intro to Numerical Analysis: Linear Algebra  
MATH 170B: Intro to Numerical Analysis:Approx./Non Lin. Eq.  
MATH 170C: Intro as well as Numerical Analysis: Ordinary, Diff. Eq.  
MATH 180A: Introduction to Probability  
MATH 180B: Intro to Stochastic Processes I  
MATH 180C: Intro to Stochastic Processes II  
MATH 189: Exploratory Data Analysis and Inference  

Cross-Campus Online  
CMN 150V: Computational Social Science (UC Davis)  
CMPE 107: Prob/Statis for Engineers (UC Santa Cruz)  
Visit crossenroll.universityofcalifornia.edu to enroll  

* Students specializing in Machine Learning and Neural Computation must choose 2 electives from: COGS 118A-B-C-D. These courses require MATH 20C-E, 18, 180A, and COGS 18 as prerequisites. ** We cannot guarantee these courses forCogSci majors as many CSE courses are very impacted.  

LANGUAGE AND CULTURE SPECIALIZATION  
Major code: CG34  
This area of specialization is intended for majors whose primary interests include human psychology and applications of cognitive science in design and engineering. Allowed electives include courses in cognitive development, language, laboratory research of cognition, anthropology and sociology.  

Linguistics  
LIGN 148: Psycholinguistics of Sign Language  
LIGN 155: Evolution of Language  
LIGN 170: Psycholinguistics  
LIGN 171: Child Lang Acquisition  
LIGN 174: Gender and Language in Society *  
LIGN 175: Sociolinguistics  
LIGN 180: Language Representation in the Brain  
LIGN 181: Language Processing in the Brain  

Psychology  
PSYC 115A: Lab in Cognitive Psychology I  
PSYC 115B: Lab in Cognitive Psychology II  
PSYC 128: Psychology of Reading  
PSYC 145: Psychology of Language  
PSYC 156: Cognitive Development in Infancy  

Sociology  
SOCI 116: Gender and Language in Society *  
SOCI 117: Language, Culture, and Education  
SOCI 118E: Sociology of Language  

*Students can take either LIGN 174 or SOCI 116 but not both  

The Department of Cognitive Science offers optional “areas of specialization” within the Cognitive Science major for the BS degree only.  
The areas of specialization are intended to provide majors with guidance in choosing elective courses and to make the specific interests and training of a major clear to prospective employers and graduate schools. Specifying an area of specialization is optional; however, students should take into consideration that approved courses are not necessarily offered every year, when planning for their specialization.  
To major in Cognitive Science with an area of specialization, student must fulfill the requirements for the BS degree and must choose 4 of the required 6 electives from the list of approved electives for that area of specialization.  
At least 3 of your 6 total electives must be taken within the Cognitive Science Department (COGS courses).  
A COGS 199 may be allowed for elective credit within the specialization if the research project was clearly in one of the specialization areas. The specialization area will be listed on the transcript.  

Cognitive Science Department  
University of California San Diego  
9500 Gilman Drive, MC 0515  
La Jolla, CA 92093-0515  
Phone: (858) 534-6775  
Email: cogadvising@ucsd.edu  
Website: cogsci.ucsd.edu  
Location: Cognitive Science Building / Room 139
<table>
<thead>
<tr>
<th>CLINICAL ASPECTS of COGNITION SPECIALIZATION</th>
<th>DESIGN AND INTERACTION SPECIALIZATION</th>
<th>Computing and the Arts</th>
<th>Psychology</th>
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<tbody>
<tr>
<td>This area of specialization is intended for majors interested in cognitive neuropsychology, psychiatry, cognitive disorders, and the effects of drugs and brain damage on cognitive functions. Allowed electives include courses in those topics, as well as organic chemistry, biochemistry and physiology.</td>
<td>This area of specialization is intended for majors interested in human computer interaction, web, visualization, and applications of cognitive science in design and engineering. Additional electives may be petitioned from communication, computer science, computer engineering and visual arts. Please note: We cannot guarantee enrollment in non-COGS courses (i.e., CSE, ECE, IMAM) for HCI students since many of these majors are very impacted and priority is given to students in those majors.</td>
<td>ICAM 102: Time- and Process-Based Digital Media</td>
<td>VIS 135: Design Research Methods</td>
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<tr>
<td>COGS 154: Communication Disorders in Children + Adults</td>
<td>COGS 102A: Cognitive Perspectives</td>
<td>ICAM 130: Seminar in Contemporary Computer Topics</td>
<td>VIS 145B: Time- and Process-Based Digital Media II</td>
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<tr>
<td>COGS 163: Metabolic Disorders of the Brain</td>
<td>COGS 102B: Cognitive Ethnography</td>
<td>Computer Science</td>
<td>VIS 147A: Electronic Technologies for Art I</td>
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<td>COGS 171: Mirror neuron System</td>
<td>COGS 102C: Cognitive Design</td>
<td>CSE 100: Advanced Data Structures</td>
<td>VIS 147B: Electronic Technologies for Art II</td>
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<tr>
<td>COGS 174: Drugs: Brain, Mind and Culture</td>
<td>COGS 120: Interaction Design</td>
<td>CSE 110: Software Engineering</td>
<td>VIS 161: Systems and Networks at Scale</td>
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<td>COGS 176: From Sleep to Attention</td>
<td>COGS 122: Interaction Design Startup</td>
<td>CSE 130: Programming Lang: Principles and Paragdms</td>
<td>VIS 163: Design Research and Criticism</td>
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<td>Biochemistry</td>
<td>COGS 123: Social Computing</td>
<td>CSE 132A: Database System Principles</td>
<td>VIS 176: 16mm Filmmaking</td>
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<tr>
<td>Biology-Animal Physiology and Neuroscience</td>
<td>COGS 126: Human-Computer Interaction</td>
<td>CSE 135: Online Database Analytics Applications</td>
<td>VIS 180B: Fiction and Allegory in Current Media Practices</td>
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<td>BIPN 100: Human Physiology I</td>
<td>COGS 160: Special Topics (if topic applies)</td>
<td>CSE 150: Introduction to Artificial Intelligence: Search and Reasoning</td>
<td>VIS 182: Advanced Editing</td>
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<td>Psychology</td>
<td>COGS 187B: Practicum in Pro Web Design</td>
<td>CSE 152: Intro Computer Vision</td>
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<td>PSYC 100: Clinical Psychology</td>
<td>COGS 188: Artificial Intelligence Algorithm</td>
<td>CSE 165: 3D User Interaction</td>
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<td>PSYC 120: Learning and Motivation</td>
<td>Communication</td>
<td>COGS 176A: Maker Topics: Health Care Robotics</td>
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<td>PSYC 124: Clinical Assessment and Treatment</td>
<td>COMM 101E: Media Production Lab: Ethnographic Methods for Media Production</td>
<td>Design</td>
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<td>PSYC 125: Clinical Neuropsychology</td>
<td>COMM 101M: Media Production Lab: Communicating and Computers</td>
<td>Electrical and Computer Engineering</td>
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<td>PSYC 134: Eating Disorders</td>
<td>COMM 102C: Practicum in New Media &amp; Community Life</td>
<td>ECE 161A: Introduction to Digital Signal Processing</td>
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<td>PSYC 154: Behavior Modification</td>
<td>COMM 106I: Internet Industry</td>
<td>ECE 161C: Applications of Digital Signal Processing</td>
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<td>PSYC 168: Psych, Disorders of Childhood</td>
<td>COMM 120N: Advanced Media Production: News Media Workshop</td>
<td>ECE 187: Introduction to Biomedical Imaging and Sensing</td>
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<td>PSYC 170: Cognitive Neuropsychys</td>
<td>COMM 124B: Critical Design: Topic Studio</td>
<td>EDS 124AR: Teaching Comp. in a Digital World</td>
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<td>PSYC 179: Drugs, Addiction, Mental Disorders</td>
<td>COMM 151: The Information Age: Fact and Fiction</td>
<td>EDS 124BR: Teaching Comp. Thinking for Everyone</td>
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<tr>
<td>PSYC 181: Drugs and Behavior</td>
<td>COMM 172: Adv. Studies in Mediation and Interaction</td>
<td>Engineering</td>
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<tr>
<td>PSYC 186: Impulse Control Disorders</td>
<td>COMM 173: Interaction with Technology</td>
<td>Philosophy</td>
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| Cross-Campus Online | | | |
|---------------------| | | |
| PSY BEH 102C: Abnormal Psychology (UC Irvine) | DSGN 100: Prototyping | | |
| Visit crossenroll.universityofcalifornia.edu to enroll | | | |

Updated: 11-15-18