Cognitive Neuroscience--Combined Ph.D. Triple Major:
Neuroscience + Cognitive Science + Home Dept.
This document reflects requirements from the Neuroscience and Cognitive Science Programs

Total number of units = 28-34

1. Core (11-14 units):
   - Survey and Integration of Neuroscience I (NRSC 5100; 2 credit hours for advanced students; 5 credit hours for students without advanced preparation)
   - Survey and Integration of Neuroscience II (NRSC 5110; 3 credit hours)
   - Issues and Methods (listed in multiple departments; 2 credit hours)
   - Research Applications Seminar *(formerly Cognitive Science Practicum)* (listed in multiple departments; 2 credit hours—equivalent practicum in home dept. may substitute)
   - Cognitive Science Topics (2 credits hours) (This class comes in a 1 unit version (attend Institute talks) or a 2 unit version (Attend Institute talks plus meet to discuss those presentations). Thus, one must either take it for 1 semester for 2 units or 2 semesters for 1 unit.
2. Depth Courses (6-9 units)

   Pick from table below

3. Related Discipline Specialization (11+ units)

   Pick from table below (currently may not be a complete list – check with Advisor)

Department of Computer Science, College of Engineering	
CSCI 5622-3	Neural Networks / Machine Learning
CSCI 5919-3	HCI: Survey and Synthesis
CSCI 6622-3	Advanced Neural Networks / Machine Learning
Department of Electrical and Computer Engineering, College of Engineering and Applied Science	
ECEN 5811-3	Neural Signals
ECEN 5831-3	Brains, Minds and Computers

Department of Psychology, College of Arts and Sciences	
PSYC 5032-3	Neurobiology of Learning and Memory
PSYC 5052-4	Behavioral Neuroscience (overlaps with NRSC 5100, depending on Instructor)
PSYC 5072	Clinical Neuroscience
PSYC 5082 (2 or 3 units depending on the specific offering)	Seminar: Special Topics in Biopsychology; can be taken multiple times
NRSC 5082-3	Neural Circuits of Learning and Decision Making
PSYC 5092-3	Hormones and Behavior
PSYC 5102-3	Advanced Behavioral Genetics
NRSC 5100-5	Survey and Integration of Neuroscience I (2 credit hours for advanced students; 5 credit hours for students without advanced preparation)
NRSC 5110-3	Survey and Integration of Neuroscience II (3 credit hours)
PSYC 5112-3	Concepts in Behavioral Genetics
PSYC 5132-3	Behavioral Neuropharmacology
PSYC 5145-4	Advanced Cognitive Psychology
PSYC 5162-3	Developmental Behavioral Genetics
PSYC 5175-4	Computational Cognitive Neuroscience
PSYC 5212-3	Gerontology: A Multidisciplinary Perspective
PSYC 5232-3	Molecular Genetics/Behavior
PSYC 5262-3	Mammalian Neuroanatomy
PSYC 5272-3	Neuronal Plasticity
PSYC 5385-3	Ethology/Comparative Psychology
PSYC 5606-3	Social/Personality Psych Prosem

PSYC 5665-2	Prosem: Higher-Level Perception & Attention
PSYC 5665-2	Prosem: Learning and memory
PSYC 5685-2	Prosem: Sensory Processes
PSYC 5685-2	Prosem: Research Methods
PSYC 5741:	Quantitative Methods in Neuroscience
PSYC 5815-2	Prosem: Language
PSYC 5815-2	Prosem: Higher-level cognition
PSYC 5825-2	Executive Function Proseminar
NRSC 6100-2	Advances in Neuroscience
PSYC 6911-1-3	Research Practicum
PSYC 7536-3	Theories and Research in Emotion
PSYC 7536-3	The Social Brain

Department of Speech, Language and Hearing Sciences, College of Arts and Sciences

SLHS 5252-3	Acquired Adult Language Disorders
SLHS 5282-3	Acquired Cognitive Disorders
SLHS 5292-3	Motor Speech Disorders
SLHS 5576-2	Communication Neuroscience
SLHS 6006-3	Advanced Hearing Science
SLHS 6564-3	Auditory Processes: Neurodiagnostics
SLHS 7100-3	Cognitive Bases of Human Communication and its Disorders
SLHS 7250-3	Research Methods in Language Development
SLHS 7540-3	Auditory Processes: Physiology, Assessment, and Management of the Vestibular System
SLHS 8206-3	Models of Speech Production and Perception

Credit Hour Requirements

A total of 28-34 hours of graduate level courses from the list of Core, Depth, and Breadth courses (see above) are required for the Combined Neuroscience Cognitive Science + Core Discipline PhD. More courses may be required if the student pursues topics outside of the cognitive neuroscience track, taking other courses listed in the approved course listings for the Neuroscience, Cognitive Science, or Core Discipline degrees that do not appear above. Of these 28-34 hours, 11 or 14 hours consist of Core breadth and integration courses for Cognitive Neuroscientists, 6-9 hours consist of Cognitive Neuroscience depth courses, and the remainder are derived from Cognitive Neuroscience-related discipline specialization courses.

Comprehensive Examination

In accordance with the graduate school requirements, students will be required to take a comprehensive exam, which they must pass in order to advance to doctoral candidacy status. Successful completion (grade of B- or better) of the Survey and Integration of Neuroscience I and II courses will fulfill the Neuroscience component of the comprehensive exam. In addition, the student must pass a comprehensive exam in their area of specialization. The format of this specialty comprehensive exam will be determined by the student's advisor and will be appropriate for the advisor's department/program of affiliation, but must also be interdisciplinary in nature to fulfill the Cognitive Science component of the comprehensive exam.

Thesis

All Cognitive Neuroscience PhD students will be required to complete a doctoral thesis with a primary Cognitive Neuroscience focus. The thesis/dissertation will represent original state-of-the art research of quality suitable for publication in a reputable scientific journal. The student's thesis advisor must be a participating faculty member of the Cognitive Neuroscience faculty. In addition, the student's thesis committee must include at least 1 additional Neuroscience faculty member and one Cognitive Science faculty member from outside the student's area of specialization. In accordance with the requirements of the Graduate School, the student's committee must be comprised of a minimum of 5 faculty members that have graduate faculty appointments. The committee will be formed by the student's advisor, upon approval of the slate of members by the Academic Directors of the Neuroscience and Cognitive Science combined PhD Programs.