

Neuroscience Major: Sequence in Cognitive Neuroscience

If you are a student who is interested in the human brain, and how it links to the human mind and complex human behaviors-- from before birth through adulthood, then this is the Neuroscience track for you!

Note: This track is approved as a multidisciplinary major for ISS scholars at CMC.

I. Overview

The CogNeuro sequence in the Neuroscience major equips students with the knowledge of how to relate information processing in the human brain to human mental processes and behavior. Mental processes include perception, attention, voluntary movement, memory, conceptual biases, language, imagery, emotions, problem solving, decision-making, and social judgment.

There are 2 main tracks within the CogNeuro track: 1) one for students who plan to attend graduate school for cognitive, social, or cultural neuroscience, or who want to obtain a job in a research lab at graduation; and 2) one for all other students (e.g. those who plan to attend medical or nursing or veterinary or dentistry school or graduate school for clinical psychology or law school or business school

As for all of the sequences you should be choosing your 4 courses with the advice of the faculty who will be your Neuroscience major advisor, who will most likely be your senior thesis first reader and primary mentor. Below we give some requirements and general guidelines.

II. Cognitive Neuroscience Faculty Mentors

Stacey Doan (CMC)
Alison Harris (CMC)
Cathy Reed (CMC, KSD)
Timothy Justus (PZ)
David Moore (PZ)
Michael Spezio (SC, KSD)
Stacey Wood (SC)

III. Tier 2 Requirements for the CogNeuro Emphasis in the KSD Neuroscience Major

- * Psyc 109 CM (or equivalent), Basic Psychological Statistics
- * Psyc 110 & 111L CM (or equivalent), Research Methods Lecture & Laboratory
- * Psyc 91 PZ Psychological Statistics
- * Psyc 92/ 92P PZ Introduction to Research Methods
- * Psyc 103 SC Psychological Statistics
- * Psyc 104 SC & 104L SC Research Design in Psychology & Laboratory

NOTE: students should take the versions of these courses through their home college.

IV. Recommended distribution of types of courses to fulfill the 4-course Cog Neuro sequence in the Neuroscience Major

NOTE: These recommendations specify the area or type of course, not actual course numbers

1. A course that covers brain structure and functional anatomy
2. A course that covers theories of cognition
3. A laboratory or upper-level seminar course in Cognition or Cognitive Neuroscience
4. An upper-level seminar course in Cognitive Neuroscience

V. Course Listings by Topic and College

1. Brain Structure and Functional Anatomy

- * Psyc 96 CM, Neuropsychology, Cathy Reed
- * Psyc123 SC, Cognitive Neuroscience, Michael Spezio
- * Psyc131 SC, Clinical Neuropsychology, Stacey Wood
- * Psyc 111 & 111P PZ Physiological Psychology/Physiological Psychology Practicum, Tom Borowski

2. Cognitive Theory

- * Psyc 40 CM, Cognitive Psychology, Gabriel Cook
- * Psyc 97 CM, Sensation and Perception, Alison Harris
- * Psyc 102 PZ Memory, Leah Light
- * Psyc122/122L SC, Cognitive Psychology & Lab, Michael Spezio
- * Psyc123/123L SC, Cognitive Neuroscience, Michael Spezio
- * Psyc 126 PZ, Psychology of Music, Timothy Justus
- * Psyc 127 PZ, Language and Cognition, Timothy Justus
- * Psyc 154 PZ Cognitive Development, David Moore

3. Laboratory Course in Cognitive Neuroscience

- * Psyc123L SC, Cognitive Neuroscience Laboratory, Michael Spezio
- * Psyc 131L SC, Clinical Neuropsychology, Stacey Wood
- * Psyc 102 PZ Memory, Leah Light
- * Psyc 111/ 111P PZ Physiological Psychology & Practicum, Tom Borowski

4. Upper-Level Seminar

- * Psyc135 CM, Controversies in Cognitive Neuroscience, Cathy Reed
- * Psyc 107/Econ 107 CM, Neuroeconomics, Alison Harris
- * Psyc 185 CM, Health Psychology, Stacey Doan
- * Psyc161 CM, Decision Making and Memory, Gabriel Cook
- * Psyc162 CM, Remembering and Forgetting, Gabriel Cook
- * Psyc127 SC, Neuroscience of Decision Making, Stacey Wood
- * Psyc129 SC, Social Neuroscience, Michael Spezio
- * Psyc130 SC, Emotion, Michael Spezio
- * Psyc131 SC, Clinical Neuropsychology, Stacey Wood
- * Psyc125 PZ, Developmental Cognitive Neuroscience, David Moore
- * Psyc 148 PZ, Neuropharmacology and Behavior, Tom Borowski

VI. Senior Thesis in Cognitive Neuroscience

If you plan to fulfill the neuroscience requirement of completing an empirical research project for your Senior Thesis (BIO188L Senior Research Thesis in Biology & BIO190L Senior Experimental Thesis in Biology) you must complete at least one semester of research internship in a human behavior lab (preferably with a cognitive or cognitive neuroscience professor) prior to your senior year. Summer internships are also acceptable. Preferably, you will complete your pre-thesis research requirement with a faculty member with whom you will do your Senior Thesis project

VII. CogNeuro Track 1: Preparation for Medical School, Nursing School, Dentistry School, Veterinary School, Clinical Psychology, Law School, Business School

Students on this track should, in consultation with their advisors, design a suitable 4-course sequence and add any other courses in Psychology, Economics, etc., that may be advisable given their interests and goals.

VIII. CogNeuro Track 2: Graduate School in Experimental Psychology/Neuroscience; Job in a Research Laboratory after Graduation

This track has a greater emphasis in quantitative and computational preparation, with hands-on use of state-of-the-art computational analysis packages for neuroimaging data. Students completing this track will be very competitive for graduate programs in cognitive, social, affective, and cultural neuroscience.

Please take the following extra courses, in order if possible

- * Math031 (or equivalent), Calculus 2
- * Math032 (or equivalent), Calculus 3 (this course is a prerequisite for Math060, but students may petition the Math Department to waive it as a requirement)
- * Math060 SC (or equivalent), Linear Algebra
- * Independent Study in computational methods for Cognitive Neuroscience (fMRI, EEG)
- * Independent Study research with a Faculty Mentor in the area of MATLAB programing

IX. Non-Neuroscience Psychology Courses for Further Interest, Grouped by Topic

The courses listed here generally have little or no emphasis on the brain, but are very helpful for students interested in the listed neuroscience-related topics. Other courses not listed here may also be identified with the guidance of your major advisor.

1. Courses relevant to Emphases in Clinical Neuropsychology/Neuroscience

- * Psyc 70 CMC (or equivalent), Abnormal Psychology
- * Psyc 181 PZ Abnormal Psychology
- * Psyc 197 PZ Seminar in Clinical Psychology

2. Courses relevant to Emphases in Developmental Neuroscience

- * Psyc 81 CM (or equivalent), Developmental Psychology
- * Psyc 105 PZ Child Development
- * Psyc 199 PZ Seminar in Developmental Psychology

3. Courses relevant to Emphases in Neuroeconomics

- * Econ101 SC (or equivalent), Microeconomics
- * Econ111 SC (or equivalent), Behavioral Economics
- * Econ125 SC (or equivalent), Econometrics

4. Courses relevant to Emphases in Neuroscience of Political Decision Making & Action

- * Psyc093 CM (or equivalent), Political Psychology