

Keck Neurosciences Major

Computational Neuroscience Sequence

The computational neuroscience sequence combines computer science with neuroscience.

Computational neuroscience mentors: Professor John Milton (KSD), Professor Michael Spezio (SCR)

Tier 2

Typically students take Cal II, BIO-133L and a physics course in electricity and magnetism (Physics 31 or 34). Students who have completed AISS can substitute Physics 31/34 with a course in mathematics (Cal III, linear algebra, differential equations) or statistics.

Tier 3

The Tier 3 sequence depends very much on the interests of the student. CMC students can satisfy Tier 3 by taking parts of the CMC modeling sequence (Computer science: Introduction (e.g. CS 51) or Programming for Science and Engineering (PHYS 108); Computer science: Data Structures and advanced programming (e.g. CS 62); Computational Physics & engineering (PHYS 100) or Numerical Analysis; Computational partial differential equations (PHYS 105)). Students interested in applications to medical imaging, such as fMRI, take PHYS 100, PHYS 108 together with courses in cognitive neuroscience (Cognitive Neuroscience (SC-PSYCH 123), Cognitive Neuroscience Laboratory (SCR-123L)). Finally students interested in modeling take Introduction to Computer Science (CS5 or CS 51), Data structures (CS60 or 62), and two courses from Selected Topics: Computational Neuroscience (BIO 155L KS), Computational Biology (HMC-BIO188), Genomics and Bioinformatics Laboratory (POM-BIO173)) as well as courses offered in Computer Science (e.g. at Pomona you can take neural networks (CS 152) or Artificial Intelligence (CS 151)). In addition to senior thesis topics related to computational neuroscience, students with string backgrounds in programming consider doing a Team Masters Project in biotechnology at the Keck Graduate Institute.