Keck Neurosciences Major
Computational Neuroscience Sequence

The computational neuroscience sequence combines computer science with neuroscience. Computational neuroscience mentors: Professor Gautam Agarwal (KSD), Professor Michael Spezio (SCR), Professor Sarah Marzen (KSD), Professor Darin Brown (PIT)

Common Core Electives

Coursework is listed in the Course Catalog description of the Neuroscience major for each college. Students can apply additional (i.e., beyond the required 3) common core elective courses towards fulfilling this requirement, if these have a significant quantitative component (e.g., BIOL 175 KS, NEUR 123 SC, 123L SC, 133L KS, 182 SC).

Sequence Courses

The sequence can include any course with a significant computational component with application to Neuroscience. Computer Science offerings around the colleges include Introduction (CSCI 51 CM), Data Structures (CSCI 62 CM), Artificial Intelligence (CSCI 151 PO), Neural Networks (CSCI 152 PO), Machine Learning (CSCI 158 PZ), Computational Partial Differential Equations (PHYS 105 KS), Programming for Science and Engineering (PHYS 108 KS), Introduction to MATLAB (PSYC 96 PZ). Math offerings include Linear Algebra (MATH 60 PZ, SC), Differential equations (MATH 111 CM, SC) with modeling (MATH 102 PZ, SC). Neuroscience offerings include Selected Topics: Computational Neuroscience (NEUR 155L KS) and Computational Psychiatry (NEUR 184 SC), Neuroimaging with fMRI (NEUR 118 PO), Mathematical Methods and Models in Neuroscience (NEUR 189A PO). Biology offerings include Genomics and Bioinformatics (BIOL 156L KS), Advanced Data Analytics (BIOL 112 KS), Computational Biology (BIOL 188 HM), Genomics and Bioinformatics Laboratory (BIOL 173 PO). Physics courses include Biophysics (PHYS 178L KS).

Senior Thesis

In addition to senior thesis topics related to computational neuroscience, students with strong backgrounds in programming may consider doing a Team Masters Project in biotechnology at the Keck Graduate Institute.