

# Keck Neurosciences Major

## Motion Science & Functional Anatomy Sequence

You should select your four courses with the advice of the faculty who will be your senior thesis first reader. Below we give some general guidelines.

Motion science mentors: Professor John Milton (KSD), Professor Anna Ahn (HMC), Professor Sharon Snowiss (PIT), Professor Meg Jolley (POM), Professor Gail Abrams (SCR)

### Tier 2

The neuroscience of movement requires a good background in Newton's laws of motion (Physics), the mathematics of motion (Calculus and differential equations) and some computer programming skills (MATLAB and/or Python). Typical choices for Tier 2 are Calculus II, Physics 30 or 33) and Bio 133L (Python) or Physics 100 (MATLAB).

### Sequence Choice

Students interested in the study of human motion have typically taken BIO 39 (Analyses of Human Motor Skills + Lab), Bio150La (Functional Human Anatomy and Biomechanics: Limbs and Movement) and Bio 150L (Functional Human Anatomy and Biomechanics: Back and Core Stabilization) (note that Bio 150a/b requires a grade in Physics 30 of B+ or better). A variety of choices for the 4th course in the sequence are possible: BIO 131L (Vertebrate Physiology + Lab), BIO 141L (Vertebrate Anatomy & Lab). A number of students have chosen to take a course in Exercise Physiology during their study abroad experience, e.g. University of Queensland (Australia). In addition some courses offered in Dance can be taken (Dance 102: Dynamics of Human Movement; Dance 163: Principles of Kinesiology as Related to Dance).

For students interested in the study of movements of animals, birds and insects, a possible sequence might be BIO 132L (Comparative Physiology & Lab), BIO 141L (Vertebrate Physiology & Lab), BIO 195 (HMC) and BIO 166 (animal Physiological Ecology).

Students interested in biomechanics should 1) have stronger math skills and have taken Physics 33 (instead of Phys 30) together with other pre-requisites for a course in continuum mechanics (Eng 83 at HMC) so that they can include an advanced course in biomechanics (e.g. Bio/Eng 190B at HMC). In this case the 4-course sequence would be Eng 83, BIO/Eng 190B, pre-requisites for Eng 83.