

# Neuroscience

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## Overview

The Neuroscience Graduate Group is a unique, diverse PhD training program that offers intensive, integrated training in multiple areas of neuroscience research. The program involves more than 55 faculty from different campus departments, with expertise ranging from molecular and cellular neuroscience to developmental neuroscience, systems and computational neuroscience, and human cognitive neuroscience.

The group provides a highly interdisciplinary, intellectually dynamic training environment of course work, research training, and mentoring within a strong research program that produces fundamental advances in knowledge and cutting-edge techniques. The program welcomes highly qualified applicants to join in better understanding the brain and its functions and disorders.

Faculty in the Neuroscience Graduate Program are involved in three broad research areas: Cellular, Molecular, and Developmental Neuroscience; Systems and Computational Neuroscience; and Cognition, Brain, and Behavior. Individual faculty may be involved in more than one research area.

The Neuroscience Graduate Program also sponsors an annual campus-wide Neuroscience retreat, weekly seminar series, and a graduate student *Neuroscience Journal Club*.

## Undergraduate Program

There is no undergraduate program in Neuroscience.

## Graduate Program

Neuroscience (<http://guide.berkeley.edu/graduate/degree-programs/neuroscience/>): PhD

## Neuroscience

Expand all course descriptions [+] Collapse all course descriptions [-]

## NEUROSC C217D Biological and Public Health Aspects of Alzheimer's Disease 3 Units

Terms offered: Spring 2017, Spring 2015, Spring 2014, Spring 2013  
 This course will survey the field of Alzheimer's disease (AD) from a biological and public health perspective by reading original research papers in the fields of medicine, neuroscience, and epidemiology. The course will begin with a historical survey of the concept of AD, followed by a description of clinical and neuropathological features. Subsequent classes will cover the genetics and molecular biology of the disease, as well as biomarkers, epidemiology, risk factors, treatment, development of new diagnostic approaches, and ethical issues. The course will also serve as a model for the analysis of complex diseases with multiple genetic and environmental causes, and late onset neurodegenerative diseases. The course will also serve as a model for the analysis of complex diseases with multiple genetic and environmental causes and late-onset neurodegenerative disease.

Biological and Public Health Aspects of Alzheimer's Disease: Read More [+]

### Rules & Requirements

**Prerequisites:** Graduate standing or consent of instructor

### Hours & Format

**Fall and/or spring:** 15 weeks - 2 hours of seminar per week

### Additional Details

**Subject/Course Level:** Neuroscience/Graduate

**Grading:** Letter grade.

**Instructor:** Jagust

**Also listed as:** PB HLTH C217D

Biological and Public Health Aspects of Alzheimer's Disease: Read Less [-]

## NEUROSC C261 Cellular and Developmental Neurobiology 3 Units

Terms offered: Fall 2023, Fall 2022, Fall 2021

This course covers the molecular/cellular basis of neuron excitability (membrane potentials, action potential generation and propagation, ion channels), synaptic transmission and plasticity, sensory receptor function, and developmental neurobiology.

Cellular and Developmental Neurobiology: Read More [+]

### Hours & Format

**Fall and/or spring:** 15 weeks - 3 hours of lecture per week

### Additional Details

**Subject/Course Level:** Neuroscience/Graduate

**Grading:** Letter grade.

**Also listed as:** MCELLBI C261

Cellular and Developmental Neurobiology: Read Less [-]

## NEUROSC C265 Neural Computation 3 Units

Terms offered: Prior to 2007

This course provides an introduction to the theory of neural computation. The goal is to familiarize students with the major theoretical frameworks and models used in neuroscience and psychology, and to provide hands-on experience in using these models. Topics include neural network models, supervised and unsupervised learning rules, associative memory models, probabilistic/graphical models, and models of neural coding in the brain.

Neural Computation: Read More [+]

### Rules & Requirements

**Prerequisites:** Calculus, differential equations, basic probability and statistics, linear algebra, and familiarity with high level programming languages such as Matlab

### Hours & Format

**Fall and/or spring:** 15 weeks - 3 hours of lecture per week

### Additional Details

**Subject/Course Level:** Neuroscience/Graduate

**Grading:** Letter grade.

**Instructor:** Olshausen

**Also listed as:** VIS SCI C265

Neural Computation: Read Less [-]

## NEUROSC 290 Neuroscience First Year Research 2 Units

Terms offered: Spring 2017, Spring 2016, Spring 2015

Seminar on the presentation and evaluation of research results for first-year neuroscience graduate students. During the first weeks, faculty present their research (FERPS); later, students present individual research results and evaluate their own and each other's work. Course enrollment limited to 15.

Neuroscience First Year Research: Read More [+]

### Rules & Requirements

**Prerequisites:** Graduate standing in Neuroscience Graduate Group; concurrent enrollment in 291A-291B

### Hours & Format

**Fall and/or spring:** 15 weeks - 2 hours of seminar per week

### Additional Details

**Subject/Course Level:** Neuroscience/Graduate

**Grading:** Letter grade.

**Instructor:** Ngai

Neuroscience First Year Research: Read Less [-]

## NEUROSC 292 Neuroscience Graduate Research 3 - 12 Units

Terms offered: Spring 2024, Fall 2023, Summer 2023 10 Week Session  
For graduate students in neuroscience in their second or later years.

During the summer, the course will count for 3-6 units. Individual research under faculty supervision. In this course each graduate student conducts basic thesis and dissertation research after successful completion of the first-year laboratory rotation, Neuroscience 291A-291B. Laboratory work provides the basis for students' thesis research, preparation for the preliminary examination, and continued progress toward completion of Ph.D. dissertation.

Neuroscience Graduate Research: Read More [+]

### Rules & Requirements

**Prerequisites:** Graduate standing in the Neuroscience Graduate Group; advanced approval from instructor

**Repeat rules:** Course may be repeated for credit without restriction.

### Hours & Format

**Fall and/or spring:** 15 weeks - 10-40 hours of laboratory per week

**Summer:** 10 weeks - 15-60 hours of laboratory per week

### Additional Details

**Subject/Course Level:** Neuroscience/Graduate

**Grading:** Letter grade.

Neuroscience Graduate Research: Read Less [-]