

Neuroscience

(12 credits)

Offered by the Department of Biology, the Graduate Certificate in Neuroscience is an exciting program with new courses launched in the Fall of 2018. The program bridges many levels of nervous system organization and function, from single nerve cells to behavior and cognition. Students will be introduced to the cell and molecular biology, biophysics, and electrophysiology of nerve cells and synapses. They will learn how these properties give rise to neural circuit and systems function, and how computational and signal processing approaches are used to understand neural coding and information processing in the brain. The fundamental biological and computational principles that govern brain function can then be applied to understand diagnostic and therapeutic approaches and instrumentation, including functional electrical stimulation, optical and functional imaging techniques, and neural prosthetics.

Who would be suited to take this program?

As many aspects of neuroscience are rooted in the basic biology of the nervous system, the program is well suited to students with a biology background. However, neuroscience is inherently multidisciplinary in both fundamental and applied approaches. Therefore, students with backgrounds in computational and mathematical principles of coding and information processing, or engineering applications, are also well matched.

Related MS degree: Biology.

Curriculum

Choose at least two courses from this list:

Code	Title	Credits
BIOL 640	Cellular Neurophysiology	3
BIOL 641	Systems Neuroscience	3
BIOL 645	Biological Imaging Techniques	3
BME 661	Neural Engineering	3
BME 668	Medical Imaging Systems	3
MATH 615	Approaches to Quantitative Analysis in the Life Sciences	3

Choose course(s) from this list after accumulating at least six credits:

Code	Title	Credits
BIOL 635	Intro to Comp Neuroscience	3
BIOL 636	Advanced Comp Neuroscience	3
BIOL 672	Computational Systems Biology	3