

# BIOF 450: Evolutionary Genomics

Enormously large series of complex and chaotic events have shaped the genomes of eukaryotes, prokaryotes, and viruses. This course will address cutting-edge approaches to the computational investigation of these events, with an eye toward developments in translational systems biology. The course will begin by presenting the fundamentals of evolutionary genomics, including basic properties of genomes and comparative genomics, population genetics, and sequence-structure-function relationships. Experimental design and biological project integration will be a major theme of the course. Specific lectures on statistical analysis, similarity searches, Next Generation Sequencing, epigenomics, and other specialized topics will supplement those given in the earlier part of the course.

## Learning Objectives

- Perform statistical analysis and display data
- Learn applications of evolutionary genomics, including cancer genomics, evolution of immune systems, and analysis of brain developmental problems
- Apply the skills acquired to complete a computational biology project

**Credits:** 2

**Class Type:** Graduate Course

**Program:** Bioinformatics and Data Science

**Availability:** Fall 2021

**Session:** Session B