

AS BIOF: Advanced Studies in Bioinformatics and Data Science

The FAES Academic Programs at NIH offers a unique Advanced Studies in Bioinformatics and Data Science to serve the quickly evolving needs of today's biomedical research community. As one of the most dynamic fields intersecting biology and computer science, bioinformatics and its data analysis tools equip life sciences researchers and professionals with highly in-demand skills in the pharmaceutical and biotechnology industries. Courses are offered in the evenings, making it convenient for working professionals and postgraduate Fellows to gain expertise and experience in the theoretical foundations and practical skills required to harvest the wealth of information contained in the vast amount of biological phenomena. The courses have been designed to train today's biomedical researchers in new methods and techniques in data science and prepare them to translate and analyze the immensity of biological data.

General Requirements

The program is designed for participants who hold an advanced degree in life sciences or STEM fields.

The Advanced Studies comprises a 14-credit curriculum required and elective courses. Courses are held in the evenings to fit the needs of working professionals and postgraduate fellows.

Required Courses

BIOF 309 | Introduction to Python
BIOF 518 | Theoretical and Applied Bioinformatics I
BIOF 519 | Theoretical and Applied Bioinformatics II
BIOF 521 | Bioinformatics for Analysis of Next Generation Sequencing

Electives

BIOF 339 | Practical R
BIOF 395 | Introduction to Text Mining
BIOF 450 | Bioinformatics, Evolutionary Genomics, and Computational Biology
BIOF 475 | Introduction to New Technologies in Data Science
BIOF 501 | Introduction to R: Step-by-Step Guide
BIOF 509 | Applied Machine Learning
STAT 500 I | Statistics for Biomedical Scientists I
STAT500 II | Statistics for Biomedical Scientists II

Learning Objectives

Upon completion, students will be able to:

- Learn to use effectively different techniques to analyze biological data from high throughput approaches
- Perform statistical analysis and visualization of biological data
- Apply bioinformatics techniques for analysis of genomic, expression and proteomic data
- Understand the uses and limitations of bioinformatics data analysis tools and technologies
- Learn how the computational methods are used in new applications in basic biology and also how they are translated into the development of new drugs and diagnostic tools

Credits: 14

Class Type: Graduate Course

Program: Bioinformatics and Data Science