The research landscape is changing thanks to advances in technology. To become a successful scientist it is critical to use the power of the computer to analyze data. Learn about tools that can analyze different types of life science datasets and investigate how computational approaches in research help solve scientific problems.

Description

In the life sciences, employers need graduates who are skilled in understanding and interpreting data. In particular, students who have experience using new, computational approaches and computer programs to process data are in demand. By completing this certificate in computational life sciences, students learn how to identify and interpret data that is generated from a wide range of fields in the life sciences. These fields include, but are not limited to: ecology, botany, evolutionary biology, neuroscience, molecular and cellular biology, and animal behavior. Students learn about many types of data generated from sources such as DNA, RNA, protein, imaging, conservation and even from long-term ecological research sites.

Students are introduced to a suite of computational approaches that are used to analyze, visualize and interpret this data. Finally, students will delve into the ethical implications of collecting, analyzing and sharing the results of computational life sciences data.

At a Glance

- **College/School:** The College of Liberal Arts and Sciences
- **Location:** Tempe campus

Program Requirements

Certificate Map (Archives)
The certificate in computational life sciences requires a minimum of 15 credit hours, of which at least 12 credit hours must be upper-division. The core consists of one computing course and one ethics course. A minimum of nine credit hours in elective courses complete the certificate. The computing course not used toward the core requirements may be used toward the elective credit hours. A grade of C (2.00 on a 4.00 scale) or higher is required for all courses used toward the certificate.

**Required Courses -- 6 credit hours**

BIO 316: History of Biology: Conflicts and Controversies (H)  or  BIO 317: History of Science (HU & H)  or  
BIO 318: History of Medicine (HU & H) (3)

BIO 439: Computing for Research  or  BIO 440: Functional Genomics (3)

**Electives -- 9 credit hours**

BIO 355: Introduction to Computational Molecular Biology (CS) (3)

BIO 411: Quantitative Methods in Conservation and Ecology (4)

BIO 415: Biometry (CS) (4)

BIO 439: Computing for Research (3)

BIO 440: Functional Genomics (3)

BIO 494: Data Analysis in Neuroscience (3)

BIO 494: Genomic Analysis (3)

BMI 311: Modeling Biomedical Knowledge (3)

BMI 312: Modeling Biomedical Data (3)

BMI 330: Topics in Translational Bioinformatics (3)

If not used as the required computing course, students may include BIO 439 or BIO 440 as a certificate elective.

Depending on a student's undergraduate program of study, prerequisite courses may be needed in order to complete the requirements of this certificate.

**Enrollment Requirements**

A student pursuing an undergraduate certificate must be enrolled as a degree-seeking student at ASU. Undergraduate certificates are not awarded prior to the award of an undergraduate degree. A student already holding an undergraduate degree may pursue an undergraduate certificate as a nondegree-seeking graduate student.
Contact Information

School of Life Sciences | LSC 426
SOLS.advising@asu.edu | 480-727-2039