

2022 - 2023 Certificate Map

Computational Life Sciences

School/College: [The College of Liberal Arts and Sciences](#)

Location: [Tempe](#)

Program Requirements

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 312 / PHI 320: Bioethics \(HU\)](#) or [BIO 316 / HPS 330: History of Biology: Conflicts and Controversies \(H\)](#) or [BIO 317 / HPS 323: History of Science II \(HU & H\)](#) or [BIO 318 / HPS 331: History of Medicine \(HU & H\)](#) or [BIO 416 / HPS 410: Biomedical Research Ethics \(L\)](#) (3)
[BIO 439: Computing for Research](#) or [BIO 440 / MBB 440: Functional Genomics](#) (3)

Electives -- 9 credit hours

[BIO 355 / MAT 355 / MBB 355: Introduction to Computational Molecular Biology \(CS\)](#) (3)
[BIO 411: Quantitative Methods in Conservation and Ecology](#) (4)
[BIO 415: Statistical Models for Biology \(CS\)](#) (4)
[BIO 439: Computing for Research](#) (3)
[BIO 440 / MBB 440: Functional Genomics](#) (3)
[BIO 494: Data Analysis in Neuroscience](#) (3)
[BIO 494: Data Analysis and Visualization in R](#) (3)
[BIO 494: Genomic Analysis](#) (3)
[BIO 498: Programming for biologists](#) (1)
[BME 494: Systems Biology of Disease](#) (3)
[BMI 311: Modeling Biomedical Knowledge](#) (3)
[BMI 312: Modeling Biomedical Data](#) (3)
[BMI 330: Topics in Translational Bioinformatics](#) (3)
[DAT 301: Exploring Data in R and Python](#) (4)
[GIS 469 / SOC 469: Multivariate Statistics for Social Sciences](#) (3)
[GIS 471: Spatial Statistics for Geography and Planning](#) (3)
[MAT 353: Mathematics and Cancer](#) (3)

MAT 451: Mathematical Modeling (CS) (3)

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

Prerequisite courses may be needed in order to complete the requirements of this certificate.