

# Computational Life Sciences, MS

LACLSMS

Join in the transformation that new types and amounts of data are bringing to the life sciences. You can learn computational methods that complement traditional bench-based approaches, allowing you to arrive at novel insights, and you'll gain the knowledge and skills you'll need when applying computational techniques in life sciences research.

## Program description

### **Degree awarded: MS Computational Life Sciences**

The MS program in computational life sciences introduces students to a burgeoning new field. Huge leaps in processing technologies have thrown open the doors for new research techniques and exciting opportunities for interdisciplinary collaborations, focusing heavily on genomics data generation, analysis and interpretation.

Students are introduced to a suite of statistical tools and computational approaches that enable them to uncover correlations, glean new understanding and help solve scientific problems.

Students examine many different types of data generated from a wide range of fields, including ecology, botany, evolutionary biology, neuroscience, molecular and cellular biology, and animal behavior.

Students have the opportunity to investigate topics such as DNA, RNA, protein, imaging, conservation and even historical data from long-term ecological research sites.

Finally, students explore 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](#) or [Online](#)

## Accelerated program options

This program allows students to obtain both a bachelor's and master's degree in as little as five years. It is offered as an [accelerated bachelor's plus master's degree](#) with:

[Biochemistry, BS](#)

[Biochemistry \(Medicinal Chemistry\), BS](#)

[Biological Sciences, BS](#)

[Biological Sciences \(Biology and Society\), BS](#)

[Biological Sciences \(Biomedical Sciences\), BS](#)

[Biological Sciences \(Conservation Biology and Ecology\), BS](#)

[Biological Sciences \(Genetics, Cell and Developmental Biology\), BS](#)

[Biological Sciences \(Neurobiology, Physiology and Behavior\), BS](#)

[Data Science, BS](#)

[Microbiology, BS](#)

[Microbiology \(Medical Microbiology\), BS](#)

[Molecular Biosciences and Biotechnology, BS](#)

Acceptance to the graduate program requires a separate application. Students typically receive approval to pursue the accelerated master's during the junior year of their bachelor's degree program. Interested students can learn about eligibility requirements and [how to apply](#).

## Degree requirements

30 credit hours including the required applied project course (BIO 593), or  
30 credit hours including the required capstone course (BIO 597)

### Required Core (1 credit hour)

BIO 610 Introduction to Responsible Conduct of Research (RCR) in Life Sciences (1)

### Restricted Electives (18-20 credit hours)

Choose two computing in life sciences courses for six to seven credit hours:

BIO 539 Computing for Research (3)

BIO 591 Topic: Quantitative Methods in Conservation and Ecology (4)

BIO 598 Topic: Medical Genetics and Genomics (3)

BIO 598 Topic: Transcriptomics (3)

Choose two statistics and mathematics courses for six to seven credit hours:

BIO 514 Statistical Models for Biology (4)

BIO 579 Data Analysis and Visualization in R (3)

BIO 598 Topic: High-Throughput Genomics Analysis and Visualization (3)

BIO 598 Topic: General Linear Models for Biology (3)

Choose two biology courses for six credit hours:

BIO 543 Molecular Genetics and Genomics (3)

BIO 544 Discovering Biodiversity (3)

EVO 601 Principles of Evolution (3)

MCB 540 Functional Genomics (3)

### **Electives or Research (6-8 credit hours)**

#### **Culminating Experience (3 credit hours)**

BIO 593 Applied Project (3)

BIO 597 Capstone (3)

### **Additional Curriculum Information**

For restricted electives students complete two computing in life sciences courses, two statistics and mathematics courses and two biology courses. Restricted elective and electives or research credit hours are variable.

Students pursuing the applied project or capstone course complete three to six credit hours of electives or research. Students should consult the academic unit for a list of approved electives and research course requirements.

Courses not selected for the restricted electives may be used as elective coursework on the same plan of study. Students should check with their academic advisor to ensure that the total number of credit hours of their plan of study is equal to 30.

## **Admission requirements**

Applicants must fulfill the requirements of both the Graduate College and The College of Liberal Arts and Sciences.

Applicants are eligible to apply to the program if they have earned a bachelor's or master's degree in biology, statistics or a related field from a regionally accredited institution.

Applicants must have a minimum cumulative GPA of 3.00 (scale is 4.00 = "A") in the last 60 hours of their first bachelor's degree program, or a minimum cumulative GPA of 3.00 (scale is 4.00 = "A") in an applicable master's degree program.

Applicants are required to submit:

1. graduate admissions application and application fee

2. official transcripts
3. personal statement
4. professional resume
5. proof of English proficiency

### **Additional Application Information**

An applicant whose native language is not English must provide proof of [English proficiency](#) regardless of their current residency.

## **Tuition information**

When it comes to paying for higher education, everyone's situation is different. Students can learn about [ASU tuition and financial aid](#) options to find out which will work best for them.

## **Attend online**

### **ASU Online**

ASU offers this program in an online format with multiple enrollment sessions throughout the year. Applicants may [view the program's ASU Online page](#) for program descriptions and to request more information.

## **Application deadlines**

### **Fall**

**Spring** [expand](#)

**Summer** [expand](#)

[expand](#)

## **Career opportunities**

Career opportunities for graduates include working at biotechnology companies, working as a lab research technician in academia, and working for government or nonprofit labs doing computational life sciences analyses. The median annual pay for those who hold a master's degree in a computational research science is approximately three times the median annual wage for all workers.

## **Contact information**

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