# Master of Science in Applied Data Science (Biology)

## About This Program

The Master of Science in Applied Data Science with an emphasis in Biology prepares students to analyze and interpret large-scale biological data using modern computational tools. Through coursework in areas such as bioinformatics, genomics, microbiology, immunology, neurobiology, and developmental biology, students gain the knowledge necessary to apply data science techniques to complex questions in the life sciences. This emphasis enables students to leverage large "-omics" datasets to uncover patterns, test hypotheses, and generate meaningful biological insights. A 3-semester credit hour (SCH) capstone project or professional internship provides hands-on experience applying analytical methods to real-world biological challenges. The program can be completed in 18 months (full-time students may complete it in 12 months).

## Competencies

1. Upon completion, students will be able to apply statistical methodologies to real-world data from diverse applications.
2. Upon completion, students will be able to understand computational aspects of big data analytics.
3. Upon completion, students will understand modern life sciences data collection and analysis methods and be able to use computational approaches to answer complex biological questions.

## Admissions Criteria

All applicants for the Applied Data Science MS must meet UT Arlington's graduate admission requirements (https://catalog.uta.edu/academicregulations/admissions/graduate/). The program does not consider GRE scores in evaluating candidates for admission.

To be considered for admission, applicants must demonstrate undergraduate preparation equivalent to a baccalaureate degree in natural, physical, or social sciences, technology, engineering, mathematics, business, or related fields. To apply for a specific track, applicants must demonstrate sufficient background in that concentration with a relevant bachelor's degree.

Applicants must submit two letters of recommendation from evaluators who can assess the candidate's potential for academic success.

### UNCONDITIONAL ADMISSION

Applicants who demonstrate a GPA of 3.0 and strong support from references will be considered for unconditional admission. Applicants with a GPA of 2.7 or higher (but less than 3.0) who demonstrate relevant work experience and/or certification may be offered unconditional admission upon review.

All admitted students must complete the program's self-paced, non-credit online review, "Math Foundation of Machine Learning," prior to enrolling in classes.

## Curriculum

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| **Foundations** | | |
| ASDS 5301 | STATISTICAL THEORY AND APPLICATIONS | 3 |
| ASDS 5302 | PRINCIPLE OF DATA SCIENCE | 3 |
| ASDS 5303 | STATISTICAL AND SCIENTIFIC COMPUTING I | 3 |
| ASDS 6306 | INTERNSHIP/CAPSTONE RESEARCH PROJECT | 3 |
| **Biology Specialization** | | |
| BIOL 5340 | BIOINFORMATICS | 3 |
| Select three from the following | | 9 |
| BIOL 5303 | MICROBIOMES: HEALTH AND THE ENVIRONMENT | |
| BIOL 5304 | VIROLOGY | |
| BIOL 5307 | NEUROBIOLOGY | |
| BIOL 5309 | IMMUNOLOGY | |
| BIOL 5311 | EVOLUTION | |
| BIOL 5317 | BACTERIAL PATHOGENESIS | |
| BIOL 5319 | HUMAN GENETICS | |
| BIOL 5335 | ESSENTIALS OF GENOMICS | |
| BIOL 5336 | MOLECULAR EVOLUTION | |
| BIOL 5341 | HISTOLOGY | |

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| BIOL 5342 | DEVELOPMENTAL BIOLOGY IN HEALTH AND DISEASE | |
| BIOL 5353 | FUNDAMENTAL MEDICAL MYCOLOGY | |
| BIOL 5354 | LIMNOLOGY | |
| BIOL 5355 | TOXICOLOGY | |
| BIOL 5359 | MEDICAL MOLECULAR BIOLOGY | |
| **Applied Data Science Electives** | | **6** |
| Select 6 hourse from the following: | | |
| ASDS 5305 | DEEP LEARNING AND ARTIFICIAL NEURAL NETWORKS | |
| ASDS 6300 | SPECIAL TOPICS | |
| ASDS 6301 | ADVANCE REGRESSION ANALYSIS | |
| ASDS 6302 | MACHINE LEARNING WITH APPLICATIONS | |
| ASDS 6303 | DATA MINING WITH INFORMATION VISUALIZATION | |
| ASDS 6304 | OPTIMIZATION AND BIG DATA ANALYTICS | |
| ASDS 6305 | STATISTICAL AND SCIENTIFIC COMPUTING II | |
| ASDS 5100 | INDEPENDENT STUDY | |
| **Total Hours** | | **30** |

# Advising Resources

## UNDERGRADUATE AND GRADUATE ADVISING

### Location:

Life Science Building Room 206A and 206B

### Email:

data.advising@uta.edu

### Phone:

817-272-1512

### Web:

Speak to an advisor in the Division of Data Science or schedule an appointment. (https://www.uta.edu/academics/schools-colleges/science/departments/division-data-science/advising/)