Master of Science in Applied Data Science (Chemistry and Biochemistry)

About This Program

The Master of Science in Applied Data Science with an emphasis in Chemistry/Biochemistry prepares students to analyze and interpret complex chemical and biochemical data using modern computational and statistical tools. Through coursework in areas such as analytical chemistry, mass spectrometry, spectroscopy, biochemistry, structural biology, and computational chemistry, students gain the knowledge necessary to apply data science techniques to problems in molecular and chemical systems. This emphasis enables students to leverage experimental, instrumental, and molecular datasets to uncover patterns, optimize processes, and generate meaningful chemical and biochemical insights. A 3-semester credit hour (SCH) project or professional internship provides hands-on experience applying analytical and computational methods to real-world chemical 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 how to use computational approaches to answer complex chemical and biochemical 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

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
Chemistry and Biochemistry Specialization		
Select four of the following in consultation with Chemistry graduate advisor:		12
CHEM 5321	INTRODUCTION TO ANALYTICAL CHEMISTRY	
CHEM 5324	ANALYTICAL MASS SPECTROMETRY AND SPECTROSCOPY	
CHEM 5331	ADVANCED BIOCHEMISTRY I	
CHEM 5336	STRUCTURE & FUNCTION OF PROTEINS, MEMBRANES & CARBOHYDRATES AND FAST KINETICS	
CHEM 5341	INORGANIC CHEMISTRY	
CHEM 5358	DETERMINATION OF MOLECULAR STRUCTURE BY PHYSICAL METHODS	
CHEM 5361	INTRODUCTION TO GRADUATE PHYSICAL CHEMISTRY	
CHEM 5262 & CHEM 5168	COMPUTATIONAL CHEMISTRY and QUANTUM CHEMISTRY LABORATORY (taken concurrently)	
Data Science Electives		
Select 6 hours from the following:		6
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/)