Bachelor of Science in Data Science (Physics)

About This Program

The Bachelor of Science in Data Science Physics concentration teaches students how to work with data from experimental measurements, simulations, and theoretical models. This track is ideal for those interested in computational physics, scientific computing, or quantitative modeling of complex systems. Beyond the UTA Core Curriculum requirements, the degree requires a sequence of courses in Mathematics, Data Science, and Physics. In addition, students must complete a year-long Capstone project in collaboration with a supervisor within the College of Science or an Industry Partner.

Competencies

1. Upon completion, students will demonstrate knowledge of fundamentals of mathematics and statistics, in applications to data science.
2. Upon completion, students will demonstrate knowledge of computer programming through receiving a certificate, and therefore passing, a programming course.
3. Upon completion, students will demonstrate the ability to effectively work in teams to complete data science projects

Curriculum

Foundations		
General Core Requirements (https://catalog.uta.edu/academicregulations/degreerequirements/generalcorerequirements/)		42
Students are required to complete specific courses in certain core area.		
For Communication select:		
ENGL 1301	RHETORIC AND COMPOSITION I	
One additional communication area course		
For Life and Physical Science select:		
PHYS 1443	GENERAL TECHNICAL PHYSICS I	
PHYS 1444	GENERAL TECHNICAL PHYSICS II	
For Mathematics select:		
MATH 1426	CALCULUS I	
MATH 2425	CALCULUS II	
Data Science Foundations		
Additional hours required in core		4
UNIV 1131	STUDENT SUCCESS	1
or UNIV-SC 1101	CAREER PREPARATION AND STUDENT SUCCESS	
Select any course numbered 3300 or higher.		3
MATH 2326	CALCULUS III	3
MATH 3313	INTRODUCTION TO PROBABILITY	3
MATH 3319	DIFFERENTIAL EQUATIONS & LINEAR ALGEBRA	3
Data Science Speciatlization		
DATA 3401	PYTHON FOR DATA SCIENCE 1	4
DATA 3402	PYTHON FOR DATA SCIENCE 2	4
DATA 3421	DATA MINING, MANAGEMENT, AND CURATION	4
DATA 3441	STATISTICAL METHODS FOR DATA SCIENCE 1	4
DATA 3442	STATISTICAL METHODS FOR DATA SCIENCE 2	4
DATA 3461	MACHINE LEARNING	4
DATA 4380	DATA PROBLEMS	3
DATA 4381	DATA CAPSTONE PROJECT 1	3
DATA 4382	DATA CAPSTONE PROJECT 2	3
Physics Specialization		
PHYS 2311	MATHEMATICAL METHODS OF PHYSICS	3
PHYS 3183	MODERN PHYSICS LABORATORY	1
PHYS 3313	INTRODUCTION TO MODERN PHYSICS	3
PHYS 3321	INTERMEDIATE ELECTRICITY AND MAGNETISM	3
PHYS 4315	THERMODYNAMICS AND STATISTICAL MECHANICS	3

PHYS 4326	INTRODUCTION TO QUANTUM MECHANICS	3
Select any PHYS course numbered 2300 or higher.		3
Select two PHYS courses numbered 3300 or higher		6
Select any PHYScourse numbered 3300 or higher or DATA course numbered 2300 or higher.		3
Total Hours		**120**

SUGGESTED COURSE SEQUENCE

Details of a personal course sequence should be made with the guidance of the Data Science undergraduate advisor, particularly since many courses are not offered every semester. For all entering freshmen, it is important to begin the mathematics sequence, starting with MATH 1426, Calculus I, in the first semester.

First Year

Fall Semester	Hours	Spring Semester	Hours
PHYS 1443	4	ENGL 1301	3
UNIV 1131 or UNIV-SC 1101	1	PHYS 1444	4
MATH 1426	4	MATH 2425	4
Component Area Course (Suggested DATA 1301)	3	DATA 3402	4
DATA 3401	4		
	16		**15**

Second Year

Fall Semester	Hours	Spring Semester	Hours
PHYS 3183	1	Approved Creative Arts Core	3
PHYS 3313	3	PHYS 2311	3
MATH 2326	3	DATA 3421	4
MATH 3319	3	DATA 3442	4
DATA 3441	4		
	14		**14**

Third Year

Fall Semester	Hours	Spring Semester	Hours
HIST 1301	3	HIST 1302	3
Approved Communication Core	3	ELECTIVE (PHYS 23xx+)	3
PHYS 4315	3	ELECTIVE (33xx+)	3
PHYS 4326	3	DATA 4380	3
DATA 3461	4	Approved Language, Philosophy, Culture Core	3
	16		**15**

Fourth Year

Fall Semester	Hours	Spring Semester	Hours
Approved Social & Behavioral Core	3	POLS 2312	3
POLS 2311	3	ELECTIVE (PHYS 33xx+)	3
PHYS 3321	3	ELECTIVE (PHYS 33xx+)	3
MATH 3313	3	ELECTIVE (PHYS 33xx+ or DATA 23xx+)	3
DATA 4381	3	DATA 4382	3
	15		**15**

Total Hours: 120

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/)