

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/degree requirements/generalcore requirements/>) 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 Specialization

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 PHYS course 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/>)