Data Science - Undergraduate Programs

Academic Advising: 406 Pickard Hall · 817-272-0939

Bachelor's Degrees in Data Science

The Bachelors of Science in Data Science requires students to select a Domain Concentration, where the Domain is one of the supported majors in the College of Science (Biology, Chemistry, Environmental Science, Geoscience, Mathematics, Physics, and Psychology). Beyond the UTA Core Curriculum requirements, the degree requires a sequences of courses in Mathematics, Data Science, and the chosen Domain Concentration. In addition, students must complete a year long Capstone project in collaboration with a supervisor within the College of Science or an Industry Partner.

The University Core Curriculum consists of 42 credit hours from University Core Curriculum (http://catalog.uta.edu/archives/2024-2025/academicregulations/degreerequirements/generalcorerequirements/).

Core Data Science Course Requirements

Regardless of the chosen concentration, all students seeking a Bachelors of Science in Data Science will be required to complete the following courses.

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

Math Requirements

All concentrations are required to take MATH 1426. The Math and Physics concentrations require either MATH 3330 or MATH 3319 and their prerequisites, while all other concentrations require DATA 3311.

All degrees are Bachelors of Science in Data Science with Domain Concentration. Possible domains are Biology, Chemistry, Earth and Environmental Science, Geoscience, Mathematics, Physics, and Psychology.

Requirements for a Bachelor of Science in Data Science with Biology Concentration

Recommended Pre-Professional Courses		
Freshman/Transfer Requirement		
UNIV 1131	STUDENT SUCCESS	1
or UNIV-SC 1101	CAREER PREPARATION AND STUDENT SUCCESS	
Communication		
ENGL 1301	RHETORIC AND COMPOSITION I	3
Select one additional communication area course *		3
Life and Physical Science		
BIOL 1441	BIOLOGY I FOR SCIENCE MAJORS: CELL AND MOLECULAR BIOLOGY	4
BIOL 1442	BIOLOGY II FOR SCIENCE MAJORS: ECOLOGY AND EVOLUTION	4
Language, Philosophy, Culture		
Select one course from this area *		3
Creative Arts		
Select one course from this area *		3
U.S. History		
Select two of the following courses		6
HIST 1301	HISTORY OF THE UNITED STATES TO 1865	
HIST 1302	HISTORY OF THE UNITED STATES, 1865 TO PRESENT	
HIST 1331	TECHNOLOGY AND SCIENCE IN AMERICAN SOCIETY, I	
HIST 1332	TECHNOLOGY AND SCIENCE IN AMERICAN SOCIETY, II	

Government/Political Science		
POLS 2311	GOVERNMENT OF THE UNITED STATES	3
POLS 2312	STATE AND LOCAL GOVERNMENT	3
Social and Behavioral Sciences		
Select one course from this area *		3
Mathematics		
MATH 1421	PREPARATION FOR CALCULUS	4
MATH 1426	CALCULUS I	4
General Elective		
ELECTIVE (33xx+)		3
Component Area		
Select one course from this area * (Suggested DATA 1301)		3
Data Science Courses		
DATA 3401	PYTHON FOR DATA SCIENCE 1	4
DATA 3402	PYTHON FOR DATA SCIENCE 2	4
DATA 3311	MATHEMATICS FOR DATA SCIENCE	3
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
Biology Requirements		
CHEM 1441	GENERAL CHEMISTRY I	4
CHEM 1442	GENERAL CHEMISTRY II	4
CHEM 2321	ORGANIC CHEMISTRY I	3
CHEM 2181	ORGANIC CHEMISTRY I LABORATORY	1
BIOL 3315	GENETICS	3
BIOL 3340	BIOINFORMATICS	3
ELECTIVE (BIOL 33xx+)		3
ELECTIVE (BIOL 33xx+)		3
ELECTIVE (BIOL 33xx+)		3
ELECTIVE (BIOL 34xx+)		4
ELECTIVE (BIOL or DATA 33xx+)		3
Total Hours		**120**

* See General Core Requirements (http://catalog.uta.edu/archives/2024-2025/academicregulations/degreerequirements/generalcorerequirements/) for approved courses.

TYPICAL 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 1421, Preparation for Calculus, in the first semester.

First Year			
Fall Semester	**Hours**	**Spring Semester**	**Hours**
UNIV 1131 or UNIV-SC 1101	1	DATA 3401	4
ENGL 1301	3	DATA 3311	3
BIOL 1441	4	MATH 1426	4
MATH 1421	4	BIOL 1442	4
Component Area Course (Suggested DATA 1301)	3		
	15		**15**

Second Year

Fall Semester	Hours	Spring Semester	Hours
DATA 3402	4	DATA 3421	4
BIOL 3315	3	ELECTIVE (BIOL 33xx+)	3
ELECTIVE (33xx+)	3	ELECTIVE (BIOL 33xx+)	3
Approved Communication Core	3	ELECTIVE (BIOL 33xx+)	3
Approved Language, Philosophy, Culture Core	3	Approved Creative Arts Core	3
	16		**16**

Third Year

Fall Semester	Hours	Spring Semester	Hours
DATA 3441	4	DATA 3442	4
DATA 3461	4	DATA 4380	3
CHEM 1441	4	CHEM 1442	4
HIST 1301	3	HIST 1302	3
	15		**14**

Fourth Year

Fall Semester	Hours	Spring Semester	Hours
DATA 4381	3	DATA 4382	3
BIOL 3340	3	ELECTIVE (BIOL 34xx+)	4
CHEM 2321	3	ELECTIVE (BIOL 33xx+ or DATA 33xx+)	3
CHEM 2181	1	Approved Social & Behavioral Core	3
POLS 2311	3	POLS 2312	3
	13		**16**

Total Hours: 120

Requirements for a Bachelor of Science in Data Science with Biological Chemistry Concentration

Recommended Pre-Professional Courses

Freshman/Transfer Requirement		
UNIV 1131	STUDENT SUCCESS	1
or UNIV-SC 1101	CAREER PREPARATION AND STUDENT SUCCESS	
Communication		
ENGL 1301	RHETORIC AND COMPOSITION I	3
Select one additional communication area course *		3
Life and Physical Science		
BIOL 1441	BIOLOGY I FOR SCIENCE MAJORS: CELL AND MOLECULAR BIOLOGY	4
BIOL 1442	BIOLOGY II FOR SCIENCE MAJORS: ECOLOGY AND EVOLUTION	4
Language, Philosophy, Culture		
Select one course from this area *		3
Creative Arts		
Select one course from this area *		3
U.S. History		
Select two of the following courses:		6
HIST 1301	HISTORY OF THE UNITED STATES TO 1865	
HIST 1302	HISTORY OF THE UNITED STATES, 1865 TO PRESENT	
HIST 1331	TECHNOLOGY AND SCIENCE IN AMERICAN SOCIETY, I	
HIST 1332	TECHNOLOGY AND SCIENCE IN AMERICAN SOCIETY, II	
Government/Political Science		
POLS 2311	GOVERNMENT OF THE UNITED STATES	3
POLS 2312	STATE AND LOCAL GOVERNMENT	3
Social and Behavioral Sciences		
Select one course from this area *		3
General Elective		

ELECTIVE (33xx+)		3
Component Area		
Select one course from this area * (Suggested DATA 1301)		3
Mathematics		
MATH 1426	CALCULUS I	4
MATH 2425	CALCULUS II	4
Data Science Courses		
DATA 3311	MATHEMATICS FOR DATA SCIENCE	3
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
Chemistry Requirements		
CHEM 1441	GENERAL CHEMISTRY I	4
CHEM 1442	GENERAL CHEMISTRY II	4
CHEM 2321	ORGANIC CHEMISTRY I	3
CHEM 2181	ORGANIC CHEMISTRY I LABORATORY	1
CHEM 2322	ORGANIC CHEMISTRY II	3
CHEM 2182	ORGANIC CHEMISTRY II LABORATORY	1
CHEM 2335	QUANTITATIVE CHEMISTRY	3
CHEM 2285	QUANTITATIVE CHEMISTRY LABORATORY	2
CHEM 3317	INORGANIC CHEMISTRY	3
or CHEM 4318	INORGANIC CHEMISTRY	
CHEM 4311	BIOCHEMISTRY I	3
CHEM 4312	BIOCHEMISTRY II	3
CHEM 4461	INSTRUMENTAL ANALYSIS	4
Total Hours		**120**

*See General Core Requirements (http://catalog.uta.edu/archives/2024-2025/academicregulations/degreerequirements/generalcorerequirements/) for approved courses.

TYPICAL 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
Component Area Course (Suggested DATA 1301)	3	CHEM 1442	4
UNIV 1131 or UNIV-SC 1101	1	MATH 2425	4
CHEM 1441	4	DATA 3402	4
MATH 1426	4	DATA 3311	3
DATA 3401	4		
	16		**15**

Second Year

Fall Semester	Hours	Spring Semester	Hours
CHEM 2321	3	CHEM 2322	3
CHEM 2181	1	CHEM 2182	1
DATA 3441	4	DATA 3421	4
ELECTIVE (33xx+)	3	DATA 3442	4

ENGL 1301	3	Approved Communication Core	3
	14		**15**

Third Year

Fall Semester	Hours	Spring Semester	Hours
CHEM 2335	3	DATA 4380	3
CHEM 2285	2	CHEM 4311	3
DATA 3461	4	CHEM 3317 or 4318	3
HIST 1301	3	Approved Social and Behavioral Core	3
Approved Creative Arts Core	3	POLS 2312	3
	15		**15**

Fourth Year

Fall Semester	Hours	Spring Semester	Hours
DATA 4381	3	DATA 4382	3
BIOL 1441	4	BIOL 1442	4
HIST 1302 or 1332	3	CHEM 4312	3
Approved Language, Philosophy, Culture Core	3	CHEM 4461	4
POLS 2311	3		
	16		**14**

Total Hours: 120

Requirements for a Bachelor of Science in Data Science with Physical Chemistry Concentration

Recommended Pre-Professional Courses		
Freshman/Transfer Requirement		
UNIV 1131	STUDENT SUCCESS	1
or UNIV-SC 1101	CAREER PREPARATION AND STUDENT SUCCESS	
Communication		
ENGL 1301	RHETORIC AND COMPOSITION I	3
Select one additional communication area course *		3
Life and Physical Science		
PHYS 1443	GENERAL TECHNICAL PHYSICS I	4
PHYS 1444	GENERAL TECHNICAL PHYSICS II	4
Language, Philosophy, Culture		
Select one course from this area *		3
Creative Arts		
Select one course from this area *		3
U.S. History		
Select two of the following courses:		6
HIST 1301	HISTORY OF THE UNITED STATES TO 1865	
HIST 1302	HISTORY OF THE UNITED STATES, 1865 TO PRESENT	
HIST 1331	TECHNOLOGY AND SCIENCE IN AMERICAN SOCIETY, I	
HIST 1332	TECHNOLOGY AND SCIENCE IN AMERICAN SOCIETY, II	
Government/Political Science		
POLS 2311	GOVERNMENT OF THE UNITED STATES	3
POLS 2312	STATE AND LOCAL GOVERNMENT	3
Social and Behavioral Sciences		
Select one course from this area *		3
General Elective		
ELECTIVE (33xx+)		3
Component Area		
Select one course from this area * (Suggested DATA 1301)		3
Mathematics		

MATH 1426	CALCULUS I	4
MATH 2425	CALCULUS II	4
Data Science Courses		
DATA 3401	PYTHON FOR DATA SCIENCE 1	4
DATA 3402	PYTHON FOR DATA SCIENCE 2	4
DATA 3311	MATHEMATICS FOR DATA SCIENCE	3
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
Chemistry Requirements		
CHEM 1441	GENERAL CHEMISTRY I	4
CHEM 1442	GENERAL CHEMISTRY II	4
CHEM 2321	ORGANIC CHEMISTRY I	3
CHEM 2181	ORGANIC CHEMISTRY I LABORATORY	1
CHEM 2322	ORGANIC CHEMISTRY II	3
CHEM 2182	ORGANIC CHEMISTRY II LABORATORY	1
CHEM 2335	QUANTITATIVE CHEMISTRY	3
CHEM 2285	QUANTITATIVE CHEMISTRY LABORATORY	2
CHEM 4311	BIOCHEMISTRY I	3
CHEM 3317	INORGANIC CHEMISTRY	3
or CHEM 4318	INORGANIC CHEMISTRY	
Select one of the following options:		4
CHEM 3315 & CHEM 3175	INTRODUCTION TO BIOPHYSICAL CHEMISTRY and BIOPHYSICAL CHEMISTRY LABORATORY	
CHEM 3321 & CHEM 3181	PHYSICAL CHEMISTRY I and PHYSICAL CHEMISTRY I LABORATORY **	
CHEM 3322 & CHEM 3182	PHYSICAL CHEMISTRY II and PHYSICAL CHEMISTRY II LABORATORY **	
ELECTIVE (CHEM or DATA 33xx+)		3
Total Hours		**120**

* See General Core Requirements (http://catalog.uta.edu/archives/2024-2025/academicregulations/degreerequirements/generalcorerequirements/) for approved courses.

** If you choose one of these two options, please consult your academic advisor because there are additional prerequisites that must be satisfied.

TYPICAL 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
Component Area Course (Suggested DATA 1301)	3	CHEM 1442	4
UNIV 1131 or UNIV-SC 1101	1	MATH 2425	4
CHEM 1441	4	DATA 3311	3
MATH 1426	4	DATA 3402	4
DATA 3401	4		
	16		**15**

Second Year

Fall Semester	Hours	Spring Semester	Hours
CHEM 2321	3	Approved Communication Core	3

CHEM 2181	1	CHEM 2322	3
DATA 3441	4	CHEM 2182	1
ENGL 1301	3	DATA 3442	4
ELECTIVE (33xx+)	3	DATA 3421	4
	14		**15**

Third Year

Fall Semester	**Hours**	**Spring Semester**	**Hours**
DATA 3461	4	CHEM 4311	3
CHEM 2335	3	CHEM 3317 or 4318	3
CHEM 2285	2	DATA 4380	3
Approved Creative Arts Core	3	POLS 2311	3
HIST 1301	3	Approved Language, Philosophy, Culture Core Course	3
	15		**15**

Fourth Year

Fall Semester	**Hours**	**Spring Semester**	**Hours**
HIST 1302 or 1332	3	POLS 2312	3
ELECTIVE (CHEM or DATA 33xx+)	3	PHYS 1444	4
PHYS 1443	4	CHEM 3315	3
DATA 4381	3	CHEM 3175	1
Approved Social and Behavioral Core Course	3	DATA 4382	3
	16		**14**

Total Hours: 120

Requirements for a Bachelor of Science in Data Science with Environmental Science Concentration

Recommended Pre-Professional Courses		
Freshman/Transfer Requirement		
UNIV 1131	STUDENT SUCCESS	1
or UNIV-SC 1101	CAREER PREPARATION AND STUDENT SUCCESS	
Communication		
ENGL 1301	RHETORIC AND COMPOSITION I	3
Select one additional communication area course *		3
Life and Physical Science		
CHEM 1441	GENERAL CHEMISTRY I	4
CHEM 1442	GENERAL CHEMISTRY II	4
Language, Philosophy, Culture		
Select one course from this area *		3
Creative Arts		
Select one course from this area *		3
U.S. History		
Select two of the following courses:		6
HIST 1301	HISTORY OF THE UNITED STATES TO 1865	
HIST 1302	HISTORY OF THE UNITED STATES, 1865 TO PRESENT	
HIST 1331	TECHNOLOGY AND SCIENCE IN AMERICAN SOCIETY, I	
HIST 1332	TECHNOLOGY AND SCIENCE IN AMERICAN SOCIETY, II	
Government/Political Science		
POLS 2311	GOVERNMENT OF THE UNITED STATES	3
POLS 2312	STATE AND LOCAL GOVERNMENT	3
Social and Behavioral Sciences		
Select one course from this area *		3
Component Area		
Select one course from this area * (Suggested DATA 1301)		3
Mathematics		
MATH 1426	CALCULUS I	4

MATH 2425	CALCULUS II	4
Data Science Courses		
DATA 3401	PYTHON FOR DATA SCIENCE 1	4
DATA 3402	PYTHON FOR DATA SCIENCE 2	4
DATA 3311	MATHEMATICS FOR DATA SCIENCE	3
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
Environmental Science Requirements		
BIOL 1441	BIOLOGY I FOR SCIENCE MAJORS: CELL AND MOLECULAR BIOLOGY	4
ENVR 1301	INTRODUCTION TO ENVIRONMENTAL SCIENCE	3
ENVR 1330	GLOBAL WARMING	3
ENVR 3454	STATISTICS FOR EARTH AND ENVIRONMENTAL SCIENTISTS	4
ENVR 4455	ENVIRONMENTAL DATA SCIENCE	4
GEOL 4330	UNDERSTANDING GEOGRAPHIC INFORMATION SYSTEMS	3
GEOL 4405	METEOROLOGY AND CLIMATOLOGY	4
or GEOL 4456	ENVIRONMENTAL RISK ASSESSMENT	
ENVR 4303	TOPICS IN SUSTAINABILITY	3
or GEOL 4331	ANALYSIS OF SPATIAL DATA	
ELECTIVE (GEOL or ENVR 33xx+)		3
ELECTIVE (GEOL or ENVR 33xx+)		3
ELECTIVE (GEOL or ENVR or DATA 33xx+)		3
Total Hours		**120**

* See General Core Requirements (http://catalog.uta.edu/archives/2024-2025/academicregulations/degreerequirements/generalcorerequirements/) for approved courses.

TYPICAL 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
UNIV-SC 1101 or 1131	1	CHEM 1442	4
Component Area Course (Suggested DATA 1301)	3	MATH 2425	4
CHEM 1441	4	DATA 3311	3
MATH 1426	4	DATA 3402	4
DATA 3401	4		
	16		**15**

Second Year

Fall Semester	Hours	Spring Semester	Hours
BIOL 1441	4	Approved Creative Arts Core	3
ENVR 3454	4	ENVR 1330	3
ENGL 1301	3	DATA 3442	4
DATA 3441	4	DATA 3421	4
	15		**14**

Third Year

Fall Semester	Hours	Spring Semester	Hours
ENVR 4455	4	ELECTIVE (GEOL or ENVR 33xx+)	3
HIST 1301	3	ENVR 1301	3
GEOL 4405 or 4456	4	GEOL 4330	3

DATA 3461	4	DATA 4380	3
		HIST 1302	3
	15		**15**

Fourth Year

Fall Semester	**Hours**	**Spring Semester**	**Hours**
Approved Communication Core	3	Approved Social & Behavioral Core	3
ENVR 4303 or GEOL 4331	3	POLS 2312	3
DATA 4381	3	ELECTIVE (GEOL or ENVR 33xx+)	3
POLS 2311	3	ELECTIVE (GEOL or ENVR or DATA 33xx+)	3
Approved Language, Philosophy Culture Core	3	DATA 4382	3
	15		**15**

Total Hours: 120

Requirements for a Bachelor of Science in Data Science with Geoscience Concentration

Recommended Pre-Professional Courses

Freshman/Transfer Requirement		
UNIV 1131	STUDENT SUCCESS	1
or UNIV-SC 1101	CAREER PREPARATION AND STUDENT SUCCESS	
Communication		
ENGL 1301	RHETORIC AND COMPOSITION I	3
Select one additional communication area course *		3
Life and Physical Science		
GEOL 1301	EARTH SYSTEMS	3
GEOL 1302	EARTH HISTORY	3
Language, Philosophy, Culture		
Select one course from this area *		3
Creative Arts		
Select one course from this area *		3
U.S. History		
Select two of the following courses:		6
HIST 1301	HISTORY OF THE UNITED STATES TO 1865	
HIST 1302	HISTORY OF THE UNITED STATES, 1865 TO PRESENT	
HIST 1331	TECHNOLOGY AND SCIENCE IN AMERICAN SOCIETY, I	
HIST 1332	TECHNOLOGY AND SCIENCE IN AMERICAN SOCIETY, II	
Government/Political Science		
POLS 2311	GOVERNMENT OF THE UNITED STATES	3
POLS 2312	STATE AND LOCAL GOVERNMENT	3
Social and Behavioral Sciences		
Select one course from this area *		3
Component Area		
Select one course from this area * (Suggested DATA 1301)		3
Mathematics		
MATH 1426	CALCULUS I	4
MATH 2425	CALCULUS II	4
Data Science Courses		
DATA 3401	PYTHON FOR DATA SCIENCE 1	4
DATA 3402	PYTHON FOR DATA SCIENCE 2	4
DATA 3311	MATHEMATICS FOR DATA SCIENCE	3
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
Geology Requirements		
PHYS 1441	GENERAL COLLEGE PHYSICS I	4
or PHYS 1443	GENERAL TECHNICAL PHYSICS I	
BIOL 1441	BIOLOGY I FOR SCIENCE MAJORS: CELL AND MOLECULAR BIOLOGY	4
CHEM 1441	GENERAL CHEMISTRY I	4
CHEM 1442	GENERAL CHEMISTRY II	4
GEOL 2445	MINERALOGY	4
GEOL 3443	STRUCTURAL GEOLOGY	4
GEOL 4199	TECHNICAL SESSIONS	1
or GEOL 4190	GEOSCIENCE INTERNSHIP	
or GEOL 4189	RESEARCH IN GEOLOGY	
GEOL 4330	UNDERSTANDING GEOGRAPHIC INFORMATION SYSTEMS	3
GEOL 3454	STATISTICS FOR EARTH AND ENVIRONMENTAL SCIENTISTS	4
ELECTIVE (GEOL or ENVR 33xx+)		3
ELECTIVE (GEOL or ENVR 33xx+)		3
ELECTIVE (GEOL or ENVR or DATA 33xx+)		3
Total Hours		**122**

* See General Core Requirements (http://catalog.uta.edu/archives/2024-2025/academicregulations/degreerequirements/generalcorerequirements/) for approved courses.

TYPICAL 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
ENGL 1301	3	Approved Communication Core	3
CHEM 1441	4	CHEM 1442	4
UNIV-SC 1131 or 1101	1	MATH 2425	4
MATH 1426	4	POLS 2311	3
Component Area Course (Suggested DATA 1301)	3	HIST 1301 or 1331	3
	15		**17**

Second Year

Fall Semester	Hours	Spring Semester	Hours
BIOL 1441	4	PHYS 1441 or 1443	4
GEOL 2445	4	HIST 1302 or 1332	3
ELECTIVE (GEOL or ENVR 33xx+)	3	GEOL 1302	3
GEOL 1301	3	DATA 3402	4
DATA 3401	4		
	18		**14**

Third Year

Fall Semester	Hours	Spring Semester	Hours
GEOL 3454	4	ELECTIVE (GEOL or ENVR 33xx+)	3
POLS 2312	3	DATA 3311	3
DATA 3421	4	DATA 3442	4
DATA 3441	4	DATA 4380	3
	15		**13**

Fourth Year					
Fall Semester	**Hours**		**Spring Semester**	**Hours**	
Approved Social & Behavioral Core		3	Approved Language, Philosophy, Culture Core		3
GEOL 4330		3	Approved Creative Arts Core		3
GEOL 3443		4	GEOL 4189, 4199, or 4190		1
DATA 3461		4	ELECTIVE (GEOL or ENVR or DATA 33xx+)		3
DATA 4381		3	DATA 4382		3
		17			**13**

Total Hours: 122

Requirements for a Bachelor of Science in Data Science with Mathematics Concentration

Recommended Pre-Professional Courses		
Freshman/Transfer Requirement		
UNIV 1131	STUDENT SUCCESS	1
or UNIV-SC 1101	CAREER PREPARATION AND STUDENT SUCCESS	
Communication		
ENGL 1301	RHETORIC AND COMPOSITION I	3
Select one additional communication area course *		3
Life and Physical Science		
Choose one of the following sequences:		6-8
BIOL 1441 & BIOL 1442	BIOLOGY I FOR SCIENCE MAJORS: CELL AND MOLECULAR BIOLOGY and BIOLOGY II FOR SCIENCE MAJORS: ECOLOGY AND EVOLUTION	
CHEM 1441 & CHEM 1442	GENERAL CHEMISTRY I and GENERAL CHEMISTRY II	
PHYS 1443 & PHYS 1444	GENERAL TECHNICAL PHYSICS I and GENERAL TECHNICAL PHYSICS II	
GEOL 1301 & GEOL 1302	EARTH SYSTEMS and EARTH HISTORY	
Additional Science		
Select two additional science area courses *		6
Language, Philosophy, Culture		
Select one course from this area *		3
Creative Arts		
Select one course from this area *		3
U.S. History		
Select two of the following courses:		6
HIST 1301	HISTORY OF THE UNITED STATES TO 1865	
HIST 1302	HISTORY OF THE UNITED STATES, 1865 TO PRESENT	
HIST 1331	TECHNOLOGY AND SCIENCE IN AMERICAN SOCIETY, I	
HIST 1332	TECHNOLOGY AND SCIENCE IN AMERICAN SOCIETY, II	
Government/Political Science		
POLS 2311	GOVERNMENT OF THE UNITED STATES	3
POLS 2312	STATE AND LOCAL GOVERNMENT	3
Social and Behavioral Sciences		
Select one course from this area *		3
General Elective		
ELECTIVE (33xx+)		3
Component Area		
Select one course from this area * (Suggested DATA 1301)		3
Data Science Courses		
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
Mathematics Requirements		
MATH 1426	CALCULUS I	4
MATH 2425	CALCULUS II	4
MATH 2326	CALCULUS III	3
MATH 3300	INTRODUCTION TO PROOFS	3
MATH 3302	MULTIVARIATE STATISTICAL METHODS	3
MATH 3313	INTRODUCTION TO PROBABILITY	3
MATH 3318	DIFFERENTIAL EQUATIONS	3
MATH 3321	ABSTRACT ALGEBRA I	3
MATH 3330	INTRODUCTION TO LINEAR ALGEBRA AND VECTOR SPACES	3
MATH 3335	ANALYSIS I	3
MATH 3345	NUMERICAL ANALYSIS AND COMPUTER APPLICATIONS	3
ELECTIVE (MATH 33xx+)		3
ELECTIVE (MATH or DATA 33xx+)		3
Total Hours		**120-122**

* See General Core Requirements (http://catalog.uta.edu/archives/2024-2025/academicregulations/degreerequirements/generalcorerequirements/) for approved courses.

TYPICAL 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
MATH 1426	4	ENGL 1301	3
DATA 3401	4	MATH 2425	4
UNIV 1131 or UNIV-SC 1101	1	DATA 3402	4
Approved Life & Physical Science Sequence	3-4	Approved Life & Physical Science Sequence	3-4
Component Area Course (Suggested DATA 1301)	3		
	15-16		**14-15**

Second Year

Fall Semester	Hours	Spring Semester	Hours
Approved Communication Core	3	Approved Creative Arts Core	3
MATH 2326	3	MATH 3300	3
MATH 3330	3	DATA 3421	4
ELECTIVE (33xx+)		DATA 3442	4
DATA 3441	4		
	13		**14**

Third Year

Fall Semester	Hours	Spring Semester	Hours
HIST 1301	3	Approved Additional Natural Science	3
MATH 3313	3	HIST 1302	3
MATH 3345	3	MATH 3302	3
MATH 3321	3	MATH 3335	3
DATA 3461	4	DATA 4380	3
	16		**15**

Fourth Year				
Fall Semester	**Hours**		**Spring Semester**	**Hours**
Approved Social & Behavioral Core	3		Approved Language, Philosophy, Culture Core	3
Approved Additional Natural Science	3		POLS 2312	3
MATH 3318	3		DATA 4382	3
POLS 2311	3		ELECTIVE (MATH 33xx+)	3
DATA 4381	3		ELECTIVE (MATH or DATA 33xx+)	3
	15			**15**

Total Hours: 117-119

Requirements for a Bachelor of Science in Data Science with Physics Concentration

Recommended Pre-Professional Courses		
Freshman/Transfer Requirement		
UNIV 1131	STUDENT SUCCESS	1
or UNIV-SC 1101	CAREER PREPARATION AND STUDENT SUCCESS	
Communication		
ENGL 1301	RHETORIC AND COMPOSITION I	3
Select one additional communication area course *		3
Life and Physical Science		
PHYS 1443	GENERAL TECHNICAL PHYSICS I	4
PHYS 1444	GENERAL TECHNICAL PHYSICS II	4
Language, Philosophy, Culture		
Select one course from this area *		3
Creative Arts		
Select one course from this area *		3
U.S. History		
Select two of the following courses		6
HIST 1301	HISTORY OF THE UNITED STATES TO 1865	
HIST 1302	HISTORY OF THE UNITED STATES, 1865 TO PRESENT	
HIST 1331	TECHNOLOGY AND SCIENCE IN AMERICAN SOCIETY, I	
HIST 1332	TECHNOLOGY AND SCIENCE IN AMERICAN SOCIETY, II	
Government/Political Science		
POLS 2311	GOVERNMENT OF THE UNITED STATES	3
POLS 2312	STATE AND LOCAL GOVERNMENT	3
Social and Behavioral Sciences		
Select one course from this area *		3
General Elective		
ELECTIVE (33xx+)		3
Component Area		
Select one course from this area * (Suggested DATA 1301)		3
Mathematics		
MATH 1426	CALCULUS I	4
MATH 2425	CALCULUS II	4
MATH 2326	CALCULUS III	3
MATH 3313	INTRODUCTION TO PROBABILITY	3
MATH 3319	DIFFERENTIAL EQUATIONS & LINEAR ALGEBRA	3
Data Science Courses		
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 Requirements		
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
Elective (PHYS 23xx+)		3
Elective (PHYS 33xx+)		3
Elective (PHYS 33xx+)		3
Elective (PHYS or DATA 33xx+)		3
Total Hours		**120**

* See General Core Requirements (http://catalog.uta.edu/archives/2024-2025/academicregulations/degreerequirements/generalcorerequirements/) for approved courses.

TYPICAL 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 or DATA 33xx+)	3

DATA 4381		3 DATA 4382	3
		15	**15**

Total Hours: 120

Requirements for a Bachelor of Science in Data Science with Psychology Concentration

Recommended Pre-Professional Courses		
Freshman/Transfer Requirement		
UNIV 1131	STUDENT SUCCESS	1
or UNIV-SC 1101	CAREER PREPARATION AND STUDENT SUCCESS	
Communication		
ENGL 1301	RHETORIC AND COMPOSITION I	3
Select one additional communication area course *		3
Life and Physical Science		
BIOL 1441	BIOLOGY I FOR SCIENCE MAJORS: CELL AND MOLECULAR BIOLOGY	4
BIOL 1442	BIOLOGY II FOR SCIENCE MAJORS: ECOLOGY AND EVOLUTION	4
Language, Philosophy, Culture		
Select one course from this area *		3
Creative Arts		
Select one course from this area *		3
U.S. History		
Select two of the following courses:		6
HIST 1301	HISTORY OF THE UNITED STATES TO 1865	
HIST 1302	HISTORY OF THE UNITED STATES, 1865 TO PRESENT	
HIST 1331	TECHNOLOGY AND SCIENCE IN AMERICAN SOCIETY, I	
HIST 1332	TECHNOLOGY AND SCIENCE IN AMERICAN SOCIETY, II	
Government/Political Science		
POLS 2311	GOVERNMENT OF THE UNITED STATES	3
POLS 2312	STATE AND LOCAL GOVERNMENT	3
Social and Behavioral Sciences		
PSYC 1315	INTRODUCTION TO PSYCHOLOGY	3
General Elective		
ELECTIVE (33xx+)		3
Component Area		
Select one course from this area		3
Mathematics		
MATH 1421	PREPARATION FOR CALCULUS	4
MATH 1426	CALCULUS I	4
Data Science Courses		
DATA 3401	PYTHON FOR DATA SCIENCE 1	4
DATA 3402	PYTHON FOR DATA SCIENCE 2	4
DATA 3311	MATHEMATICS FOR DATA SCIENCE	3
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
Psychology Requirements		
PSYC 3200	EXPERIENCING RESEARCH IN PSYCHOLOGY	2
PSYC 3300	RESEARCH METHODS IN PSYCHOLOGY	3

PSYC 3315	SOCIAL PSYCHOLOGY	3
PSYC 3322	BRAIN AND BEHAVIOR	3
PSYC 3334	COGNITIVE PROCESSES	3
PSYC 4281	RESEARCH IN PSYCHOLOGY	2
ADVANCED COURSE GROUP 1 (PSYC 33xx+)		3
ADVANCED COURSE GROUP 2 (PSYC 33xx+)		3
ADVANCED COURSE GROUP 3 (PSYC 33xx+)		3
ADVANCED COURSE GROUP 1, 2 or 3 (PSYC 33xx+)		3
ELECTIVE (PSYC 33xx+)		3
ELECTIVE (PSYC or DATA 33xx+)		3
Total Hours		**120**

* See General Core Requirements (http://catalog.uta.edu/archives/2024-2025/academicregulations/degreerequirements/generalcorerequirements/) for approved courses.

TYPICAL 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 1421, Preparation for Calculus, in the first semester.

First Year

Fall Semester	Hours	Spring Semester	Hours
UNIV 1131 or UNIV-SC 1101	1	BIOL 1442	4
BIOL 1441	4	MATH 1426	4
PSYC 1315	3	DATA 3311	3
MATH 1421	4	DATA 3401	4
Component Area Course (Suggested DATA 1301)	3		
	15		**15**

Second Year

Fall Semester	Hours	Spring Semester	Hours
ENGL 1301	3	Approved Communication Core	3
PSYC 3300	3	PSYC 3200	2
PSYC 3315	3	PSYC 3322	3
DATA 3402	4	PSYC 3334	3
ELECTIVE (33xx+)	3	DATA 3421	4
	16		**15**

Third Year

Fall Semester	Hours	Spring Semester	Hours
HIST 1301	3	Approved Language, Philosophy, Culture Core	3
ADVANCED COURSE GROUP 1 (PSYC 33xx+)	3	ADVANCED COURSE GROUP 3 (PSYC 33xx+)	3
DATA 3461	4	ADVANCED COURSE GROUP 2 (PSYC 33xx+)	3
DATA 3441	4	DATA 3442	4
		DATA 4380	3
	14		**16**

Fourth Year

Fall Semester	Hours	Spring Semester	Hours
Approved Creative Arts Core	3	HIST 1302	3
POLS 2311	3	POLS 2312	3
Elective (PSYC 33xx+)	3	PSYC 4281	2
ADVANCED COURSE GROUP 1, 2 or 3 (PSYC 33xx+)	3	ELECTIVE (PSYC or DATA 33xx+)	3
DATA 4381	3	DATA 4382	3
	15		**14**

Total Hours: 120

Minor in Data Science

The College of Science also offers a Minor in Data Science to pair with an existing major. Course schedule may vary based on transferable credits or credits earned.

Students must gain advising and approval from both the department that offers the minor and from their major department. Failure to gain Major Department approval can result in no minor applied at graduation and final transcripts.

Students who wish to obtain a minor in Data Science must take at least 19-20 semester hours of DATA or related courses and maintain a minimum GPA of 2.0. Any substitutions to courses listed below must be approved by the department offering the minor.

COURSE REQUIREMENTS

Foundational Courses		
Select 4 of the following courses:		16
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
Elective Courses		
Select 1 of the following courses:		4
DATA 1301	INTRODUCTION TO DATA SCIENCE	3
BIOL 3340	BIOINFORMATICS	3
ENVR/GEOL 3454	STATISTICS FOR EARTH AND ENVIRONMENTAL SCIENTISTS	4
ENVR/GEOL 4458	MACHINE LEARNING FOR EARTH AND ENVIRONMENTAL SCIENTISTS	4
ENVR 4455	ENVIRONMENTAL DATA SCIENCE	4
GEOL 4330	UNDERSTANDING GEOGRAPHIC INFORMATION SYSTEMS	3
MATH 3313	INTRODUCTION TO PROBABILITY	3
MATH 3316	STATISTICAL INFERENCE	3
PHYS 2321	COMPUTATIONAL PHYSICS	3
PSYC 3325	DATA SCIENCE IN PSYCHOLOGY	3
DATA 33xx Choose from foundational courses list		4

COURSES

DATA 1301. INTRODUCTION TO DATA SCIENCE. 3 Hours.
This course provides an introduction to the field of data science with a high level overview of basic concepts, data types, and techniques while introducing data-informed decision making.

DATA 3311. MATHEMATICS FOR DATA SCIENCE. 3 Hours.
This course covers techniques from linear algebra and probability with an emphasis on how they are used in data science. Working with real data sets will be emphasized, along with basics of Matlab or R programming. Prerequisite: MATH 1426.

DATA 3401. PYTHON FOR DATA SCIENCE 1. 4 Hours.
This is the first of a two course sequence offering the foundations of Python programming in the context of data science. It introduces the full syntax of the Python language as it overviews structured, functional, and object oriented programming methodologies. It also provides a basic conceptual understanding of computing and introduces Unix command-line tools, software employed in data science such as git and Jupyter, and Python libraries such as numpy, matplotlib, and Pandas. Prerequisite: MATH 1426 or concurrent enrollment in MATH 1426.

DATA 3402. PYTHON FOR DATA SCIENCE 2. 4 Hours.
This is the second of a two course sequence offering the foundations of Python programming in the context of data science. It reinforces concepts presented in DATA 3401 with greater depth with a focus on application to various problems in data science, while exploring the python library ecosystem. Prerequisite: DATA 3401, or consent of instructor.

DATA 3421. DATA MINING, MANAGEMENT, AND CURATION. 4 Hours.
This lecture and lab course will provide training in working with databases, including data mining techniques and principles and best practices in data management, storage, and curation. Prerequisite: DATA 3402 or concurrent enrollment in DATA 3402, or consent of instructor.

DATA 3441. STATISTICAL METHODS FOR DATA SCIENCE 1. 4 Hours.
This lecture and lab course will provide an introduction to the fundamental building blocks of advanced data analysis, with emphasis on advanced linear algebra, optimization, statistical inference, and Monte Carlo methods. Working with real data sets will be emphasized, along with basics of R programming. Prerequisite: DATA 3401 or consent of instructor.

DATA 3442. STATISTICAL METHODS FOR DATA SCIENCE 2. 4 Hours.
This lecture and lab course will provide an introduction to the principles and general methods for the analysis of categorical data. This type of data occurs extensively in both observational and experimental studies, as well as industrial applications. While some theoretical statistical detail is given, the primary focus will be on methods of data analysis. Topics include generalized regression models, logistic regression models, Poisson regression models, and multinomial regression models. Problems will be motivated from a scientific perspective. Prerequisite: DATA 3441.

DATA 3461. MACHINE LEARNING. 4 Hours.
This course introduces and surveys Machine Learning techniques and their application to various problems in data science. Prerequisite: DATA 3401, DATA 3402 or consent of instructor.

DATA 4090. UNDERGRADUATE RESEARCH. 0 Hours.
Undergraduate research experiences under supervision of faculty. Students are expected to disseminate research findings by poster or oral presentations in meetings or conferences. Students are also expected to participate in other activities as directed by the grant-funded Research Program Director.

DATA 4380. DATA PROBLEMS. 3 Hours.
This course is intended for Junior-level Data Science students, and will enable them to identify, define, and explore a number of potential problems and projects, for follow-up in the capstone course sequence. Prerequisite: DATA 3402, DATA 3421. DATA 3461 or current enrollment in DATA 3461, or permission of the instructor.

DATA 4381. DATA CAPSTONE PROJECT 1. 3 Hours.
This is the first of a two-semester sequence that will involve deep engagement in a team or individual project in Data Science. Presentation of written and oral reports will be required. Prerequisite: DATA 4380.

DATA 4382. DATA CAPSTONE PROJECT 2. 3 Hours.
This is the second of a two-semester sequence that will involve deep engagement in a team or individual project in Data Science. Presentation of written and oral reports will be required. Prerequisite: DATA 4381.

DATA 4390. DATA SCIENCE RESEARCH. 3 Hours.
Formulation and definition of research problems, the formulation and execution of strategies of solution, and the presentation of results. Prerequisite: consent of instructor. Recommendation by other faculty encouraged.

DATA 4391. SPECIAL TOPICS IN DATA SCIENCE. 3 Hours.
Special topics in Data Science are assigned to individuals or small groups. Faculty members closely supervise the projects and assign library reference material. Small groups will hold seminars at suitable intervals. May be repeated for credit. Prerequisite: senior standing and written permission of the instructor & department chair.

DATA 4392. ADVANCED TOPICS IN DATA SCIENCE. 3 Hours.
Varies from semester to semester. New developments in Data Science, in-depth study of a topic not covered in other courses, or a special faculty expertise made available to undergraduates. May be repeated for credit as topic varies. Prerequisite: permission of instructor.

DATA 4393. HONORS THESIS/SENIOR PROJECT. 3 Hours.
Required of all students in the University Honors College. During the senior year the student must complete a thesis or a project under the direction of a faculty member in Data Science. Prerequisite: Enrollment in the University Honors College and written permission of the instructor and chair.

DATA 4394. UNDERGRADUATE RESEARCH EXPERIENCES. 3 Hours.
Research under faculty supervision and mentorship involving collaboration within a small group. The topic varies from semester to semester, is determined by the faculty teaching the course, and is announced in advance. The course promotes active learning based on inquiry, development of higher-order thinking skills, and meaningful scientific research. Prerequisite: consent of instructor.