DATA SCIENCE CONCENTRATION

Mathematics Bachelor of Arts with a Concentration in Data Science

Code	Title	Credits
GENERAL EDUCATION REQUIREMENTS - 46 Hours Required		
Minimum of "C-"required		
Fundamental Academic Skills		**15**
ENGL 1150	ENGLISH COMPOSITION I	
ENGL 1160	ENGLISH COMPOSITION II	
Writing in the Discipline Course		
CMST 1110	PUBLIC SPEAKING FUNDS	
or CMST 2120	ARGUMENTATION AND DEBATE	
MATH 1120	INTRODUCTION TO MATHEMATICAL AND COMPUTATIONAL THINKING	
or MATH 1100	DATA LITERACY AND VISUALIZATION	
or MATH 1130	QUANTITATIVE LITERACY	
or MATH 1140	QUANTITATIVE REASONING FOR HEALTHCARE PROFESSIONALS	
or MATH 1300	COLLEGE ALGEBRA WITH SUPPORT	
or STAT 1100	DATA LITERACY AND VISUALIZATION	
or STAT 1530	ELEMENTARY STATISTICS	
Distribution Requirements		**31**
Natural Science - From two disciplines and at least one lab - 7 hrs		
Social Science - From two disciplines - 9 hrs		
Humanities and Fine Arts - From two disciplines- 9 hrs		
Global Diversity - 3 hrs		
US Diversity - 3 hrs		
MAJOR REQUIREMENTS		
**Course will satisify UNO's General Education requirement		
^Course requires pre-requisite(s)		
Mathematics Major with a Concentration in Data Science - 46 Hours Required		
Required Coursework		**25**
MATH 1950	CALCULUS I (^)	
MATH 1960	CALCULUS II	
MATH 1970	CALCULUS III	
MATH 2050	APPLIED LINEAR ALGEBRA	
MATH 2230	INTRODUCTION TO ABSTRACT MATH	
MATH 2350	DIFFERENTIAL EQUATIONS	
MATH 3230	INTRODUCTION TO ANALYSIS	
Select one of the following		**3**
CIST 1400	INTRODUCTION TO COMPUTER SCIENCE I	
MATH 2200	MATHEMATICAL COMPUTING I	
MATH 3250	INTRODUCTION TO NUMERICAL METHODS	
Select all of the following Data Science Concentration courses		**15**
MATH 3200	MATHEMATICAL COMPUTING II (^)	
or CSCI 1620	INTRODUCTION TO COMPUTER SCIENCE II	
MATH 4740	INTRODUCTION TO PROBABILITY AND STATISTICS I	
MATH 4750	INTRODUCTION TO PROBABILITY AND STATISTICS II	
STAT 4410	INTRODUCTION TO DATA SCIENCE	
STAT 4420	EXPLORATORY DATA VISUALIZATION AND QUANTIFICATION	
Select one of the following Data Science Concentration courses		**3**
MATH/CSCI 4300	DETERMINISTIC OPERATIONS RESEARCH MODELS	
MATH/CSCI 4310	PROBABILISTIC OPERATIONS RESEARCH MODELS	
MATH/STAT 4450	INTRODUCTION TO MACHINE LEARNING AND DATA MINING	
MATH 4900	INDEPENDENT STUDIES	
STAT 4430	LINEAR MODELS	
STAT 4440	TIME SERIES ANALYSIS	
College Breadth (choose one option		**15-30+**
Option 1: Complete any UNO minor or undergraduate certificate - 15 + hours		
Option 2: Additional General Education Requirements - 19+ hours		
Additional quantitative literacy - 3 hours		
Additional Social Science Gen. Ed. from 3rd Discipline - 3 hours		
Additional Humanities Gen. Ed. from 3rd Discipline - 3 hours		
HIST 1000 and HIST 1010 - 6 hours		
Additional Nat. and Physical Science w/ Lab - 4-5 hours		
Option 3: CAS comprehensive major (50+ hours) OR any second UNO major (30+ hours)		
Bachelor of Arts Language Requirement		**16**
FREN, GERM, Or SPAN, 1110**, 1120, 2010, 2120		
ELECTIVES		
Elective hours as required to reach a total of 120 hours		

Mathematics Bachelor of Arts with a Concentration in Data Science Four Year Plan

Freshman

Fall		Credits
CMST 1110 or CMST 2120	PUBLIC SPEAKING FUNDS or ARGUMENTATION AND DEBATE	3
ENGL 1150	ENGLISH COMPOSITION I (*)	3
MATH 1950	CALCULUS I (*)	5
Foreign Language Course 1110***		5
*ENGL 1150: Requires EPPE.		
**MATH 1950: Requires Math Placement Exam or ACT or SAT scores.		
***Level 1110 foreign language courses count as a Humanity/Fine Arts course, Global Diversity, and toward the student's BA requirement. If student is fulfilling the BA requirement via alternative methods, then 16 additional credits including a HFA and Global Diversity will need to be factored in to this degree plan.		
	Credits	**16**

Spring		
ENGL 1160	ENGLISH COMPOSITION II	3

MATH 1960	CALCULUS II	4
Foreign Language Course 1120		5
Humanities/Fine Arts Course		3
	Credits	**15**

Sophomore

Fall

MATH 1970	CALCULUS III	4
MATH 2050	APPLIED LINEAR ALGEBRA (*)	3
Natural/Physical Science with Lab		4
Foreign Language Course 2110		3
*MATH 2050: Requires MATH 1960.		
	Credits	**14**

Spring

MATH 2230	INTRODUCTION TO ABSTRACT MATH	3
MATH 2350	DIFFERENTIAL EQUATIONS	3
Social Science with U.S. Diversity		3
Humanity/Fine Arts Course		3
Foreign Language Course 2120		3
*MATH 2350: It is recommended you take MATH 2050 first, but not required.		
	Credits	**15**

Junior

Fall

HIST 1010 or Minor/2nd Major Course*		3
MATH 3230	INTRODUCTION TO ANALYSIS (**)	3
MATH 4740	INTRODUCTION TO PROBABILITY AND STATISTICS I (***)	3
Coding Course^		3
Social Science		3
*A&S College Requirement Options		
**MATH 3230: Requires MATH 2230		
***MATH 4740: Requires MATH 1970 and MATH 2230		
^See Academic Catalog for list of Coding Course Options.		
	Credits	**15**

Spring

HIST 1000 or Course for Minor/2nd Major*		3
MATH 4750	INTRODUCTION TO PROBABILITY AND STATISTICS II (**)	3
MATH 3200 or CSCI 1620	MATHEMATICAL COMPUTING II (***) or INTRODUCTION TO COMPUTER SCIENCE II	3
Advanced Writing Requirement^		3
Social Science#		3
*A&S College Requirement Options		
**MATH 4750: Requires MATH 4740		
***MATH 3200: Requires MATH 2200. CSCI 1620: Requires CIST 1400.		
^Advanced Writing Requirement can be: CIST 3000 Advanced Composition for IS&T, ENGL 3050 Writing for the Workplace, ENGL 3980 Technical Writing Across the Discipline, or PHIL 3000 Philosophy Writing Seminar		
#SS Must be in a 2nd discipline		
	Credits	**15**

Senior

Fall

STAT 4410	INTRODUCTION TO DATA SCIENCE (*)	3
Data Science Elective/Elective**		3
Natural/Physical Science***		3
Additional Social Science for A&S or Course towards Minor/2nd Major^		3
Additional Humanities and Fine Arts for A&S or Course towards Minor/2nd Major#		3
*STAT 4410: Requires MATH 4740		
**Students only need one Data Science Elective. Some are offered only in Fall, others only in Spring. Fall: MATH/CSCI 4300 Deterministic Operations Research Models (prereq: MATH 2050), or STAT 4430 Linear Models (prereq: MATH 4750)		
***N&PS Course must be in a 2nd discipline		
^A&S College Requirement Options. SS Must be in a 3rd discipline		
#A&S College Requirement Options. Additional HFA for A&S must be in 3rd discipline.		
	Credits	**15**

Spring

STAT 4420	EXPLORATORY DATA VISUALIZATION AND QUANTIFICATION (*)	3
Data Science Elective/Elective**		3
Elective or Minor/Double Major Course***		3
Elective at 3000-4000 Level or Minor/2nd Major Course***		3
Elective at 3000-4000 Level or Minor/2nd Major Course***		3
*STAT 4420: Requires MATH 4750, and CSCI 1620 or MATH 3200		
**Students only need one Data Science Elective. Some are offered only in Fall, others only in Spring. Spring: MATH/CSCI 4310 Probabilistic Operations Research Models (prereq: MATH 2050 and MATH 4740), STAT 4440 Time Series Analysis (prereq: MATH 4750 and CSCI 1620 or MATH 3200), or MATH/STAT 4450 Intro to Machine Learning & Data Mining (prereq: MATH 4740)		
***Students need at least 120 credits and a minimum of 27 upper level credits throughout the entire degree, with at least 18 credits of upper level coursework taken within the major/concentration. May need to select 3000/4000 level free electives to reach the 27 credit minimum.		
	Credits	**15**
	Total Credits	**120**

This roadmap is a suggested plan of study and does not replace meeting with an advisor. Please note that students may need to adjust the actual sequence of courses based on course availability. Please consult an advisor in your major program for further guidance.

This plan is not a contract and curriculum is subject to change

Additional Information About this Plan:

University Degree Requirements: The minimum number of hours for a UNO undergraduate degree is 120 credit hours. Please review the requirements for your specific program to determine all requirements for the program. In order to graduate on-time (four years for an undergraduate degree), you need to take 30 hours each year.

Placement Exams: For Math, English, Foreign Language, a placement exam may be required. More information on these exams can be found at https://www.unomaha.edu/enrollment-management/testing-center/placement-exams/information.php

**Transfer credit or placement exam scores may change suggested plan of study