

MAJOR IN DATA SCIENCE, BIOINFORMATICS CONCENTRATION

Major Completion Map

Distinctive Requirements for Degree Program:

Freshman

Semester 1		Critical	Recommended	AUCC	Credits
CS 150B	Culture and Coding: Python	X		3B	3
DSCI 100	First Year Seminar in Data Science	X			1
LIFE 102	Attributes of Living Systems (GT-SC1)	X		3A	4
MATH 156	Mathematics for Computational Science I (GT-MA1)	X		1B	4
1C	(https://catalog.colostate.edu/general-catalog/all-university-core-curriculum/aucc/#aucc)		X	1C	3

Total Credits **15**

Semester 2		Critical	Recommended	AUCC	Credits
CO 150	College Composition (GT-CO2)	X		1A	3
CS 164	CS1--Computational Thinking with Java	X			4
DSCI 369	Linear Algebra for Data Science	X			4
STAT 158	Introduction to R Programming	X			1
STAT 315	Intro to Theory and Practice of Statistics	X			3

Total Credits **15**

Sophomore

Semester 3		Critical	Recommended	AUCC	Credits
CS 165	CS2--Data Structures	X			4
CS 220	Discrete Structures	X			4
STAT 341	Statistical Data Analysis I	X			3
Social and Behavioral Sciences	(https://catalog.colostate.edu/general-catalog/all-university-core-curriculum/aucc/#social-behavioral-sciences)		X	3C	3

Total Credits **14**

Semester 4		Critical	Recommended	AUCC	Credits
CHEM 111	General Chemistry I (GT-SC2)	X		3A	4
CHEM 112	General Chemistry Lab I (GT-SC1)	X		3A	1
DSCI 235	Data Wrangling	X			2
MATH 256	Mathematics for Computational Science II	X			4
STAT 342	Statistical Data Analysis II	X			3

Total Credits **14**

Junior

Semester 5		Critical	Recommended	AUCC	Credits
CS 201/PHIL 201	Ethical Computing Systems	X		3B	3
DSCI 320/ MATH 320	Optimization Methods in Data Science	X			3
LIFE 210	Introductory Eukaryotic Cell Biology	X			3
Select one course from the following:		X			3
CO 300	Writing Arguments (GT-CO3)			2	
CO 301B	Writing in the Disciplines: Sciences (GT-CO3)			2	
CO 302	Writing in Digital Environments (GT-CO3)			2	
JTC 300	Strategic Writing and Communication (GT-CO3)			2	

TO PREPARE FOR FIRST SEMESTER: The curriculum for the Major in Data Science assumes students enter college prepared to begin a year-long calculus sequence (either MATH 155/MATH 255 or MATH 160/MATH 161) in the first semester of their first year. LIFE 102 requires high school chemistry as a prerequisite; CHEM 111 requires Algebra II as a prerequisite (this prerequisite is met by having Algebra II by test credit, transfer credit, or placement out of MATH 117 and MATH 118 on Math Placement Exam).

Historical Perspectives (https://catalog.colostate.edu/general-catalog/all-university-core-curriculum/aucc/#historical-perspectives)		X	3D	3	
Total Credits				15	
Semester 6		Critical	Recommended	AUCC	Credits
CHEM 113	General Chemistry II	X			3
DSCI 335	Inferential Reasoning in Data Analysis	X			3
DSCI 336	Data Graphics and Visualization	X			1
LIFE 201B	Introductory Genetics: Molecular/Immunological/Developmental (GT-SC2)	X		3A	3
Data Science Elective (see list on Concentration Requirements tab)			X		3
Elective			X		3
Total Credits				16	
Senior					
Semester 7		Critical	Recommended	AUCC	Credits
BZ 360	Bioinformatics and Genomics	X			4
DSCI 445	Statistical Machine Learning	X		4B	3
Data Science Electives (see list on Concentration Requirements tab)			X		4
Life Science Electives (see list on Concentration Requirements tab)			X		4
Total Credits				15	
Semester 8		Critical	Recommended	AUCC	Credits
CS 425	Introduction to Bioinformatics Algorithms	X			4
DSCI 478	Capstone Group Project in Data Science	X		4A,4C	4
Life Science Electives (see list on Concentration Requirements tab)		X			4
Electives		X			4
The benchmark courses for the 8th semester are the remaining courses in the entire program of study.		X			
Total Credits				16	
Program Total Credits:				120	