

MAJOR IN DATA SCIENCE, BIOINFORMATICS CONCENTRATION

Requirements Effective Fall 2026

Freshman

		AUCC	Credits
CO 150	College Composition (GT-CO2)	1A	3
CS 150B	Culture and Coding: Python	3B	3
CS 164	CS1--Computational Thinking with Java		4
DSCI 100	First Year Seminar in Data Science		1
DSCI 369	Linear Algebra for Data Science		4
LIFE 102	Attributes of Living Systems (GT-SC1)	3A	4
MATH 156 ¹	Mathematics for Computational Science I (GT-MA1)	1B	4
STAT 158	Introduction to R Programming		1
STAT 315	Intro to Theory and Practice of Statistics		3
1C (https://catalog.colostate.edu/general-catalog/all-university-core-curriculum/aucc/#aucc)		1C	3
Total Credits			30

Sophomore

CHEM 111	General Chemistry I (GT-SC2)	3A	4
CHEM 112	General Chemistry Lab I (GT-SC1)	3A	1
CS 165	CS2--Data Structures		4
CS 220	Discrete Structures		4
DSCI 235	Data Wrangling		2
MATH 256 ¹	Mathematics for Computational Science II		4
STAT 341	Statistical Data Analysis I		3
STAT 342	Statistical Data Analysis II		3
Social and Behavioral Sciences (https://catalog.colostate.edu/general-catalog/all-university-core-curriculum/aucc/#social-behavioral-sciences)		3C	3
Total Credits			28

Junior

CHEM 113	General Chemistry II		3
CS 201/PHIL 201	Ethical Computing Systems	3B	3
DSCI 320/MATH 320	Optimization Methods in Data Science		3
DSCI 335	Inferential Reasoning in Data Analysis		3
DSCI 336	Data Graphics and Visualization		1
LIFE 201B	Introductory Genetics: Molecular/Immunological/Developmental (GT-SC2)	3A	3
LIFE 210	Introductory Eukaryotic Cell Biology		3
Select one course from the following:			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	
Data Science Elective			3

Historical Perspectives (https://catalog.colostate.edu/general-catalog/all-university-core-curriculum/aucc/#historical-perspectives)	3D	3
Elective		3
Total Credits		31
Senior		
BZ 360	Bioinformatics and Genomics	4
CS 425	Introduction to Bioinformatics Algorithms	4
DSCI 445	Statistical Machine Learning	4B 3
DSCI 478	Capstone Group Project in Data Science	4A,4C 4
Data Science Electives		4
Life Science Electives		8
Electives ²		4
Total Credits		31
Program Total Credits:		120

Data Science Electives List

Code	Title	AUCC	Credits
CS 214	Software Development		3
CS 250	Computer Systems Foundations		4
CS 270	Computer Organization		4
CS 314	Software Engineering		3
CS 320	Algorithms--Theory and Practice		3
CS 370	Operating Systems		3
CS 435	Introduction to Big Data		4
CS 440	Introduction to Artificial Intelligence		4
CT 301	C++ Fundamentals		2
DSCI 473	Introduction to Geometric Data Analysis		2
DSCI 475	Topological Data Analysis		2
DSCI 510	Linux as a Computational Platform		1
DSCI 512	RNA-Sequencing Data Analysis		1
ECON 202	Principles of Microeconomics (GT-SS1)	3C	3
ECON 204	Principles of Macroeconomics (GT-SS1)	3C	3
ECON 435	Intermediate Econometrics		3
MATH 301	Introduction to Combinatorial Theory		3
MATH 317	Advanced Calculus of One Variable		3
MATH 331	Introduction to Mathematical Modeling		3
MATH 345	Differential Equations		4
MATH 360	Mathematics of Information Security		3
MATH 450	Introduction to Numerical Analysis I		3
MATH 451	Introduction to Numerical Analysis II		3
STAT 400	Statistical Computing		3
STAT 420	Probability and Mathematical Statistics I		3
STAT 430	Probability and Mathematical Statistics II		3
STAT 440	Bayesian Data Analysis		3

Life Science Electives List

Code	Title	AUCC	Credits
ANeq 505	Microbiome of Animal Systems		3
BC 351	Principles of Biochemistry		4
BC 360	Responsible Conduct in Biochemical Research		1
BC 463	Molecular Genetics		3
BC 465	Molecular Regulation of Cell Function		3
BZ 220	Introduction to Evolution		3
BZ 240	Synthetic Biology-Principles and Applications		3
BZ 348/MATH 348	Theory of Population and Evolutionary Ecology		4
BZ 450	Plant Ecology		4
BZ 477	Genome Editing Laboratory		2
CHEM 114	General Chemistry Lab II		1
CHEM 245	Fundamentals of Organic Chemistry		4
LIFE 103	Biology of Organisms-Animals and Plants	3A	4
LIFE 220/LAND 220	Fundamentals of Ecology	3A	3
MIP 300	General Microbiology		3
MIP 315	Pathology of Human and Animal Disease		3
MIP 545	Microbial Metagenomics/Genomics Data Analysis		2

¹ The calculus requirement for the major may alternatively be satisfied by completion of MATH 160, MATH 161, and MATH 261, or by completion of MATH 155 and MATH 255.

² Select enough elective credits to bring the program total to a minimum of 120 credits, of which at least 42 must be upper-division (300- to 400-level).