

MAJOR IN DATA SCIENCE, NEUROSCIENCE CONCENTRATION

Requirements Effective Fall 2023

Freshman

		AUCC	Credits
CO 150	College Composition (GT-CO2)	1A	3
CS 150B	Culture and Coding: Python (GT-AH3)	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
PSY 100	General Psychology (GT-SS3)	3C	3
STAT 158	Introduction to R Programming		1
STAT 315	Intro to Theory and Practice of Statistics		3
Total Credits			30

Sophomore

CHEM 107	Fundamentals of Chemistry (GT-SC2)	3A	4
CHEM 108	Fundamentals of Chemistry Laboratory (GT-SC1)	3A	1
CS 165	CS2--Data Structures		4
CS 220	Discrete Structures and their Applications		4
DSCI 235	Data Wrangling		2
MATH 151	Mathematical Algorithms in Matlab I		1
MATH 256 ¹	Mathematics for Computational Science II		4
STAT 341	Statistical Data Analysis I		3
STAT 342	Statistical Data Analysis II		3
Select one course from the following:			3-4
BZ 350	Molecular and General Genetics		
LIFE 201B	Introductory Genetics: Molecular/Immunological/Developmental (GT-SC2)	3A	
Total Credits			29-30

Junior

BMS 300	Principles of Human Physiology		4
CS 201/PHIL 201	Ethical Computing Systems (GT-AH3)	3B	3
DSCI 320	Optimization Methods in Data Science		3
DSCI 335	Inferential Reasoning in Data Analysis		3
DSCI 336	Data Graphics and Visualization		1
PSY 252	Mind, Brain, and Behavior		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 Electives (Select a minimum of 4 credits from a minimum of two courses from the Data Science Electives list below)		4
Diversity, Equity, and Inclusion (http://catalog.colostate.edu/general-catalog/all-university-core-curriculum/aucc/#diversity-equity-inclusion)	1C	3
Historical Perspectives (http://catalog.colostate.edu/general-catalog/all-university-core-curriculum/aucc/#historical-perspectives)	3D	3
Total Credits		30
Senior		
BMS 325	Cellular Neurobiology	3
BMS 345	Functional Neuroanatomy	4
DSCI 445	Statistical Machine Learning	4B 3
DSCI 478	Capstone Group Project in Data Science	4A,4C 4
PSY 458	Cognitive Neuroscience	3
Neuroscience Electives (Select two courses not previously taken from the Neuroscience Electives List below)		6
Electives		7-8
Total Credits		30-31
Program Total Credits:		120

Data Science Electives List

Code	Title	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
ECON 202	Principles of Microeconomics (GT-SS1)	3
ECON 204	Principles of Macroeconomics (GT-SS1)	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

BMS 450	Pharmacology	3
PSY 454	Biological Psychology	3
PSY 456	Sensation and Perception	3

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

Neuroscience Electives List

Code	Title	Credits
BMS 405	Nerve and Muscle-Toxins, Trauma and Disease	3
BMS 425	Introduction to Systems Neurobiology	3