MAJOR IN COMPUTER SCIENCE, HUMAN-CENTERED COMPUTING CONCENTRATION

Requirements
Effective Fall 2023

A minimum grade of C (2.000) is required in CO 150 and in all CS, DSCI, MATH, STAT, and Technical Elective courses which are required for graduation.

Freshman

		AUCC	Credits
CO 150	College Composition (GT-CO2)	1A	3
MATH 156 or 160[1]	Mathematics for Computational Science I (GT-MA1) Calculus for Physical Scientists I (GT-MA1)	1B	4
Select one group from the following:[2]			5-9
Group A:			
CS 150A or 150B	Culture and Coding: Java (GT-AH3) Culture and Coding: Python (GT-AH3)	3B	
CS 162 or 164	CS1--Introduction to Java Programming CS1--Computational Thinking with Java		
Group B:			
Arts and Humanities (http://catalog.colostate.edu/general-catalog/all-university-core-curriculum/aucc/#arts-and-humanities)		3B	
CS 152	Python for STEM		
CS 162 or 164	CS1--Introduction to Java Programming CS1--Computational Thinking with Java		
Group C:			
Arts and Humanities (http://catalog.colostate.edu/general-catalog/all-university-core-curriculum/aucc/#arts-and-humanities)		3B	
CS 163	CS1---No Prior Programming Experience		
CS 201/PHIL 201	Ethical Computing Systems (GT-AH3)	3B	3
Select at least two courses totaling a minimum of 7 credits from the following (one course must be or include the sequenced laboratory):		3A	7
AA 100 & AA 101	Introduction to Astronomy (GT-SC2)	3A	
ANTH 120 & ANTH 121	Human Origins and Variation (GT-SC2)	3A	
BZ 110 & BZ 111	Principles of Animal Biology (GT-SC2)	3A	
BZ 120	Principles of Plant Biology (GT-SC1)	3A	
CHEM 107 & CHEM 108	Fundamentals of Chemistry (GT-SC2)	3A	
CHEM 111 & CHEM 112	General Chemistry I (GT-SC2)	3A	
GEOL 120 & GEOL 121	Exploring Earth - Physical Geology (GT-SC2)	3A	
GEOL 122 & GEOL 121	The Blue Planet - Geology of Our Environment (GT-SC2)	3A	
GEOL 124 & GEOL 121	Geology of Natural Resources (GT-SC2)	3A	

GEOL 150	Physical Geology for Scientists and Engineers	3A	
HONR 292A	Honors Seminar: Knowing in the Sciences	3A	
LIFE 102	Attributes of Living Systems (GT-SC1)	3A	
LIFE 103	Biology of Organisms-Animals and Plants (GT-SC1)	3A	
LIFE 201A	Introductory Genetics: Applied/Population/Conservation/Ecological (GT-SC2)	3A	
LIFE 201B	Introductory Genetics: Molecular/Immunological/Developmental (GT-SC2)	3A	
LIFE 220/LAND 220	Fundamentals of Ecology (GT-SC2)	3A	
NR 150	Oceanography (GT-SC2)	3A	
PH 121	General Physics I (GT-SC1)	3A	
PH 122	General Physics II (GT-SC1)	3A	
PH 141	Physics for Scientists and Engineers I (GT-SC1)	3A	
PH 142	Physics for Scientists and Engineers II (GT-SC1)	3A	
Diversity, Equity, and Inclusion (http://catalog.colostate.edu/general-catalog/all-university-core-curriculum/aucc/#diversity-equity-inclusion)		1C	3
Electives[3]			1-5
	Total Credits		**26-34**

Sophomore

CS 165	CS2--Data Structures		4
CS 220	Discrete Structures and their Applications		4
Select one group from the following:			4-5
Group A			
CS 214	Software Development		
CT 301	C++ Fundamentals		
Group B			
CS 253	Software Development with C++		
Select one course from the following:			4
CS 250	Computer Systems Foundations		
CS 270	Computer Organization		
Select one course from the following:			3-4
DSCI 369	Linear Algebra for Data Science		
MATH 369	Linear Algebra I		
Select one course from the following:			1-3
STAT 301	Introduction to Applied Statistical Methods		
STAT 302A	Statistics Supplement: General Applications		
STAT 307	Introduction to Biostatistics		
STAT 315	Intro to Theory and Practice of Statistics		
Social and Behavioral Sciences (http://catalog.colostate.edu/general-catalog/all-university-core-curriculum/aucc/#social-behavioral-sciences)		3C	3
Historical Perspectives (http://catalog.colostate.edu/general-catalog/all-university-core-curriculum/aucc/#historical-perspectives)		3D	3
Electives			0-4
	Total Credits		**26-34**

Junior

CS 314	Software Engineering	4A,4B	3
CS 320	Algorithms--Theory and Practice		3
CS 345	Machine Learning Foundations and Practice		3
CS 370	Operating Systems		3
Select one course from the following:			3
CS 310H/IDEA 310H	Design Thinking Toolbox: Mixed Reality Design		
CS 312	Modern Web Applications		

Any CS course numbered 400- or above excluding CS 480-499			
Technical Electives (see list below)			6
Advanced Writing (http://catalog.colostate.edu/general-catalog/all-university-core-curriculum/aucc/#advanced-writing)		2	3
Electives			6
	Total Credits		**30**
Senior			
CS 464	Principles of Human-Computer Interaction	4C	4
Select two courses from the following:			8
CS 410	Introduction to Computer Graphics		
CS 440	Introduction to Artificial Intelligence		
CS 445	Introduction to Machine Learning		
CS 462	Engaging in Virtual Worlds		
CS course numbered 300- or above, excluding 380-399 and 480-499			3
Technical Electives (see list below)			3
Electives[4]			12
	Total Credits		**30**
	Program Total Credits:		**120**

1 MATH 156 recommended for computer science majors who do not already have MATH 160 credit.

2 Recommended sequence for most incoming students is Group A: CS 150B to CS 164.

3 CS 192 or other seminar course is a recommended elective for incoming, first semester, students.

4 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).

Technical Electives

Select a minimum of 9 credits, of which 6 credits must be upper-division.

Code	Title	Credits
Any IDEA course numbered 300- or above, excluding 380-399 and 480-499		
Any STAT course numbered 300- or above, excluding 301, 302A, 307, 315, 380-399 and 480-499		
IDEA 210	Introduction to Design Thinking (GT-AH1)	3
PSY 252	Mind, Brain, and Behavior	3
PSY 253	Human Factors and Engineering Psychology	3
PSY 452	Cognitive Psychology	3
PSY 454	Biological Psychology	3
PSY 456	Sensation and Perception	3
PSY 458	Cognitive Neuroscience	3