



Curriculum for B.S. Degree in Computer Science
120 units (Effective Fall 2026 Semester Term)

General Education (21 units)

Lower Division General Education Requirements (21 units out of 34 units; 13 units met in major)

Area 1 English Communication		
1A English Composition	ENGL 1010	3
1B Critical Thinking	Met in major by multiple courses	
1C Oral Communication	COMM 1100	3
Area 2 Mathematical Concepts and Quantitative Reasoning		
Met in major (Math 2110)		
Area 3 Arts and Humanities		
3A Arts	Arts	3
3B Humanities	Met in major (CS 3801)	
Area 4 Social and Behavioral Sciences		
Social & Behavioral Sciences	Social & Behavioral Sciences	3
American Institutions	US Constitution & State/Local Government	3
Area 5 Physical and Biological Sciences		
5A Physical Sciences	Met in major (PHYS 2100)	
5B Biological Sciences	Biological Science	3
5C Laboratory	Met in major (PHYS 2100 lab)	
Area 6 Ethic Studies		3

Upper Division General Education Requirements (9 units met in major)

These requirements are met in major by CS 3112, CS 3186, CS 4961, and CS 4962.

University Requirements (5 units)

American Institutions	US History	3
Introduction to Higer Education (IHE)	CS 1010	2

Major Requirements (94 units)

Lower Division Major Requirements (44 units)

CS 1011	Explorations in Computer Science: Foundations		1
OR			
CS 1021	Explorations in Computer Science: Applications		1
CS 1222	Introduction to Relational Databases	Prerequisites: CS 1010, Computer Literacy	3
CS 2011	Introduction to Programming I	Prerequisites: CS 1010 and MATH 1040; or consent of the instructor	4
		Prerequisites: CS 2011 with a grade of C or better; Recommended: MATH 2110	4
CS 2012	Introduction to Programming II	Prerequisites: CS 2012 with a C or better grade; Recommended: MATH 2120	4
CS 2013	Programming with Data Structures	Prerequisites: CS 2011 and MATH 2110, all graded C or better	4
CS 2148	Discrete Structures	Prerequisites: CS 2011	3
CS 2445	Introduction to Computer Systems	Prerequisites: CS 2010 or CS 2011	3
CS 2470	Fundamentals of Network Systems and Cybersecurity	Prerequisites: ENGL 1010	3
ENGL 2030	Introduction to Technical Writing		
		Prerequisites: Graded C or better in either MATH 1040 or (MATH 1081 and MATH 1083) or (MATH 1082 and MATH 1083) or (ESM 1082 and MATH 1083); or scored satisfactorily on a math placement examination.	4
MATH 2110	Calculus I	Prerequisites: Graded C or higher in MATH 2110; Corequisite(s): MATH 2121 if MATH 2110 is graded less than B-.	4
MATH 2120	Calculus II	Prerequisites: ESM 1082, MATH 1040, MATH 1081 or MATH 1082	3
MATH 2740	Introduction to Data Science and Statistics	Prerequisites: MATH 2110 with a grade of C or better. Corequisite(s): PHYS 2101 if MATH 2110 grade is less than B-.	4
PHYS 2100	General Physics I: Mechanics		

Upper Division Major Requirements (32 units)

CS 3035	Programming Paradigms	Prerequisites: CS 2013 with a grade C or better	3
CS 3112	Analysis of Algorithms	Prerequisites: CS 2013, CS 2148, and Math2740 all graded C or better	3
CS 3186	Introduction to Automata Theory	Prerequisites: CS 2013 and CS 2148, all graded C or better	3
CS 3220	Web and Internet Programming	Prerequisites: CS 1222 and CS 2013, all with a grade C or better	4
CS 3337	Software Engineering	Prerequisites: CS 2013 with a grade C or better	3
CS 3338	Software Engineering Tools	Prerequisites: CS 2013	1
CS 3801	Societal and Ethical Issues in Computing	Prerequisites: CS 2013 with a grade C or better,or Consent of the instructor	3
CS 4440	Introduction to Operating Systems	Prerequisites: CS 2013 and CS 2445 and CS 2470, all graded C or better	3
		Prerequisites: Completion of a course each from Lower Division GE Blocks: A1, A2, B, C and D; and obtained a garde of C or better on all these 8 courses: CS 3035, CS 3112, CS 3186, CS 3220, CS 3337, CS 3338, CS 3801, and CS 4440.	
CS 4961	Software Design Laboratory I	Prerequisites: CS 4961	3
CS 4962	Software Design Laboratory II		3
CS 4963	Computer Science Recapitulation	Prerequisites: PHYS 2100 Pre/Co-requisite(s): CS 4962	3

Major Electives (18 units)

CS 4075	Concurrent and Distributed Programming	Prerequisites: CS 3112, CS 3035	3
CS 4188	Compilers	Prerequisites: CS 3035, CS 3112, CS 3186	3
CS 4220	Current Trends in Web Design and Development	Prerequisites: CS 3112, CS 3220	3
CS 4222	Principles of Data Base Systems	Prerequisites: CS 1222, CS 3112	3
CS 4470	Computer Networking Protocols	Prerequisites: CS 2013 and CS 2470	3
CS 4471	Computer Networks Configuration and Management	Prerequisites: CS 2013 and CS 2470	3
CS 4472	Computer and Cyber Security	Prerequisites: CS 2470 and CS 3112	3
CS 4540	Topics in Advanced Computer Science	Prerequisites: As needed for specific topic	3
CS 4550	Computer Graphics	Prerequisites: CS 3112	3
CS 4551	Multimedia Software Systems	Prerequisites: CS 3112	3
CS 4555	Introduction to 3D Computer Game Programming	Prerequisites: CS 3112	3
CS 4580	Virtual Reality and Immersive Experiences	Prerequisites: CS 3112	3
CS 4635	Modeling and Simulation	Prerequisites: CS 3112	3
CS 4660	Artificial Intelligence	Prerequisites: CS 3112	3
CS 4661	Introduction to Data Science	Prerequisites: CS 3112	3
CS 4662	Advanced Machine Learning and Deep Learning	Prerequisites: CS 4661	3
CS 4665	Introduction to Data Visualization	Prerequisites: CS 3112	3
CS 4780	Cryptography and Information Security	Prerequisites: CS 3112	3
CS 4875	Human Centered Computing	Prerequisites: CS 3112	3
EE 3445	Computer Organization	Prerequisites: CS 2013 or permission of the instructor	3