

Computer Science, BS

Program Description

This program provides students with a broad understanding of the principles and practice of Computer Science, with the craft of programming emphasized as a central tool both for pedagogy (learning by doing) and for preparation for professional practice. Students study fundamental topics in software, hardware, and theory, as well as in-depth subjects such as artificial intelligence, graphics, compilers, and distributed systems.

Program Curriculum

120 credits

Utah Tech General Education Requirements

All Utah Tech General Education requirements must be fulfilled. A previously earned degree may fulfill those requirements, but courses must be equivalent to Utah Tech's minimum General Education standards in American Institutions, English, and Mathematics.

Code	Title	Hours
General Education Core Requirements (catalog.utahtech.edu/programs/generaleducation/#gerequirementstext)		
	English	3-7
	Mathematics	3-5
	American Institutions	3-6
	Life Sciences	3-10
	Physical Sciences	3-5
	Laboratory Science	0-1
	Fine Arts	3
	Literature/Humanities	3
	Social & Behavioral Sciences	3
	Exploration	3-5

Code	Title	Hours
Computer Science Core Requirements		
CS 1400	Fundamentals of Programming	3
CS 1410	Object Oriented Programming	3
CS 2420	Introduction to Algorithms and Data Structures	3
CS 2450	Software Engineering	3
CS 2810	Computer Organization and Architecture	3
CS 3005	Programming in C++	3
CS 3530	Computational Theory	3
CS 3510	Algorithms	3
CS 4600	Senior Project	3
Complete at least twenty-one (21) credits from the following:		
CS 3200	Web Application Development I	3
CS 3400	Operating Systems	3
CS 3410	Distributed Systems	3
CS 3520	Programming Languages	3
CS 3600	Graphics Programming	3
CS 4300	Artificial Intelligence	3
CS 4307	Database Systems	3
CS 4320	Machine Learning	3
CS 4550	Compilers	3
Math & Science Core Requirements		
CS 3310	Discrete Mathematics	3
MATH 1210	Calculus I (MA)	4

MATH 1220	Calculus II (MA)	4
MATH 3400	Probability & Statistics	3-4
or MATH 2270	Linear Algebra	
or MATH 2210	Multivariable Calculus (MA)	
or MATH 2280	Ordinary Differential Equations	
or MATH 2250	Differential Equations and Linear Algebra	
BIOL 1610 & BIOL 1615	Principles of Biology I (LS) and Principles of Biology I Lab (LAB)	5
PHYS 2210 & PHYS 2215	Physics/Scientists Engineers I (PS) and Physics/Scientists Engineers I Lab (LAB)	5

Computer Science Elective Requirements

Complete at least nine (9) credits from the following:

CS 3010	Mobile Application Development for Android	3
CS 3020	Mobile Application Development: iOS	3
CS 3150	Computer Networks	3
CS 3200	Web Application Development I	3
CS 3400	Operating Systems	3
CS 3410	Distributed Systems	3
CS 3440	Software Practices	3
CS 3500	Application Development	3
CS 3520	Programming Languages	3
CS 3600	Graphics Programming	3
CS 4200	Web Application Development II	3
CS 4300	Artificial Intelligence	3
CS 4307	Database Systems	3
CS 4320	Machine Learning	3
CS 4550	Compilers	3
CS 4800R	Undergraduate Research (up to 6 credits)	1-3
CS 4920R	Internship	1-3
CS 4990	Special Topics in Computer Science	3
CS 4992R	Computer Science Seminar (up to 4 credits)	1
CS 4991R	Competitive Programming	0.5
IT 2700	Information Security	3
IT 3100	Systems Design and Administration	3
IT 3110	System Automation	3
IT 4200	DevOps Lifecycle Management	3
SE 1400	Web Design Fundamentals (ALCS)	3
SE 3150	Software quality	3
SE 3400	Human-Computer Interaction	3
SE 3450	User Experience Design	3

NOTE: A course may only be used to fulfill one program requirement. Dual-listed courses may only be used once to fill requirements. Consult course descriptions in the current catalog to verify dual-listed courses.

Graduation Requirements

1. Complete a minimum of 120 college-level credits (1000 and above).
2. Complete at least 40 upper-division credits (3000 and above).
3. Complete at least 30 upper-division credits at Utah Tech for institutional residency.
4. Cumulative GPA 2.0 or higher.
5. Grade C or higher in each Core Requirement and Elective Requirement course.

Graduation Plan

1st Year

Fall Semester	Hours	Spring Semester	Hours
First Year Recommended Elective		2 BIOL 1610 & BIOL 1615 (linkurl^/programs/generaleducation/#gerequirementstext^meets General Education (Life Sciences & Lab Science))	5
CS 1400		3 CS 1410	3
ENGL 1010 or 1010D		3 MATH 1220	4
MATH 1210 (linkurl^/programs/generaleducation/#gerequirementstext^meets General Education (Mathematics))		4 ENGL 2010	3
CS Elective 3 of 9 credits (SE 1400)		3 Milestones & Notes: Meet with your program advisor. Maintain minimum prerequisite and program grade requirements.	
Milestones & Notes: Meet with your program advisor. Maintain minimum prerequisite and program grade requirements.			
		15	15

2nd Year

Fall Semester	Hours	Spring Semester	Hours
PHYS 2210 & PHYS 2215 (linkurl^/programs/generaleducation/#gerequirementstext^meets General Education (Physical Sciences))		5 CS 3005	3
CS 2420		3 General Elective	3
CS 2450		3 CS Core Elective 3 of 21 Credits (CS 3200)	3
CS 2810		3 CS Elective 6 of 9 credits (CS 3150)	3
General Elective		1 General Education (American Institutions) (catalog.utahtech.edu/programs/generaleducation/#gerequirementstext)	3
Milestones & Notes: Meet with your program advisor. Maintain minimum prerequisite and program grade requirements.		Milestones & Notes: Meet with your program advisor. Maintain minimum prerequisite and program grade requirements.	
		15	15

3rd Year

Fall Semester	Hours	Spring Semester	Hours
CS 3310		3 CS 3510	3
CS 3530		3 General Education (Social & Behavioral Sciences) (catalog.utahtech.edu/programs/generaleducation/#gerequirementstext)	3
CS Core Elective 6 of 21 credits (CS 3520)		3 CS Core Electives 9 of 21 credits (CS 4307)	3
General Elective		3 CS Core Electives 12 of 21 credits (CS 4550)	3

General Education (Literature/ Humanities) (catalog.utahtech.edu/ programs/generaleducation/ #gerequirementstext)		3 General Education (Fine Arts) (catalog.utahtech.edu/programs/ generaleducation/#gerequirementstext)	3
Milestones & Notes: Meet with your program advisor. Maintain minimum prerequisite and program grade requirements.		Milestones & Notes: Meet with your program advisor. Maintain minimum prerequisite and program grade requirements.	
	15		15
4th Year			
Fall Semester	Hours	Spring Semester	Hours
MATH 3400		3 CS 4600	3
CS Core Elective 15 of 21 credits (CS 4300)		3 General Elective	3
CS Core Elective 18 of 21 credits (CS 3400)		3 General Elective	3
CS Elective 9 of 9 credits		3 CS Core Elective 21 of 21 credits (CS 3600)	3
General Education (Exploration) (catalog.utahtech.edu/programs/ generaleducation/#gerequirementstext)		3 General Elective	3
Milestones & Notes: Apply for graduation (SPRING DEADLINE NOV. 1, FALL DEADLINE APR. 1). Meet with your program advisor. Maintain minimum prerequisite and program grade requirements.		Milestones & Notes: Double check with advisor for final classes. Maintain minimum program grade requirements. Congratulations!	
	15		15
Total Hours 120			

BS Computer Science Program Learning Outcomes

At the successful conclusion of this program, students will be able to:

1. Design, implement, and evaluate computational systems to address needs in a variety of contexts and disciplines.
2. Devise new solutions from foundational principles informed by current practice.
3. Weigh and apply ethical, legal, and social responsibilities in all aspects of practice.
4. Construct effective solutions in teams to accomplish a common goal.
5. Author effective visual, oral, and written communication for a range of audiences.