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.

General Education Core Requirements (https://catalog.utahtech.edu/programs/generaleducation/#gerequirementstext)

Code	Title	Hours
English		3-7
Mathematics		3-5
American Institutions		3-6
Life Sciences		3-10
Physical Sciences		3-5
Fine Arts		3
Literature/Humanities		3
Social & Behavioral Sciences		3

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 seven (7) courses from the following:		
CS 3150	Computer Networks	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
SE 3200	Web Application Development I	3
Math Core Requirements		
MATH 1210	Calculus I (MA)	4
MATH 3400	Probability & Statistics	3

CS 2100	Discrete Structures	3
Complete at least two (2) courses from the following:		
MATH 1220	Calculus II (MA)	4
MATH 2210	Multivariable Calculus (MA)	4
MATH 2250	Differential Equations and Linear Algebra	4
MATH 2270	Linear Algebra	3
MATH 2280	Ordinary Differential Equations	3
MATH 3050	Stochastic Modeling and Applications	3
MATH 3450	Statistical Inference	3
MATH 3605	Introduction to Modeling and Simulation	3
MATH 3905	Cryptography and Codes	3
MATH 4005	Quantum Computing and Cryptography	3

Science Core Requirement

Complete one (1) course with lab from the following:		
BIOL 1610 & BIOL 1615	Principles of Biology I (LS) and Principles of Biology I Lab (LAB)	5
CHEM 1210 & CHEM 1215	Principles of Chemistry I (PS) and Principles of Chemistry I Lab (LAB)	5
PHYS 2210 & PHYS 2215	Physics/Scientists Engineers I (PS) and Physics/Scientists Engineers I Lab	5

Computer Science Elective Requirements

Complete at least nine (9) credits from the following:		
CS 3150	Computer Networks	3
CS 3400	Operating Systems	3
CS 3410	Distributed Systems	3
CS 3500	Game Development	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 4400	Data Mining	3
CS 4410	Data Visualization	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	0.5-3
CS 4991R	Competitive Programming	0.5
CS 4992R	Computer Science Seminar (up to 4 credits)	1
IT 1100	Introduction to Unix/Linux	3
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 3010	Mobile Application Development for Android	3
SE 3020	Mobile Application Development for iOS	3
SE 3100	Software Practices	3
SE 3200	Web Application Development I	3
SE 3150	Software Quality	3
SE 3250	Internet of Things Programming	3
SE 3400	Human-Computer Interaction	3
SE 3450	User Experience Design	3

SE 4200	Web Application Development II	3
SE 4930R	Software Entrepreneurial Exploration	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.