Computer Science - Computer Science Emphasis, B.S.

Computer Science spans the range from theory through programming to cutting-edge development of computing solutions. Computer Scientists master the theory and practice of computing, and explore new and exciting ways to use computers. Systems like Google and Amazon are created by computer scientists.

Matriculation Requirements

1. Completion of CS 1400 Fundamentals of Programming, CS 1410 Object Oriented Programming, CS 2300 Discrete Mathematical Structures I, CS 2420 Introduction to Algorithms and Data Structures, CS 2450 Software Engineering I, with a grade of C+ better.
2. Completion of MATH 1210 Calculus I QL and ENGL 1010 Introduction to Academic Writing CC or ENGH 1005 Literacies and Composition Across Contexts CC with a grade of C or better.
3. Each of CS 1400, CS 1410, CS 2300, CS 2420, CS 2450, MATH 1210, and (ENGL 1010 or ENGH 1005) cannot be taken more than twice to obtain the required grade.
4. Overall GPA of 2.5 or higher.

Program Requirements

Code	Title	Credit Hours
Total Credit Hours		**120**
Computer Science Requirements		**84 Credits**
Complete the requirements		84
Emphasis Requirements		**36 Credits**
Minimum grade of C- required in these courses.		
CS 3250	Java Software Development	3
or CS 3260	CsharpNET Software Development	
or CS 3270	Python Software Development	
or CS 3370	C Plus Plus Software Development	
or CS 3380	JavaScript Software Development	
or CS 339R	Advanced Programming Language Other	
CS 3310	Analysis of Algorithms	3
CS 3450	Principles and Patterns of Software Design	3
CS 4380	Advanced High Performance Computer Architecture	3
CS 4450	Analysis of Programming Languages	3
CS 4470	Artificial Intelligence	3
CS 4490	Compiler Construction	3
Emphasis Elective Requirements:		
Complete 15 credits from CS 2690, CS 2700, ECE 4850, any CS 3000 or 4000 level course not already required. (Minimum grade of C- required in these courses.)		15

Core Requirements

Code	Title	Credit Hours
Total Credit Hours		**84**
General Education Requirements		**33 Credits**
ENGL 1010	Introduction to Academic Writing CC	3
or ENGH 1005	Literacies and Composition Across Contexts CC	
ENGL 2010	Intermediate Academic Writing CC	3
MATH 1210	Calculus I QL [1]	4

American Institutions: Complete one of the following:		3
HIST 2700 & HIST 2710	US History to 1877 AS and US History since 1877 AS (6)	
HIST 1700	American Civilization AS (3)	
HIST 1740	US Economic History AS (3)	
POLS 1000	American Heritage AS (3)	
POLS 1100	American National Government AS (3)	
Complete the following:		
PHIL 2050	Ethics and Values IH	3
HLTH 1100	Personal Health and Wellness TE	2
or EXSC 1097	Fitness for Life TE	
Distribution Courses:		
COMM 1020	Public Speaking HH [1]	3
COMM 2110	Interpersonal Communication SS [1]	3
Fine Arts Distribution (Choose from list)		3
Biology (Choose from list)		3
Physical Science (Choose from list)		3
Additional GE to be completed in the core.		
Discipline Core Requirements		**51 Credits**
Complete one of the following additional GE course/lab combinations:		5
BIOL 1610 & BIOL 1615	College Biology I BB and College Biology I Laboratory (5)	
CHEM 1210 & CHEM 1215	Principles of Chemistry I PP and Principles of Chemistry I Laboratory (5)	
PHYS 2020 & PHYS 2025	College Physics II PP and College Physics II Lab (5)	
PHYS 2210 & PHYS 2215	Physics for Scientists and Engineers I PP and Physics for Scientists and Engineers I Lab (5)	
PHYS 2220 & PHYS 2225	Physics for Scientists and Engineers II PP and Physics for Scientists and Engineers II Lab (5)	
GEO 1010 & GEO 1015 & GEO 202R	Introduction to Geology PP and Introduction to Geology Laboratory and Science Excursion (5)	
Minimum grade of C- required in these courses.		
Complete one of the following:		6
CS 1400 & CS 1410	Fundamentals of Programming and Object Oriented Programming (6)	
CS 1420	Accelerated Introduction to Programming (undefined) (and an additional 3 credit CS elective not already completed) [2]	
CS 2300	Discrete Mathematical Structures I	3
CS 2370	C Plus Plus Programming	3
CS 2420	Introduction to Algorithms and Data Structures	3
CS 2450	Software Engineering WE	3
CS 2550	Web Programming I	3
CS 2600	Computer Networks I	3
CS 2810	Computer Organization and Architecture	3
CS 305G	Global Social and Ethical Issues in Computing GI WE	3
CS 3060	Operating Systems Theory	3
CS 3100	Data Privacy and Security	3
CS 3240	Discrete Mathematical Structures II	3
CS 3520	Database Theory	3
STAT 2050	Introduction to Statistical Methods	4

1

 Minimum grade required (see Graduation Requirements).

2

If students choose CS 1420, please see advisor.

Graduation Requirements

1. Completion of a minimum of 120 semester credits, with a minimum of 40 upper-division credits.
2. Overall grade point average of 2.0 or above. Must have a minimum grade of C- with a combined GPA of 2.5 or higher in all discipline core and emphasis requirements and the General Education requirements marked with a footnote.
3. Residency hours -- minimum of 30 credit hours through course attendance at UVU. 10 of these hours must be within the last 45 hours earned. At least 12 of the credit hours earned in residence must be in approved CSE Department courses.
4. All transfer credit must be approved in writing by UVU.
5. No more than 80 semester hours and no more than 20 hours in CS type courses of transfer credit from a two-year college.
6. No more than 30 semester hours may be earned through independent study and/or extension classes.
7. Successful completion of at least one Global/Intercultural course.
8. Successful completion of at least two Writing Enriched (WE) courses.

Graduation Plan

This graduation plan is a sample plan and is intended to be a guide. Your specific plan may differ based on your Math and English placement and/or transfer credits applied. You are encouraged to meet with an advisor and set up an individualized graduation plan in Wolverine Track (http://www.uvu.edu/wolverinetrack/).

First Year

Semester 1		Credit Hours
CS 1400	Fundamentals of Programming	3
ENGL 1010	Introduction to Academic Writing CC	3
MATH 1210	Calculus I QL	4
GE		3

HLTH 1100
    or EXSC 1097
	Personal Health and Wellness TE
	    or Fitness for Life TE
		2

	Credit Hours	**15**
Semester 2		
CS 1410	Object Oriented Programming	3
CS 2810	Computer Organization and Architecture	3
ENGL 2010	Intermediate Academic Writing CC	3
GE		3
STAT 2050	Introduction to Statistical Methods	4
	Credit Hours	**16**

Second Year

Semester 3		
CS 2300	Discrete Mathematical Structures I	3
CS 2420	Introduction to Algorithms and Data Structures	3
CS 2370	C Plus Plus Programming	3
CS 2600	Computer Networks I	3
GE		3
	Credit Hours	**15**
Semester 4		
CS 2450	Software Engineering WE	3
CS 2550	Web Programming I	3
COMM 1020	Public Speaking HH	3
PHYS 2210	Physics for Scientists and Engineers I PP	4
PHYS 2215	Physics for Scientists and Engineers I Lab	1
	Credit Hours	**14**

Third Year

Semester 5		
CS 3310	Analysis of Algorithms	3
CS 3240	Discrete Mathematical Structures II	3
CS 3520	Database Theory	3

CS 3100	Data Privacy and Security	3
CS 3250	Java Software Development	3
	Credit Hours	**15**
Semester 6		
CS 3060	Operating Systems Theory	3
CS 3450	Principles and Patterns of Software Design	3
CS Elective		6
GE		3
	Credit Hours	**15**
Fourth Year		
Semester 7		
CS 4380	Advanced High Performance Computer Architecture	3
CS 4450	Analysis of Programming Languages	3
CS 4470	Artificial Intelligence	3
PHIL 2050	Ethics and Values IH	3
CS Elective		3
	Credit Hours	**15**
Semester 8		
CS 4490	Compiler Construction	3
CS 305G	Global Social and Ethical Issues in Computing GI WE	3
COMM 2110	Interpersonal Communication SS	3
CS Elective		6
	Credit Hours	**15**
	Total Credit Hours	**120**

Program Learning Outcomes

1. Graduates are proficient in using data structures and algorithms.
2. Graduates understand the foundations of computer architecture.
3. Graduates are able to develop solutions to significant computing problems.
4. Graduates will have a thorough understanding of the theory and constructs of programming languages
5. Graduates understand the theoretical foundations of computation
6. Graduates understand the principles and components of operating systems.
7. Graduates have proficiency in the mathematical skills needed in computer science (viz. discrete mathematics, basic probability and statistics, basic differential and integral calculus)
8. Students understand the fundamentals of net-centric computing