

Software Engineering, B.S.

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Requirements

Software Engineers design and develop large software systems. In addition, they may lead teams of software developers or quality assurance engineers. They also work with users and customers to understand their needs. Software systems we take for granted, such as Microsoft Office, are implemented by software engineers. Software engineers employ innovative software development approaches, such as Agile software development, to effectively manage software development projects.

Total Program Credits: 120

Matriculation Requirements:			
<ol style="list-style-type: none"> 1. Completion of CS 1400, CS 1410, CS 2300, and CS 2420 with a grade of C+ better. 2. Completion of MATH 1210 and (ENGL 1010 or ENGH 1005) with a grade of C or better. 3. Each of CS 1400, CS 1410, CS 2300, CS 2420, MATH 1210, and (ENGL ENGL 1010 or ENGH 1005) cannot be taken more than twice to obtain the required grade. 4. Overall GPA of 2.5 or higher. 			
General Education Requirements:			41 Credits
	ENGL 1010	Introduction to Academic Writing	3
or	ENGH 1005	Literacies and Composition Across Contexts (5)	
	ENGL 2010	Intermediate Writing Academic Writing and Research	3
	MATH 1210	Calculus I ¹	5
American Institutions, complete one of the following:			3
	HIST 1740	US Economic History (3)	
	HIST 1700	American Civilization (3)	
	POLS 1000	American Heritage (3)	
	POLS 1100	American National Government (3)	
	HIST 2700	US History to 1877 (3)	
and	HIST 2710	US History since 1877 (3)	
Complete the following:			
	PHIL 2050	Ethics and Values	3
	HLTH 1100	Personal Health and Wellness	2

or	PES 1097	Fitness for Life (2)	
Distribution Requirements:			
	PHYS 2210	Physics for Scientists and Engineers I (4)	5
and	PHYS 2215	Physics for Scientists and Engineers I Lab (1)	
Biology distribution			3
Complete one of the following additional GE course/lab combinations:			5
	BIOL 1610	College Biology I (4)	
and	BIOL 1615	College Biology I Laboratory (1)	
	CHEM 1210	Principles of Chemistry I (4)	
and	CHEM 1215	Principles of Chemistry I Laboratory (1)	
	PHYS 2020	College Physics II (4)	
and	PHYS 2025	College Physics II Lab (1)	
	PHYS 2220	Physics for Scientists and Engineers II (4)	
and	PHYS 2225	Physics for Scientists and Engineers II Lab (1)	
	GEO 1010	Introduction to Geology (3)	
and	GEO 1015	Introduction to Geology Laboratory (1)	
and	GEO 202R	Science Excursion (1)	
Fine Arts Distribution			3
	COMM 1020	Public Speaking	2
and	COMM 1025	Public Speaking ¹	1
	COMM 2110	Interpersonal Communication ¹	3
Discipline Core Requirements:			70 Credits
	CS 1400	Fundamentals of Programming	3
	CS 1410	Object-Oriented Programming	3
	CS 2810	Computer Organization and Architecture	3

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	CS 2300	Discrete Mathematical Structures I	3
	CS 2370	C plus plus Programming WE	3
	CS 2420	Introduction to Algorithms and Data Structures	3
	CS 2450	Software Engineering	3
	CS 2600	Computer Networks I	3
	CS 2690	Computer Networks II	3
	CS 305G	Global Social and Ethical Issues in Computing	3
	CS 3060	Operating Systems Theory	3
	CS 3240	Discrete Mathematical Structures II	3
	CS 3100	Data Privacy and Security	3
	CS 3320	Numerical Software Development	3
	CS 3250	Java Software Development (3)	3
or	CS 3370	C Plus Plus Software Development (3)	
or	CS 3260	CsharpNET Software Development (3)	
or	CS 3270	Python Software Development (3)	
or	CS 3380	JavaScript Software Development (3)	
	CS 3450	Principles and Patterns of Software Design	3
	CS 3410	Human Factors in Software Development	3
	CS 3520	Database Theory	3
	CS 4230	Software Testing and Quality Engineering	3
	CS 4400	Software Engineering II	3

	CS 4450	Analysis of Programming Languages	3
	CS 4550	Software Engineering III	3
	CS 496R	Senior Seminar	1
	ECE 3710	Applied Probability and Statistics for Engineers and Scientists	3
Elective Requirements:			9 Credits
Complete 9 credits from the following:			9
	Any CS course numbered 3000 or higher not already required.		

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 elective requirements and the General Education requirements marked with a footnote 1.
3. Residency hours -- minimum of 30 credit hours through course attendance at UVU. Ten 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. No more than 80 semester hours and no more than 20 hours of transfer credit from a two-year college may be applied to the core or elective courses.
5. No more than 6 semester hours may be earned through independent study.
6. Successful completion of at least one Global/Intercultural course.

Footnotes: ¹Minimum grade of C- required.

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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.

Milestone courses (pre-requisites for a course in one of the subsequent semesters) are marked in red and Italicized.

Semester 1	Course Title	Credit Hours
CS 1400	Fundamentals of Programming	3
MATH 1210	Calculus I	5
ENGL 1005 or ENGL 1010	Literacies and Composition Across Contexts Introduction to Writing or Introduction to Academic Writing	3
GE	Choose from American Institutions Distribution list	3
	Semester total:	14
Notes: Matriculation based on minimum grade of C+ in CS 1400, CS 1410, CS 2420, and CS 2300; C in Math 1210, ENGL 1010 or ENGL 1005		
Semester 2	Course Title	Credit Hours
CS 1410	Object Oriented Programming	3
CS 2810	Computer Organization & Architecture	3
GE	Choose from Fine Arts Distribution List	3
ENGL 2010	Intermediate Writing	3
GE	Choose from Biology Distribution List	3
	Semester total:	15
Notes: Matriculation based on minimum grade of C+ in CS 1400, CS 1410, CS 2420, and CS 2300; C in Math 1210, ENGL 1010 or ENGL 1005		
Semester 3	Course Title	Credit Hours
CS 2420	Introduction to Algorithms & Data Structures	3
CS 2300	Discrete Mathematical Structures I	3
CS 2370	C plus plus Programming WE	3
PHYS 2210	Physics for Scientists and Engineers I	4
PHYS 2215	Physics for Scientists and Engineers I Lab	1
	Semester total:	14
Notes: Matriculation based on minimum grade of C+ in CS 1400, CS 1410, CS 2420, and CS 2300; C in Math 1210, ENGL 1010 or ENGL 1005		

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Semester 4	Course Title	Credit Hours
CS 2450	Software Engineering I	3
CS 2600	Computer Networks I	3
CS 3250 or 3260 or 3270 or 3370 or 3380	Java Software Development or C#Net Software Development or Python Software Development or C Plus Plus Software Development or Java Script Software Development	3
Third Science	Complete one of the following course/ lab combinations: BIOL 1610 & 1615 College Biology I & Lab (5); CHEM 1210 & 1215 Principles of Chemistry I & Lab (5); GEO 1010 & 1015 & 202R Introduction to Geology & Lab & Science Excursion (5); PHYS 2020 & 2025 College Physics II & Lab (5); PHYS 2220 & phys 2225 Physics for Scientists and Engineers II & Lab (5)	5
GE	Choose from HLTH 1100 or PES 1097	2
	Semester total:	16
CS 2690	Computer Networks II	3
CS 3410	Human Factors in Software Development	3
CS 3100	Data Security and Privacy	3
COMM 2100	Interpersonal Communications	3
PHIL 2050	Ethics and values	3
	Semester total:	15
Semester 6	Course Title	Credit Hours
CS 3060	Operating Systems Theory	3
CS 3240	Discrete Mathematical Structures II	3
CS 3450	Principles & Patterns of Software Design	3
CS 3520	Database Theory	3
COMM 1020	Public Speaking	2
and COMM 1025	Public Speaking Lab	1
	Semester total:	15
Semester 7	Course Title	Credit Hours

CS 4450	Analysis of Programming Languages	3
CS 4400	Software Engineering II	3
CS 4230	Software Testing & Quality Engineering	3
ECE 3710	Applied Probability & Statistics for Engineers and Scientists	3
CS Elective	Any 3000/4000 level CS class not required	3
CS 496R	Senior Seminar	1
	Semester total:	16
Semester 8	Course Title	Credit Hours
CS 305G	Global Social and Ethical Issues in Computing	3
CS 3320	Numerical Software Development	3
CS 4550	Software Engineering III	3
CS Elective	Any 3000/4000 level CS class	3
CS Elective	Any 3000/4000 level CS class	3
	Semester total:	15
	Degree total:	120