

COLLEGE OF ENGINEERING AND TECHNOLOGY COMPUTER SCIENCE DEPARTMENT BACHELOR OF SCIENCE DEGREE 2022-2023 FULL STACK WEB DEVELOPMENT EMPHASIS

► CS 1400		FULL STACK WEB DEVEL	OPMENT CORE REQUIREMENTS		BS-COSC2 -FSWD
ALEKS 38+. CS 1030 recommended SC 1400 CS 1400 CMMTH 1050 or MATH 1050 with a C+ or higher, or MATH above 1050) S. CS 2370 Discrete Mathematical Structures CS 1410 & (MATH 1050 or higher) S. O F, Sp, Sp, Sc 2420 Intro to Algorithms and Data Structures CS 1410 CS 1410 CS 1410 CS 1410 S. (MATH 1050 or higher) S. O F, Sp, Sc 2420 Intro to Algorithms and Data Structures CS 1410	COURSE #	COURSE TITLE	PREREQUISITE	CR	SEMESTER
higher, or MATH above 1050 S. CS 2370 C plus plus Programming CS 1410 & (MATH 1050 or higher) 3.0 F, Sp. CS 2420 Intro to Algorithms and Data Structures CS 1410 CS 1410 CS 1410 CS 1410 CS 2550 Web Programming CS 1410 CS 1410 CS 1410 CS 1410 CS 2550 Web Programming CS 1410 CS 1410 CS 1410 CS 17 CS 2550 Web Programming CS 1410 CS 1410 CS 17 CS 2600 Computer Networks CS 2810 CS 1410 CS 100 CS 17 CS 2600 Computer Networks CS 2810 CS 1410 CS 100 CS 17 CS 2600 Computer Networks CS 1410 CS 1410 CS 100 CS 17 CS 2600 Computer Networks CS 1410 CS 1410 CS 1400 CS 1400 CS 2810 Computer Organization and Architecture CS 1400 CS 1400 CS 1400 CS 2810 Computer Organization and Architecture CS 1400 CS 1400 CS 1400 CS 1400 CS 305G Global Social & Ethical Issues in Computing CS 1400 CS 1400 CS 1400 CS 1400 CS 1400 CS 1400 CS 3100 Data Privacy and Security CS 2420 & UAS 3.0 F, S CS 3100 Data Privacy and Security CS 2420 & UAS 3.0 F, S CS 3200 Discrete Mathematical Structures II CS 2300, 2420, 2810, COSC 3.0 F, S CS 3520 Database Theory COSC & UAS 3.0 F, S CS 3520 Database Theory COSC & UAS 3.0 F, S CS 496R Senior Seminar UAS (Take Senior Year) 1.0 F, S STAT 2050 Introduction to Statistical Methods Within last 2 years: MATH 1050 or 1055 or 1080 with a grade of C or higher, or appropriate test score. F, S CS 3250 Java Software Development CS 2420, CSC, & UAS 3.0 F, S CS 3360 Java Software Development CS 2420, CSC, & UAS 3.0 F, S CS 3450 Software Engineering CS 2420, CSC, & UAS 5, S CS 3360 Web Programming CS 2420, CSC, & UAS 3.0 F CS 3460 NoSQL Database Development CS 2420, CSC, & UAS 3.0 F CS 3460 NoSQL Database Development CS 2420, CSC, & UAS 3.0 F CS 3660 NoSQL Database Development CS 3520, COSC, & UAS	▶CS 1400	Fundamentals of Programming		3.0	F,Sp,Su
CS 2370 C plus plus Programming CS 1410 3.0 F,Sp. ▶ CS 2420 Intro to Algorithms and Data Structures CS 1410 3.0 F,Sp. CS 2550 Web Programming I CS 1410 or INFO 1200 or DGM 2760 3.0 F,Sp. CS 2600 Computer Networks I CS 2810 or (INFO 1200 & IT 1600) 3.0 F,Sp. CS 2690 Computer Networks II CS 1410, 2300, 2370, 2600, and Pre- or 3.0 F,Sp. CS 2690 Computer Organization and Architecture CS 1400 3.0 F,Sp. CS 305G Global Social & Ethical Issues in Computing CS 1400 CS 1400 or INFO 1120) 3.0 F, Sp. CS 3100 Operating Systems Theory CS 2370, 2420, 2810, & COSC 3.0 F, S CS 3100 Data Privacy and Security CS 2420 & UAS 3.0 F, S CS 3320 Numerical Software Development MATH 1210, COSC, & UAS 3.0 F, S CS 3520 Database Theory COSC & UAS 3.0 F, Sp. CS 2450 Senior Seminar UAS (Take Senior Year) 1.0 F, S<	►CS 1410	Object-Oriented Programming		3.0	F,Sp,Su
►CS 2420 Intro to Algorithms and Data Structures CS 1410 or INFO 1200 or DGM 2760 3.0 F,Sp, CS 2550 Web Programming I CS 1410 or INFO 1200 or DGM 2760 3.0 F,Sp, CS 2600 Computer Networks I CS 2810 or (INFO 1200 & IT 1600) 3.0 F,Sp, CS 2690 Computer Networks II CS 1410, 2300, 2370, 2600, and Pre- or Corequisite: MATH 1210 3.0 F,Sp, CS 2810 Computer Organization and Architecture CS 1400 3.0 F,Sp, CS 305G Global Social & Ethical Issues in Computing ENGL 2010 & (CS 1030 or CS 1400 or INFO 1120) 3.0 F, Sp, CS 3060 Operating Systems Theory CS 2370, 2420, 2810, & COSC 3.0 F, Sp, CS 3100 Data Privacy and Security CS 2420 & UAS 3.0 F, Sp, CS 3240 Discrete Mathematical Structures II CS 2300, 2420, 2810, COSC 3.0 F, Sp, CS 3520 Database Theory CSC & UAS 3.0 F, Sp, STAT 2050 Introduction to Statistical Methods Within last 2 years: MATH 1050 or 1055 or 1080 with a grade of C or highner, or appropriate test score. 1.0	►CS 2300	Discrete Mathematical Structures I	CS 1410 & (MATH 1050 or higher)	3.0	F,Sp,Su
CS 2550 Web Programming CS 1410 or INFO 1200 or DGM 2760 3.0 F,Sp, CS 2600 Computer Networks CS 2810 or (INFO 1200 & IT 1600) 3.0 F,S	CS 2370	C plus plus Programming	CS 1410	3.0	F,Sp
CS 2600 Computer Networks CS 2810 or (INFO 1200 & IT 1600) 3.0 F,S CS 2690 Computer Networks CS 1410, 2300, 2370, 2600, and Pre- or Corequisite: MATH 1210 3.0 F,S CS 2600 Global Social & Ethical Issues in Computing CS 1400 or (INFO 1120) 3.0 F,S CS 3060 Operating Systems Theory CS 2370, 2420, 2810, & COSC 3.0 F,S CS 3100 Data Privacy and Security CS 2420 & UAS 3.0 F,S CS 3320 Discrete Mathematical Structures II CS 2300, 2420, 2810, COSC 3.0 F,S CS 3320 Database Theory COSC & UAS 3.0 F,S CS 3520 Database Theory COSC & UAS 3.0 F,S CS 3520 Database Theory COSC & UAS 3.0 F,S CS 3520 Introduction to Statistical Methods Within last 2 years: MATH 1050 or 1055 or 1080 with a grade of C or higher, or appropriate test score. FULL STACK WEB DEVELOPMENT EMPHASIS REQUIREMENTS CS 2450 Software Engineering CS 2300 & 2420 COSC, & UAS F,S CS 3250 Java Software Development CS 2420, COSC, & UAS F,S CS 3410 Human Factors in Software CS 2420, COSC, & UAS F,S CS 3410 Human Factors in Software CS 2420, CS 2550, COSC, & UAS F,S CS 3460 Web Programming CS 2420, CS 2550, COSC, & UAS F,S CS 3660 Web Programming COSC & UAS S270 or 3370), & UAS S270 or 3370), & UAS S270 or CS 3250 or CS 3250 or CS 3270 or CS	►CS 2420	Intro to Algorithms and Data Structures	CS 1410	3.0	F,Sp,Su
CS 2690 Computer Networks II CS 1410, 2300, 2370, 2600, and Pre- or Corequisite: MATH 1210 3.0 F,Sp, Architecture CS 1400 3.0 F,Sp, Architecture CS 1400 3.0 F,Sp, Architecture CS 305G Global Social & Ethical Issues in Computing ENGL 2010 & (CS 1030 or CS 1400 or INFO 1120) 3.0 F, Sp, CS 3060 Operating Systems Theory CS 2370, 2420, 2810, & COSC 3.0 F, Sp, CS 3100 Data Privacy and Security CS 2420 & UAS 3.0 F, Sp, CS 3240 Discrete Mathematical Structures II CS 2300, 2420, 2810, COSC 3.0 F, Sp, CS 3320 Numerical Software Development MATH 1210, COSC, & UAS 3.0 F, Sp, CS 3520 Database Theory COSC & UAS 3.0 F, Sp, CS 496R Senior Seminar UAS (Take Senior Year) 1.0 F, Sp, STAT 2050 Introduction to Statistical Methods Within last 2 years: MATH 1050 or 1055 or 1080 with a grade of C or higher, or appropriate test score. FULL STACK WEB DEVEL OPMENT EMPHASIS REQUIREMENTS CS 2350 Java Software Development CS 2300 & 2420 S.0 S.0 F, Sp, CS 3250 Java Software Development CS 2420, COSC, & UAS S.2 S.2	CS 2550	Web Programming I	CS 1410 or INFO 1200 or DGM 2760	3.0	F,Sp,Su
Corequisite: MATH 1210	CS 2600	Computer Networks I	CS 2810 or (INFO 1200 & IT 1600)	3.0	F,Sp
Architecture	CS 2690	Computer Networks II		3.0	F,Sp
Computing	CS 2810		CS 1400	3.0	F,Sp,Su
CS 3100 Data Privacy and Security CS 2420 & UAS 3.0 F CS 3240 Discrete Mathematical Structures II CS 2300, 2420, 2810, COSC 3.0 F, S CS 3320 Numerical Software Development MATH 1210, COSC, & UAS 3.0 F, S CS 3520 Database Theory COSC & UAS 3.0 F, Sp, CS 496R Senior Seminar UAS (Take Senior Year) 1.0 F, S STAT 2050 Introduction to Statistical Methods Within last 2 years: MATH 1050 or 1055 or 1080 with a grade of Cor higher, or appropriate test score. 4.0 F, Sp, STAT 2050 Introduction to Statistical Methods Within last 2 years: MATH 1050 or 1055 or 1080 with a grade of Cor higher, or appropriate test score. 4.0 F, Sp, CS 2450 Software Engineering CS 2300 & 2420 3.0 F, Sp, CS 3250 Java Software Development CS 2420, COSC, & UAS 3.0 F, Sp, CS 3380 JavaScript Software Development CS 2420, CS 2550, COSC, & UAS 3.0 F CS 3410 Human Factors in Software (CS 3250 or 3260 or 3370 or INFO 2200) & UAS 3.0 F, S	CS 305G		ENGL 2010 & (CS 1030 or CS 1400 or INFO 1120)	3.0	F, Sp
CS 3240 Discrete Mathematical Structures II CS 2300, 2420, 2810, COSC 3.0 F, S	CS 3060	Operating Systems Theory	CS 2370, 2420, 2810, & COSC	3.0	F, Sp
CS 3320 Numerical Software Development MATH 1210, COSC, & UAS 3.0 F, Sp, CS 3520 Database Theory COSC & UAS 3.0 F, Sp, CS 496R Senior Seminar UAS (Take Senior Year) 1.0 F, Sp, STAT 2050 Introduction to Statistical Methods Within last 2 years: MATH 1050 or 1055 or 1080 with a grade of C or higher, or appropriate test score. FULL STACK WEB DEVELOPMENT EMPHASIS REQUIREMENTS	CS 3100	Data Privacy and Security	CS 2420 & UAS	3.0	F
CS 3520 Database Theory COSC & UAS 3.0 F,Sp, CS 496R Senior Seminar UAS (Take Senior Year) 1.0 F, Sp, STAT 2050 Introduction to Statistical Methods Within last 2 years: MATH 1050 or 1055 or 1080 with a grade of C or higher, or appropriate test score. 4.0 F,Sp, FULL STACK WEB DEVELOPMENT EMPHASIS REQUIREMENTS CS 2450 Software Engineering CS 2300 & 2420 3.0 F,Sp, CS 3250 Java Software Development CS 2420, COSC, & UAS 3.0 F, Sp, C 3260 CsharpNET Software Development COSC & UAS F, S C 3380 C++ Software Development CS 2370, 2810, COSC, & UAS 3.0 F CS 3410 Human Factors in Software (CS 3250 or 3260 or 3370 or INFO 2200) & UAS 3.0 F CS 3660 Web Programming II CS 2420, CS 2550, & one of (CS 3250 or 3260 or 3260 or 3260 or 3270 or CS 3270 o	CS 3240	Discrete Mathematical Structures II	CS 2300, 2420, 2810, COSC	3.0	F, Sp
CS 496R Senior Seminar UAS (Take Senior Year) 1.0 F, S STAT 2050 Introduction to Statistical Methods Within last 2 years: MATH 1050 or 1055 or 1080 with a grade of C or higher, or appropriate test score. 4.0 F, Sp, F, Sp, Grade of C or higher, or appropriate test score. FULL STACK WEB DEVELOPMENT EMPHASIS REQUIREMENTS CS 2450 Software Engineering CS 2300 & 2420 3.0 F, Sp, Sp, CS 3250 CS 3250 Java Software Development CS 2420, COSC, & UAS 3.0 F, S Or 3260 CsharpNET Software Development CS 2370, 2810, COSC, & UAS T, S CS 3380 JavaScript Software Development CS 2420, CS 2550, COSC, & UAS 3.0 F CS 3410 Human Factors in Software Development CS 2420, CS 2550, COSC, & UAS 3.0 F CS 3660 Web Programming II CS 2420, CS 2550, & one of (CS 3250 or 3260 or 3370) & UAS 3.0 F, S CS 4660 NoSQL Database Development CS 3520, COSC, & UAS 3.0 F CS 4690 Distributed Internet App Dev CS 3660 & (CS 3250 or CS 3260 or CS 3270 or CS 3270 or CS 3260) & UAS 3.0 CS 4880	CS 3320	Numerical Software Development	MATH 1210, COSC, & UAS	3.0	F, Sp
STAT 2050 Introduction to Statistical Methods Within last 2 years: MATH 1050 or 1055 or 1080 with a grade of C or higher, or appropriate test score. 4.0 F,Sp, grade of C or higher, or appropriate test score.	CS 3520	Database Theory	COSC & UAS	3.0	F,Sp,Su
Grade of C or higher, or appropriate test score. FULL STACK WEB DEVELOPMENT EMPHASIS REQUIREMENTS	CS 496R	Senior Seminar	UAS (Take Senior Year)	1.0	F, Sp
FULL STACK WEB DEVELOPMENT EMPHASIS REQUIREMENTS CS 2450 Software Engineering CS 2300 & 2420 3.0 F,Sp, CS 3250 Java Software Development CS 2420, COSC, & UAS 3.0 F or 3260 CsharpNET Software Development COSC & UAS F, S or 3370 C++ Software Development CS 2370, 2810, COSC, & UAS F, S CS 3380 JavaScript Software Development CS 2420, CS 2550, COSC, & UAS 3.0 F CS 3410 Human Factors in Software Development (CS 3250 or 3260 or 3370 or INFO 2200) & UAS 3.0 F CS 3660 Web Programming II CS 2420, CS 2550, & one of (CS 3250 or 3260 or 3260 or 3260 or 3260 or 3270 or 3270 or 3270 or 3270 or 3270, & UAS 3.0 F, S CS 3680 Mobile Device Programming COSC & UAS 3.0 F, S CS 4660 NoSQL Database Development CS 3520, COSC, & UAS 3.0 F CS 4690 Distributed Internet App Dev CS 3660 & (CS 3250 or CS 3260 or CS 3270 or CS	STAT 2050	Introduction to Statistical Methods	Within last 2 years: MATH 1050 or 1055 or 1080 with a	4.0	F,Sp,Su
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or 3370 C++ Software Development CS 2370, 2810, COSC, & UAS F, S CS 3380 JavaScript Software Development CS 2420, CS 2550, COSC, & UAS 3.0 F CS 3410 Human Factors in Software Development (CS 3250 or 3260 or 3370 or INFO 2200) & UAS 3.0 F CS 3660 Web Programming II CS 2420, CS 2550, & one of (CS 3250 or 3260 or 3260 or 3260 or 3270 or 3270 or 3370), & UAS 3.0 F, S CS 3680 Mobile Device Programming COSC & UAS 3.0 F, S CS 4660 NoSQL Database Development CS 3520, COSC, & UAS 3.0 F CS 4690 Distributed Internet App Dev CS 3660 & (CS 3250 or CS 3260 or CS 3270 or CS 32		·		3.0	
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CS 4690 Distributed Internet App Dev CS 3660 & (CS 3250 or CS 3260 or CS 3270 or CS 3270 or CS 3370) & UAS 3370) & UAS CS 4880 Cloud Computing CS 4690, COSC, & UAS 3.0 CS 4900 Full Stack Web Senior Capstone CS 3410, CS 4660, (CS 3250 or CS 3260) & UAS 3.0	CS 3680	Mobile Device Programming	COSC & UAS	3.0	F, Sp
CS 4880 Cloud Computing CS 4690, COSC, & UAS 3.0 CS 4900 Full Stack Web Senior Capstone CS 3410, CS 4660, (CS 3250 or CS 3260) & UAS 3.0	CS 4660	NoSQL Database Development	CS 3520, COSC, & UAS	3.0	F
CS 4880 Cloud Computing CS 4690, COSC, & UAS 3.0 CS 4900 Full Stack Web Senior Capstone CS 3410, CS 4660, (CS 3250 or CS 3260) & UAS 3.0	CS 4690	Distributed Internet App Dev	1	3.0	F
CS 4900 Full Stack Web Senior Capstone CS 3410, CS 4660, (CS 3250 or CS 3260) & UAS 3.0	CS 4880	Cloud Computing	·	3.0	Sp
	CS 4900		CS 3410, CS 4660, (CS 3250 or CS 3260) & UAS	3.0	Sp
Core Credit Required 80		1	Core Credit Required	80	·

✓ Minimum grade of "C-" required unless a higher grade is designated.

UAS - University Advanced Standing Requirement: Before students can register for upper-division coursework (3000 or higher), they must qualify for University Advanced Standing (UAS) by:

- Completing, and/or transferring in, at least 24 credits of college-level coursework (1000 or higher);
- Having a cumulative GPA of 2.0 or higher;
- Complete Quantitative Literacy, (MAT 1030 or higher) and ENGL 2010 or equivalent.

	GENERAL EDUCATI	ON REQUIREMENTS	
COURSE #	COURSE TITLE	PREREQUISITE	CR
ENGL 1010 OR	Introduction to Writing	ENGH 1000 with C- or higher (or appropriate test scores within 5 yrs.)	
ENGH 1005	Literacies and Compositions Across Contexts CC	ENGH 0890 (or appropriate placement scores.)	3.0
ENGL 2010	Intermediate Writing	Completion of ENGL 1010 or ENGL 101H with a grade of C- or higher, or ENGH 1005 with a grade of C or higher. (Or appropriate ACT test scores taken within the last 3 years.)	3.0
MATH 1210	Calculus I	One of the following within the past 2 years: (MATH 1050 or MATH 1055) & MATH 1060, each with a grade of C or higher; OR MATH 1080 with a grade of C or higher; OR by appropriate math placement score.	4.0
AMERICAN	1. (One class) HIST 1700 America	n Civilization, or HIST 1740 US Economic History, or POLS	
INSTITUTIONS	1000 American Heritage, or PO	LS 1100 American National Gov't	3.0
Choose option 1 or 2	(Two classes) US History (HIST	2700 & HIST 2710)	
HLTH1100 or PES1097	Personal Health & Wellness or Fitness for	or Life	2.0
PHIL 2050	Ethics & Values	ENGL 1010. ENGL 2020 highly recommended	3.0
HUMANITIES DISTRIBUTION	COMM 1020 & 1025	Public Speaking and Lab are Required. A grade of C- or higher is required.	3.0
	RIBUTION—Complete one of the following:	2 1	5.0
BIOL 1610 & 1615	College Biology I and Lab	ACT (or equivalent) composite score of 21+, or completion of ENGL1010 (or higher) with a minimum grade of C-	0.0
CHEM 1210 & 1215	Principles of Chemistry I and Lab	MATH 1080, 1050, 1055 with C- or better or placement into 1060 or higher, (CHEM 1010 or high school recommended.) Corequisite: CHEM 1215	
GEO 1010, 1015 & 202R	Intro to Geology, Lab, & Excursion	All three classes are required if you choose Geology	
PHYS 2020 & 2025	Physics for Scientists and Engineers I and Lab	PHYS 2010 Corequisite(s): PHYS 2025	
PHYS 2220 & 2225	Physics for Scientists and Engineers II and Lab	PHYS 2210 Corequisite(s): PHYS 2225 and Pre or Corequisite: MATH 1220	
FINE ARTS DISTRIBUT	ION (see Wolverine Track for class list)		3.0
SOCIAL/BEHAVIORAL SCIENCE DIST	COMM 2110	Interpersonal Communication is Required. A grade of Cor higher is required.	3.0
BIOLOGY SCIENCE DIS	STRIBUTION (see Wolverine Track for clas	•	3.0
PHYSICAL SCIENCE DISTRIBUTION	PHYS 2210 and 2215	Physics for Scientists and Engineers I and Lab Required. A grade of C- or higher is required.	5.0
	1	GE Credits Required	40
		Core Credits Required	80
Total Credits Required for	or Degree:		120

▶ Matriculation Requirements (COSC):

- 1. Completion of CS 1400, CS 1410, CS 2300, and CS 2420 with a grade of C+ or better.
- 2. Completion of MATH 1210 and ENGL 1010 or ENGH 1005 with a grade of C or better.
- 3. Overall GPA of 2.5 or higher. Each class cannot be taken more than twice to obtain the required grade.

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.
- 3. Must have a minimum grade of C- with a combined GPA of 2.5 or higher in all discipline requirements and the General Education requirements that are marked with an *.
- 4. Residency hours - minimum of 30 credit hours through course attendance at UVU. 10 of these hours must be within the last 45 hours earned.
- 5. All transfer credit must be approved in writing by UVU courses.
- No more than 80 semester hours and no more than 20 hours in CDS-type courses of transfer credit from a two-year college.
- 7. No more than 30 semester hours may be earned through independent study and/or extension classes.
- 8. Successful completion of at least one Global/Intercultural course. CS 305G satisfies this requirement