Bachelor of Science in Computer Science

Updated 2/17/2020

Catalog Year: 2020

Total Degree Credit Hours: 120

General Education Requirements (See Degreeworks for Prerequisites)

A-1	**ENGL 1101** Composition I	3	
	ENGL 1102 Composition II	3	
A-2	**MATH 1113** Precalculus	3	

Area A: Essential Skills (9 credit hours)
All Area A courses must be completed within the first 30 credit hours with a grade of C or higher.

B-1	**ECON 1000** Contemporary Economic Issues	2	
B-2	**AADS/AMST/ASIA/GWST/LAL/PAX/RELS 1102, COM 1100, FL 1002, LDRS 2300, PHIL 2200,** *or* **POLS 2401**	3	

Area B: Institutional Options (5 credit hours)
Choose 1 course from B-2. COM 1100 is recommended.

C-1	**ENGL 2110, 2111, 2112, 2120, 2121, 2122, 2130, 2131, 2132,** *or* **2300**	3	
C-2	**ART 1107, MUSI 1107, DANC 1107,** *or* **TPS 1107**	3	

Area C: Humanities, Fine Arts, and Ethics (6 cr hrs)
Choose one course from each area.

D-1	**MATH 1190** Calculus I	4	
D-2	**BIOL 1107/L, CHEM 1211/L, PHYS 1111/L, PHYS 2211/L, BIOL 1108/L, CHEM 1212/L, PHYS 1112/L** *or* **PHYS 2212/L**	8	

Area D: Science, Math, and Technology (12 cr hrs)
Choose any two 4 credit hour science courses. A sequence is not necessary. "L" denotes the corresponding Lab course. Students **may not** take both PHYS 1111/L and PHYS 2211/L or PHYS 1112/L and PHYS 2212/L. PHYS 2211/L and 2212/L are recommended.

E-1	**POLS 1101** American Government	3	
E-2	**HIST 2111** *or* **2112** US History	3	
E-3	**HIST 1100, 1111,** *or* **1112** World History	3	
E-4	**CRJU 1101, GEOG 1101, PSYC 1101, SOCI 1101, STS 1101, ANTH 1102,** *or* **ECON 2100**	3	

Area E: Social Sciences (12 credit hours)
Choose one course from each area for E-2, E-3, & E-4.

Area F Lower Division Major Requirements

	Prerequisites		
CSE 1321/L Programming & Problem Solving I	Lecture & Lab must be taken together	4	
CSE 1322/L Programming & Problem Solving II	Min. grade of 'B' in CSE 1321/L & MATH 1113/1190/2202*	4	
MATH 2202 Calculus II	MATH 1190	4	
MATH 2345 Discrete Mathematics	MATH 1113	3	
TCOM 2010 Technical Writing	ENGL 1102	3	

CSE 1321/L and CSE 1322/L must have a minimum grade of 'B.'

*Concurrent prerequisite

Free Electives (5 credit hours)

CSE 1300 is highly recommended for students who are new to programming and have available free elective credits to complete.

Upper Division Major Courses

	Prerequisites		
CS 3305 Data Structures	MATH 2345 & CSE 1322/L	3	
CS 3503 Computer Organization & Architecture	CSE 1322/L	3	
CS 3502 Operating Systems	CS 3503 & CS 3305	3	
SWE 3313 Intro to Software Engineering	CSE 1322/L	3	
CS 3410 Introduction to Database Systems	CSE 1322/L	3	
CS 3622 Fundamentals of Data Communications	CSE 1322/L	3	
CS 4306 Algorithm Analysis	CS 3305 & CS 4308*	3	
CS 4504 Parallel and Distributed Computing	CS 3305, CS 3503, & CS 3502*	3	
CS 4308 Concepts of Programming Languages	CS 3503 & CS 3305	3	
CSE 3801 Professional Practices and Ethics	CSE 1322/L	2	
CS 4850 Senior Project	CS 3502 & SWE 3313	3	
MATH 2332 Probability and Data Analysis	MATH 1190	3	
MATH 3260 Linear Algebra I	MATH 1190	3	

All major courses must have a minimum grade of 'C,' except for CSE 1321/L and CSE 1322/L, which must have a minimum grade of 'B.'
*Concurrent prerequisite
+ 1 hour from MATH 1190
+ 1 hour from the second science lab (C or better)

Major Electives OR Concentration (15 credit hours)

All students must complete at least 9 credit hours of CS-specific courses, with a total of 15 credit hours overall. You may choose to mix and match electives OR complete all requirements of one of the listed concentrations. If you aren't doing a concentration, you may still take **CS courses** listed within the concentrations.

Choose a concentration

Artificial Intelligence

		Prerequisites	
1	**CS 3642** Artificial Intelligence	CS 3305	
2	**CS 4267** Machine Learning	CS 3642	
3	**CS 4732** Machine Vision	CS 3642	
4	**CS 4742** Natural Language Processing	CS 3642	
5	**Choose 1**		
CS 4277 Deep Learning		CS 3642 & CS 4267*	
Additional options below			

Data Science

		Prerequisites	
1	**CS 4265** Big Data Analytics	CS 3305 & CS 3410	
2	**CS 4412** Data Mining	CS 3305 & CS 3410	
3	**CS 4422** Information Retrieval	CS 3305 & CS 3410	
4	**CS 4522** HPC & Parallel Prog.	CS 4504	
5	**Choose 1**		
CS 4524 Cloud Computing		CS 4504	
CS 4722 Comp. Graphics & Multimedia		CS 3305	
Additional options below			

Cyber and Network Security

		Prerequisites	
1	**CS 3626** Cryptography	CS 3305* & MATH 2345	
2	**CS 4612** Software Security	CS 3502 & CS 3626	
3	**CS 4622** Computer Networks	CS 3503 & CS 3622	
4	**CS 4626** Computer & Network Sec.	CS 3626 & CS 4622	
5	**Choose 1**		
IT 4823 Information Security Admin		MATH 2345, CS 3410 & CS 3503	
IT 4833 Wireless Security		CS 4622	
IT 4843 Ethical Hacking		CS 4622	
IT 4853 Computer Forensics		CS 4622	
IT 4883 Infrastructure Defense		CS 4622	
Additional options below			

Additional 5th course options for any concentration: CS 4491 Adv. Topics in CS, CS 4492 Research, and CSE 4983 Computing Internship

OR Choose 5 electives

Course	Prerequisites	
CS		
CS		
CS		

You may choose from any CS 3000 or 4000 level course not already required, including concentration courses. All CS courses are 3 hours, except CS 4400 Directed Studies, which can be 1-3 hours. You may choose up to 6 credit hours from the list below.

	Prerequisites
SWE 3633 Software Architecture and Design	SWE 3313
SWE 3643 Software Testing & Quality Assurance	SWE 3313
SWE 3683 Embedded Systems Analysis & Design	CS 3305
SWE 4633 Cloud Software Development	CS 3305
CSE 4983 Computing Internship	Dept. Approval