

Required Core Courses

Course #	Course Name	Credits	Semester	Emphasis	Required Pre-Reqs (C- minimum grade needed)
CS 1400	Introduction to Computer Programming	4	Fall/Spring		Co-Req: Math 1050
CS 1410	Intro to Object-Oriented Programming	4	Fall/Spring		CS 1400, Co-Req: Math 1060
CS 1420	Accelerated Intro to Object-Oriented Prog	4	Fall/Spring		Co-Req: Math 1060
CS 2100	Discrete Structures	3	Fall/Spring		CS 1410 or CS 1420 & Math 1210
CS 2420	Intro to Algorithms & Data Structures	4	Fall/Spring		CS 1400 & CS 1410 or CS 1420
CS 3090	Ethics in Computing	3	Fall/Spring		CS 2420 & major status
CS 3130	Engineering Probability & Statistics	3	Fall/Spring		Math 1220 & Major Status
CS 3390	Ethics in Data Science	3	Fall/Spring		CS 2420 & major status
CS 3500	Software Practice	4	Fall/Spring		CS 2420 & major status
CS 3505	Software Practice II	3	Fall/Spring		CS 3500 & major status
CS 3810	Computer Organization	3	Fall/Spring		CS 2420 & major status
CS 4150	Algorithms	3	Fall/Spring		CS 2100, CS 3500 & major status
CS 4400	Computer Systems	3	Fall/Spring		CS 3810
*CS 4000	Senior Capstone Design (CS)	3	Fall/Spring		CS 3505 & (WRTG 3014, 3015 OR HONOR 3200) & major status
CS 4500	Senior Capstone Project (CS)	3	Fall/Spring		CS 4000 & major status

Elective Courses

Course #	Course Name	Credits	Semester	Emphasis	Required Pre-Reqs (C- minimum grade needed)
CS 3190	Foundations of Data Analysis	3	Fall		CS 2100, CS 2420 & Math 2270; Co-Reqs: CS 3130/ECE 3530 or Math 3070
CS 3520	Programming Language Concepts	3	Fall		CS 3500 & major status
CS 3550	Web Software I	3	Fall	CS App Dev	CS 3500 & major status
CS 3710	Computer Design Lab	3	Fall		CS 3700, CS 3810 & major status
CS 4230	Parallel Programming	3	Fall		CS 3505 & CS 3810
CS 4300	Artificial Intelligence	3	Fall	CS AI/SD AI/DS AI	CS 3350 & major status
CS 4600	Intro Computer Graphics	3	Fall		CS 3500, Math 2270 or 2250 & major status
CS 5140	Data Mining	3	Fall		CS 3500, CS 3190 & major status
CS 5150	Advanced Algorithms	3	Fall		CS 4150 & major status
CS 5310	Robotics I: Mechanics	3	Fall		MATH 2250 or MATH 2270 & PHYS 2210 & major status
CS 5320	Computer Vision	3	Fall	CS AI/SD AI/DS AI	CS 3350 & 3500 & major status
CS 5340	Natural Language Processing	3	Fall	CS AI/SD AI/DS AI	CS 3350 or CS 5353 & major status
CS 5353	Deep Learning	3	Fall		CS 3500 & (MATH 1311 & MATH 1321) or MATH 2210
CS 5494	CPS and IoT Security	3	Fall	CS Sec Comp	CS 3505 & CS 4400 & major status
CS 5495	Human Aspects of Security and Privacy	3	Fall	CS App Dev/CS Sec Comp	Foundational Courses & major status
CS 5496	Modern Cryptography and Applications	3	Fall	CS Sec Comp	CS 2100 & major status
CS 5620	Rendering with Ray Tracing	3	Fall		CS 4600 & major status
CS 5630	Visualization for Data Science	3	Fall		CS 3500 & major status
CS 5710	Digital VLSI Design	4	Fall		CS 3700 & major status
CS 3200	Scientific Computing	3	Spring		Math 2270 & major status
CS 3535	Manage Data for & with Machine Learning	3	Spring	CS AI/SD AI/DS AI	CS 3500 & major status
CS 3700	Digital System Design	4	Spring		PHYS 2220 & major status
CS 4470	Compilers	3	(every other) Spring		CS 4400 & major status
CS 4480	Computer Networks	3	Spring		CS 3500 & major status
CS 4530	Mobile Application Programming	3	Spring	CS App Dev	CS 3505 & major status
CS 4545	AI for Human-Centered Computing	3	Spring	CS AI/SD AI	CS 3350 & major status
CS 4550	Web Software II	3	Spring	CS App Dev	CS 3550 & major status
CS 5110	Software Verification and Analysis	3	Spring		CS 3100 & CS 3500 & CS 4150
CS 5460	Operating Systems	3	Spring		CS 4400 & major status
CS 5490	Network Security	3	Spring	CS Sec Comp	CS 4480 & major status
CS 5493	Applied Software Security Testing	3	Spring	CS Sec Comp	CS 3505 & CS 4400 or CS 4440 & major status
CS 5530	Database Systems	3	Spring		CS 3500 & major status
CS 5610	Interactive Comp Graph	3	Spring		CS 4600 & major status
CS 5635	Visualization for Scientific Data	3	Spring		CS 3500 & Math 1220
CS 5720	Analog IC Design	3	Spring		ECE 3110 & major status
CS 5780	Embedded System Design	4	Spring		CS 3810 or CS 4400 & major status
CS 3100	Models of Computation	3	Fall/Spring		CS 2100 & major status
CS 3540	Designing Human-Centered Systems	3	Fall/Spring	CS App Dev	CS 2420 & major status
CS 4440	Computer Security	3	Fall/Spring	CS App Dev/ CS Sec Comp	CS 3500 & major status
CS 3350	Introduction to Practical Machine Learning	3	Fall/Spring	CS AI/SD AI	Math 2270 & major status
CS 3545	Designing Human-Centered Experiences	3	Varies	CS App Dev	CS 3540 & major status
CS 3536	Human-Centered Data Management	3	Varies		CS 3500 & major status
CS 4010	CS Internship	3	Summer		CS 3505 & director approval
CS 4305	Advanced AI	3	Varies		CS 4300 or CS 5350 & major status
CS 4405	AI Systems	3	Varies		CS 3350 & major status
CS 4560	Web Browser Internals	3	Varies	CS App Dev	CS 3500 & major status
CS 4640	Image Processing Basics	3	Varies	CS AI/SD AI/DS AI	CS 2420 & major status
CS 5100	Theory of Computation	3	Varies		CS 3100, CS 4150 & major status
CS 5350	Machine Learning	3	Varies		CS 3190 & CS 3500 & major status
CS 5354	Human-AI Alignment	3	Varies		CS 4300 or CS 5350 & major status
CS 5497	Machine Learning Security	3	Varies	CS Sec Comp	CS 3350 & major status
CS 5550	Introduction to Information Retrieval	3	Varies		CS 3130 & CS 3500 & major status
CS 5740	Computer Design Digital Circuits	3	Varies		CS 3700 & major status
CS 5745	Testing & Verification Digital Circuits	3	Varies		CS 2420 & major status

* Students should have four or fewer CS electives/required courses left when signing up for this course and should be graduating during the following semester.