COMPUTER SCIENCE COMPREHENSIVE MAJOR: SCIENTIFIC COMPUTING EMPHASIS

A minimum of 62 credits is required, including the 33-credit Computer Science Core:

Code	Title	Credits
Computer Science Core		
CS 190	Computer Science I	3
CS 191	Computer Science II	3
CS 195	Database Management Systems	3
CS 250	Web Applications Development I	3
CS 280	Data Structures	3
CS 330	Operating Systems and Architecture	3
CS 370	Systems Programming in C	3
CS 412	Software Engineering	3
CS 470	Algorithms	3
CS 495	Senior Project	3
MATH 200	Discrete Mathematics	3
Total Credits		**33**

And the following additional courses:

Code	Title	Credits
CS 303	Machine Learning	3
MATH 151	Calculus I (GT-MA1)	4
MATH 213	Probability and Statistics (GT-MA1)	3
MATH 251	Calculus II	4
MATH 260	Applied Linear Algebra	3
MATH 314	Applied Probability I	3
AND		9
	At least 3 upper division CS courses (including CS 235 and excluding any core courses included in the scientific computing emphasis) or math course from MATH 252, MATH 275, MATH 300, MATH 313, MATH 358, MATH 360 and MATH 380	
Total Credits		**29**

Capstone Course Requirement

The following course fulfills the capstone course requirement in the Computer Science Major: CS 495 SENIOR PROJECT.

Graduation Requirements

Undergraduate programs require a minimum of 120 semester credits for graduation. Of those 120 credits, 40 credits must be in upper-division courses (those marked 300 and above). Fifteen of these 40 upper-division credits must be earned in courses that are part of the standard or comprehensive major program being pursued.

Students are expected to review all graduation requirements, which can be found in the Western Undergraduate Catalog: Graduation Requirements (https://catalog.western.edu/undergraduate/graduation-requirements/).

Course	Title	Credits
Year One		
Fall		
CS 190	Computer Science I	3
ENG 102	Writing and Rhetoric I (GT-CO1)	3
HWTR 100	First Year Seminar	1
MATH 151	Calculus I (GT-MA1)	4
Elective	H & SS lower-division or Foreign Language course	3
PHYS 170 or PHYS 190	Principles of Physics I (GT-SC2) or General Physics I (GT-SC2)	3
PHYS 185	Laboratory Physics I (GT-SC1)	1
	Credits	**18**
Spring		
CS 191	Computer Science II	3
ENG 103	Writing and Rhetoric II (GT-CO2)	3
MATH 251	Calculus II	4
PHIL 200	Symbolic Logic	3
PHYS 171 or PHYS 191	Principles of Physics II (GT-SC2) or General Physics II (GT-SC2)	3
PHYS 186	Laboratory Physics II (GT-SC1)	1
	Credits	**17**
Year Two		
Fall		
CS 280	Data Structures	3
CS 330	Operating Systems and Architecture	3
MATH 314	Applied Probability I	3
Elective	H & SS lower-division or Foreign Language course	6
Elective	Natural Science	3
ENG 103	Writing and Rhetoric II (GT-CO2)	3
	Credits	**21**
Spring		
CS 370	Systems Programming in C	3
CS 412	Software Engineering	3
MATH 200	Discrete Mathematics	3
PHIL 135	Introduction to Ethics	3
Elective	Elective or minor course	3
	Credits	**15**
Year Three		
Fall		
CS 250	Web Applications Development I	3
CS Elective	Upper Division CS elective course	3
MATH 260	Applied Linear Algebra	3
Elective	H & SS elective course	3
Elective	Elective or minor course	3
	Credits	**15**
Spring		
CS 195	Database Management Systems	3

CS Elective	Upper Division CS elective course	3
Elective	Upper Division H & SS elective course	3
Elective	Upper Division elective or minor course	3
MATH 213	Probability and Statistics (GT-MA1)	3
	Credits	**15**
Year Four		
Fall		
CS 303	Machine Learning	3
CS Elective	Upper Division CS elective course	3
Elective	Upper Division elective or minor course	3
Elective	Upper Division H &SS elective course	3
Elective	Elective or minor course	3
	Credits	**15**
Spring		
CS 470	Algorithms	3
CS 495	Senior Project	3
CS Elective	CS elective course	3
Elective	Elective or minor course	3
	Credits	**12**
	Total Credits	**128**