COMPUTER SCIENCE COMPREHENSIVE MAJOR: SOFTWARE ENGINEERING EMPHASIS

Program Requirements

A minimum of 63 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:

Code	Title	Credits
CS 303	Machine Learning	3
CS 350	WEB APPL DEVELOPMENT II	3
CS 380	The Internet of Things	3
CS 435	Mobile Development	3
MATH 213	Probability and Statistics (GT-MA1)	3
or MATH 260	Applied Linear Algebra	
AND		15
	At least 5 upper division CS courses (including CS 235 or ENG 302 and excluding any core courses included in the software engineering emphasis)	
	OR	
	At least 4 upper division CS courses (including CS 235 or ENG 302 and excluding any core courses included in the software engineering emphasis) and one math course from MATH 151, MATH 213, MATH 260 and MATH 380	
Total Credits		**30**

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
Elective	Elective or minor course	3
ENG 102	Writing and Rhetoric I (GT-CO1)	3
Gen Ed	Arts & Humanities	3
HWTR 100	First Year Seminar	1
MATH 141	Precalculus (GT-MA1)	4
or MATH 151	or Calculus I (GT-MA1)	
	Credits	**17**
Spring		
CS 191	Computer Science II	3
CS 195	Database Management Systems	3
ENG 103	Writing and Rhetoric II (GT-CO2)	3
Gen Ed	Arts & Humanities	3
Gen Ed	Social Sciences	3
	Credits	**15**
Year Two		
Fall		
CS 280	Data Structures	3
CS 330	Operating Systems and Architecture	3
or CS 250	or Web Applications Development I	
MATH 213	Probability and Statistics (GT-MA1)	3
or MATH 260	or Applied Linear Algebra	
Gen Ed	Natural Sciences w/lab	4
Gen Ed	Social Sciences	3
	Credits	**16**
Spring		
CS 380	The Internet of Things	3
or CS 350	or WEB APPL DEVELOPMENT II	
CS 412	Software Engineering	3
MATH 200	Discrete Mathematics	3
Elective	Elective or minor course	3
Gen Ed	Natural Sciences w/lab	4
	Credits	**16**
Year Three		
Fall		
CS 250	Web Applications Development I	3
or CS 330	or Operating Systems and Architecture	
CS 435	Mobile Development	3
or CS 303	or Machine Learning	
CS	CS elective	3
Elective	Elective or minor course	6
Gen Ed	Social Sciences	3
	Credits	**18**
Spring		
CS 350	WEB APPL DEVELOPMENT II	3
or CS 380	or The Internet of Things	
CS 370	Systems Programming in C	3
CS	Upper division CS elective	3
Elective	Elective or minor course	3
Gen Ed	Arts & Humanities	3
	Credits	**15**

Year Four

Fall

CS 303 or CS 435	Machine Learning or Mobile Development	3
CS 470	Algorithms	3
CS	Upper division CS elective	3
Elective	Elective or minor course	3
Elective	Upper division elective or minor course	3
	Credits	**15**

Spring

CS 495	Senior Project	3
CS	Upper division CS elective	6
Elective	Elective or minor course	3
	Credits	**12**
	Total Credits	**124**