COMPUTER SCIENCE MAJOR

Program Outcomes for the Major in Computer Science

Upon completion of the Computer Science Major students will be able to:

- Analyze a problem, develop/design multiple solutions, and evaluate and document the solutions based on the requirements.
- Communicate effectively both in written and oral form.
- Identify professional and ethical considerations and apply ethical reasoning to technological solutions to problems.
- Demonstrate an understanding of and appreciation for the importance of negotiation, effective work habits, leadership, and good communication with teammates and stakeholders.
- Learn new models, techniques, and technologies as they emerge and appreciate the necessity of such continuing professional development.

It is highly recommended that entering students have four years of high school mathematics including the equivalent of pre-calculus.

Students wishing to apply courses transferred from other institutions to the Computer Science major should meet with the department chair to determine the applicability of the courses before registering for any Computer Science courses at Worcester State University.

A laptop computer running Windows, macOS, or Linux is required for courses in the Computer Science program. 16GB of memory is suggested. A Chromebook will not work.

Requirements for a Major in Computer Science

Students must complete a core of twelve Computer Science courses, one of the two Computer Science concentrations (Big Data Analytics or Software Development), one Computer Science Elective courses, and 31 credits of Ancillary courses.

If a CS student completed two of the CS concentrations, he/she will be able to declare another concentration and one of the courses in the subsequent concentration can be used to fulfill the three credits of required CS electives.

Code	Title	Credits
Core Courses		**(38 credits)**
CS-101	Basics of Computer Science	3
CS-140	Introduction to Programming	4
CS-155	Computer Networking and Security	3
CS-225	Discrete Structures I	3
CS-242	Data Structures	3
CS-248	Algorithm Analysis	3
CS-254	Computer Organization and Architecture	4
CS-282	Unix Systems Programming	3
CS-286	Database Design and Applications	3
CS-295	Discrete Structures II	3
CS-348	Software Process Management	3
CS-373	Operating Systems	3
Elective Courses		**(3 credits)**
Credits in Computer Science courses at the 300 level or above [1]		3
Required CS Concentration		**(9 credits)**
One of the CS Concentrations (Big Data Analytics or Software Development)		9
Ancillary Requirements [2]		**(31 credits)**
CM-110	Public Speaking	3
EN-252	Technical Writing	3
UR-230	Technology, Public Policy and Urban Society	3
or PH-134	Computing Ethics	
MA-150	Statistics I [3]	3
or MA-302	Probability and Statistics	
MA-200	Calculus I	4
2 lab science courses		8
2 approved math or science course chosen from a department-approved list of courses [4]		7
Total Credits		**81**

[1] Up to 3 credits of Internship (CS-498) and up to 3 credits of Independent Study (CS-499) may be used to satisfy the major elective requirements.

[2] 31 credits (may apply to LASC requirements). These ancillary courses cannot be taken on a pass/fail basis

[3] Students planning a Mathematics minor or a Computer Science/Mathematics double major should take MA-302.

[4] Students planning a Mathematics minor or a Computer Science/Mathematics double major should take math courses required for the Mathematics minor/major.