

**University of Wisconsin-Milwaukee**  
**College of Engineering and Applied Science**

# COMPUTER SCIENCE

The minimum number of credits required to complete the Bachelor of Science in Computer Science is 120 credits.

<b>Computer Science Requirements (43 credits)</b>		<b>Credits</b>	<b>Prerequisite</b>
CompSci 140	Introduction to the CS Labs (recommended only)	1	none
CompSci 150	Survey of Computer Science (recommended only)	3	none
EAS 200	Professional Seminar	1	none
CompSci 201	Introductory Computer Programming	3	Math 105
CompSci 251	Intermediate Computer Programming	4	CS 201*
CompSci 351	Programming Data Structures	4	CS 251*
CompSci 315	Introduction to Computer Organization and Assembly Language Programming	3	CS 201, Math 211 or 226 or 231
CompSci 317	Discrete Information Structures	3	CS 201, Math 226 or 231
ElecEng 354	Digital Logic	3	CS 151 or CS 201 or CS 315
CompSci 417	Introduction to the Theory of Computation	3	CS 317*, Math 221 or 232
CompSci 431	Programming Languages Concepts	3	CS 351*
CompSci 458	Computer Architecture	3	CS 315 or EE 354
CompSci 520	Computer Networks	3	CS 315 or CS 458 or EE 367
CompSci 535	Data Structures and Algorithms	3	CS 317*, CS 351*
CompSci 537	Introduction to Operating Systems	4	CS 315*, CS317*, CS431 or CS 535
CompSci 557	Introduction to Database Systems	3	CS 315 or CS 351

\* C or better in prerequisite.

<b>Mathematics Requirements (8 credits)</b>			
Math 231	Calculus and Analytic Geometry I	4	Math Placement A
Math 232	Calculus and Analytic Geometry II	4	Math 231*

\* C or better in prerequisite.

<b>Natural Science Requirements (12 credits including at least 1 laboratory credit)</b>			
<b>Must include one of the following sequences:</b>			
BioSci 150 - 152	Foundations of Biology I & II	8	Chem placement
BioSci 202 - 203	Anatomy and Physiology I & II	8	none
Chem 102 - 104	General Chemistry I & II	10	Math 105, Chem placement
Physics 120 - 122	General Physics I & II	8	Math placement C
Physics 209 - 210	Physics I & II	8	Math 232 (C), Math 233 (C)
<b>Remaining credits to be chosen from the Natural Science elective from GER list</b>			

<b>General Education Requirements (15 credits)</b>		
<b>Art</b>	3	variable
<b>Humanities</b>	6	variable
<b>Social Science</b>	6	variable
One of the arts, humanities, or social science courses selected must also meet the UWM cultural diversity requirement. <i>(Commun 103 Public Speaking or Commun 105 Business and Professional Communication are recommended as part of the distribution requirements)</i>		
<i>Competency Requirements (credits from the following two sections do count towards the total credit requirement)</i>		
<b>English Composition (0-6 credits)</b>		
The English Composition requirement is satisfied by:		
1. Earning a satisfactory score on the English placement test, or		
2. Earning a grade of C or higher in English 102.)		
<b>Foreign Language (0-8 credits)</b>		
The foreign language requirement can be completed with one of these options:		
1. Two years of a single foreign language in high school		
2. Two semesters of a single foreign language in college		
3. Demonstrate ability by examination		

**Placement Examinations**  
 Once admitted to UWM, most computer science students are required to take placement examinations in mathematics and English. Students with previous college level credits in these areas may not be required to take placement exams. The placement exams are administered by the UWM Testing Center, Mellencamp Hall, room B28, (414) 229-4689. The results of these tests help students determine the appropriate course in which to register. Background prerequisite courses may be required in addition to the courses listed above. Possible Math placements for computer science students are Math 090-095-105-116-117- 225-231-221. Possible English placements are English 090-095-101-102.

<b>Approved Technical Electives (15 credits)</b>		<b>Credits</b>	<b>Prerequisite</b>
<b>Must include CompSci 536 or CompSci 654 or both.</b>			
CompSci 422	Introduction to Artificial Intelligence	3	CS 317*, CS 351*
CompSci 423	Introduction to Natural Language Processing	3	CS 351*, CS 417*
CompSci 438	Software Engineering Laboratory	(1 – 6)	CS 251*
CompSci 459	Fundamentals of Computer Graphics	3	CS 251, Math 233, 234 or EE 234
CompSci 469	Introduction to Computer Security	3	CS 201*, CS 317*
CompSci 511	Symbolic Logic	3	Phil 212
CompSci 530	Computer Networks Laboratory	3	CS 520
CompSci 536	Introduction to Software Engineering	3	CS 251*
CompSci 552	Object Oriented Programming	3	CS 431
CompSci 581	Web Languages and Standards	3	CS 417 (R), CS 431
CompSci 654	Introduction to Compilers	4	CS 417, CS 431
CompSci 657	Topics in Computer Science	(1 – 4)	variable
CompSci 699	Independent Study	(1 – 3)	variable
ElecEng 301	Electrical Circuits I	3	Phys 210 (C), EE 234 (C)
ElecEng 305	Electrical Circuits II	4	EE 301, EE 234
ElecEng 330	Electronics I	4	EE 305
ElecEng 335	Electronics II	4	EE 330, EE310
ElecEng 367	Introduction to Microprocessors	4	EE 354, CS 151 or CS 201
ElecEng 451	Introduction to VLSI Design	3	EE 330 or EE 331, EE 354
ElecEng 457	Digital Logic Laboratory	3	EE 330 or EE 331, EE 354
ElecEng 541	Integrated Circuits and Systems	3	EE 330 or EE 331

\* C or better in prerequisite.

<b>Applied Mathematics Electives (6 credits)</b>			
Math 233	Calculus and Analytic Geometry III	4	Math 232*
Math 234	Linear Algebra and Differential Equations	4	Math 232*
Math 305	Vectors and Matrices	3	Math Placement B
Math 337	Introduction to Number Theory	3	Math Placement A
Math 431	Modern Algebra with Applications	3	Math 232
Math 451	Axiomatic Geometry	3	Math 232, Math 341
MthStat 361	Introduction to Mathematical Statistics I	3	Math 233
ElecEng 234	Analytical Methods in Engineering	4	Math 232*
IndEng 467	Intro to Statistics for Phy Sciences and Engineering	3	Math 233

\* C or better in prerequisite.

**Free Elective Courses (Variable credits)**  
 University level courses of your choice as needed to reach a minimum of 120 total credits.

<b>College of Engineering and Applied Science</b> <b>University of Wisconsin – Milwaukee</b> <b>P.O. Box 784</b> <b>Milwaukee, WI 53201</b>	Office of Student Services (414) 229-4667 Engineering & Mathematical Science Building (EMS) Room E386  Department of Electrical Engineering and Computer Science (414) 229-4677 Engineering & Mathematical Science Building (EMS) Room E1019  Web Site: <a href="http://www.uwm.edu/ceas">http://www.uwm.edu/ceas</a>
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