University of Wisconsin-Milwaukee
College of Engineering and Applied Science

COMPUTER SCIENCE

The discipline of computer science pertains to the study and design of computer systems, networks, communication, software, computing techniques and underlying theory. Our program provides a student with a strong technical background in computer science. It is a flexible program providing a broad background and permitting a student to develop strength in selected areas within computer science, as well as in related areas, depending on a student's interests. Our computer science laboratories provide a state of the art computing environment for the students.

(Courses marked "L" are normally taken in the Freshman or Sophomore years, courses marked "M" are normally taken in the Sophomore and Junior years and courses marked "U" are normally taken in the Junior or Senior years. The "key prerequisite" column is often not complete, it should be used as an indicator only, see catalog for full details.)

Course		credits	level	key prerequisite
Total required for the degree		**124 credits**		
Computer Science Core Courses		**32 credits**		
CompSci 140	Intro. to the CS Labs (recommended only)	1	L	none
CompSci 152	Computer Programming I	4	L	Math 105
CompSci 252	Computer Programming II	4	L	CS 152
CompSci 215	Introduction to Computer Organization and Assembly Language Programming	3	M	CS 132 or CS 152, Math 231
CompSci 217	Discrete Information Structures	3	M	CS 152, Math 232
CompSci 336	Systems Programming	3	M	CS 215, CS 252
ElecEng 354	Digital Logic	3	M	CS 215
CompSci 458	Computer Architecture	3	M-U	CS 215
CompSci 535	Data Structures and Algorithms	3	U	CS 217, CS 252
CompSci 536	Introduction to Software Engineering	3	M-U	CS 336
CompSci 537	Introduction to Operating Systems	3	U	CS 336
Core Mathematics Requirement:		**10 - 16 credits**		
Alternative I:	Math 225, 226, 232, 233	16	L-M	(see catalog for details)
Alternative II:	Math 231, 232, 233	12	L-M	"
Alternative III:	Math 221, 222 (honors)	10	L-M	"
Natural Science Requirement:		**12 credits**		
Physics 209	Physics I	4	M	Math 232
Physics 210	Physics II	4	M	Math 233
Natural Science elective with at least one laboratory credit		4	L-M	
Engineering & Applied Science Requirement:		**1 credit**		
EAS 100	CEAS Freshman Orientation	1	L	none
EAS 200	Professional Seminar	0	M	none
General Education Requirements		**18 credits**		
English Composition: *Either* 1. Earn a score of 637 or better in the English placement test *or* 2. Earn a C or higher in English 102.			L	
Foreign Language (for students starting Fall 1999) *Either* 1. Two years of a single foreign language in High School *or* 2. Two semesters of a single foreign language in College *or* 3. Demonstrate ability by examination			L-M	
Art Requirement		3	L-M	
Humanities Requirement		6	L-M	
Social Science Requirement		6	L-M	

One of the GER *courses listed above must meet the Cultural Diversity requirement.*

Course		credits	level	key prerequisite
Approved Technical Electives		**15 credits**		
CompSci 422	Introduction to Artificial Intelligence	3	M-U	CS 217 CS 252
CompSci 423	Introduction to Natural Language Processing	3	M-U	CS 252
CompSci 459	Fundamentals of Computer Graphics	3	M-U	CS 217 CS 252
CompSci 469	Computer Security	3	M-U	CS 217 CS 336
CompSci 511	Symbolic Logic	3	U	Phil 212
CompSci 517	Introduction to the Theory of Computation	3	U	CS 217
CompSci 552	Object Oriented Programming	3	U	CS 336
CompSci 557	Introduction to Database Systems	3	U	CS 217 CS 252
CompSci 620	Computer Networks	3	U	CS 215, CS 535
CompSci 631	Programming Languages Concepts	3	U	CS 252
CompSci 654	Introduction to Compilers	3	U	CS 535
CompSci 657	Topics in Computer Science	3	U	variable
CompSci 699	Independent Study	3	U	variable
ElecEng 301*	Electrical Science I	3	M-U	Phys 210, EE 234
ElecEng 331*	Solid-State Devices, Circuits, and Systems I	4	M-U	EE 301
ElecEng 332*	Solid-State Devices, Circuits, and Systems II	3	M-U	EE 331
ElecEng 367	Introduction to Microprocessors	3	U	EE 354, CS 152
ElecEng 451*	Introduction to VLSI Design	3	U	EE 331, EE 354
ElecEng 457*	Digital Logic Laboratory	3	U	EE 331, EE 354
ElecEng 541*	Integrated Circuits and Systems	3	U	EE 331

***** This course requires Math 234 or ElecEng 234 shown below.

Applied Mathematics Electives		**9 credits**		
ElecEng 234	Linear Systems Analysis	4	M	Math 233
Math 234	(alternative to ElecEng 234)	4	M	Math 233
Math 241	Intro. to the Language and Practice of Math	3	M	Math Placement A
Math 313	Linear Programming and Optimization	3	M	Math 234
Math 321	Vector Analysis	3	M	Math 234 or EE 234
Math 361	Introduction to Mathematical Statistics I	3	M	Math 233
Math 362	Introduction to Mathematical Statistics II	3	M	Math 361
Math 413	Introduction to Numerical Analysis	3	M	Math 413
Math 414	Numerical Analysis	3	M	Math 413
IndEng 455	Basic Optimization Techniques	3	M-U	EE 234
IndEng 465	Operations Analysis	3	M-U	IndEng 467
IndEng 467	Introductory Statistics for Physical Sciences and Engineering Students	3	M-U	Math 233
Math 467	(equivalent to IndEng 467)	3	M-U	Math 233
Math 471	Introduction to the Theory of Probability	3	M-U	Math 233
CompSci 511	Symbolic Logic	3	M-U	Phil 212
Math 511	(equivalent to CompSci 511)	3	M-U	"
Phil 511	(equivalent to CompSci 511)	3	M-U	"
Math 531	Modern Algebra	3	U	Math 232, Math 241
Math 535	Linear Algebra	3	U	Math 233, Math 234, Math 241
Math 537	Number Theory	3	U	Math 233, Math 241

Free Elective Courses	**21 - 27 credits**		
University level courses of your choice	21 - 27	L-M-U	