BACHELOR OF SCIENCE IN COMPUTER SCIENCE

Required Courses

Code	Title		Credit Hours
Computer Science Requirements			(36)
CS 100	Intro to the Profession		2
CS 115	Object-Oriented Programming I		2
CS 116	Object-Oriented Programming II [1]		2
CS 330	Discrete Structures		3
CS 331	Data Structures and Algorithms		3
CS 350	Cmptr Org&Asmbly Lang Prgmmg		3
CS 351	Systems Programming		3
CS 425	Database Organization		3
CS 430	Introduction to Algorithms		3
CS 440	Prgmng Languages Translators		3
CS 450	Operating Systems		3
CS 485	Computers and Society		3
CS 487	Software Engineering		3
Computer Science Electives			(12)
Select 12 credit hours [2]			12
Mathematics Requirements			(20)
MATH 151	Calculus I		5
MATH 152	Calculus II		5
MATH 251	Multivariate & Vector Calculus		4
MATH 332	Elementary Linear Algebra		3
or MATH 333	Matrix Alg & Complex Variables		
MATH 474	Probability and Statistics		3
or MATH 475	Probability		
Mathematics Elective			(3)
Select one of the following:			3
MATH 252	Introduction to Diff Equations	4	
MATH 350	Intro to Computational Mathe	3	
MATH 380	Intro to Mathematical Modeling	3	
MATH 410	Number Theory	3	
MATH 435	Linear Optimization	3	
MATH 453	Combinatorics	3	
MATH 454	Graph Theory and Applications	3	
MATH 476	Statistics	3	
MATH 481	Intro to Stochastic Processes	3	
Science Requirements			(8)
PHYS 123	General Physics I: Mechanics		4
PHYS 221	Gen Physics II: Elect&Magntism		4
Science Electives			(6)
Select six credit hours [3]			6
Communication Elective			(3)
Select one of the following:			3
COM 421	Technical Communication	3	
COM 424	Document Design	3	
COM 425	Editing	3	
COM 428	Verbal Visual Communications	3	
COM 435	Intercultural Communication	3	

Interprofessional Projects (IPRO)	(6)
See Illinois Tech Core Curriculum, section E	6
Humanities and Social Sciences Requirements	(21)
See Illinois Tech Core Curriculum, sections B and C	21
Free Electives	(12)
Select 12 credit hours	12
Total Credit Hours	127

1 CS 201 is a one-semester, accelerated course equivalent to the two-semester CS 115/CS 116 sequence.

2 Computer science electives: Any computer science course at the 300-level or higher (including graduate CS courses) may be used as a computer science elective, except CS 401 and CS 402. ECE 218 and ECE 441 may also be used as computer science electives. Higher mathematics or computational science courses at the 300-level or above can also be used as computer science electives, with CS department approval. Students pursuing the data science specialization may only apply the two required computer science courses toward this requirement.

3 Science electives (no lab required): Chosen from the natural sciences (biology, chemistry, material science, and physics), or courses marked with an (N) (natural science attribute) in the Undergraduate Bulletin. At least one course must be in a field other than physics.

The Bachelor of Science in Computer Science degree is accredited by:

Computing Accreditation Commission of ABET
415 N. Charles Street
Baltimore, MD 21201
telephone: 410.347.7700

Bachelor of Science in Computer Science Curriculum

			Year 1
Semester 1	**Credit Hours**	**Semester 2**	**Credit Hours**
CS 100	2	CS 116[1]	2
CS 115[1]	2	MATH 152	5
MATH 151	5	PHYS 123	4
Humanities 200-level Course	3	Humanities Elective (300+)	3
Social Sciences Elective	3	Social Sciences Elective (300+)	3
	15		17

			Year 2
Semester 1	**Credit Hours**	**Semester 2**	**Credit Hours**
CS 330	3	CS 350	3
CS 331	3	CS 425	3
MATH 251	4	MATH 332 or 333	3
PHYS 221	4	Humanities Elective (300+)	3
Social Sciences Elective (300+)	3	Science Elective[2]	3
	17		15

			Year 3
Semester 1	**Credit Hours**	**Semester 2**	**Credit Hours**
CS 351	3	CS 430	3
CS 440	3	CS 450	3
MATH 474 or 475	3	IPRO Elective I	3
Communication Elective[3]	3	Mathematics Elective	3
Computer Science Elective[4]	3	Free Elective	3
	15		15

			Year 4
Semester 1	**Credit Hours**	**Semester 2**	**Credit Hours**
CS 487	3	CS 485	3
IPRO Elective II	3	Computer Science Elective[4]	3
Computer Science Elective[4]	3	Computer Science Elective[4]	3
Science Elective[2]	3	Free Elective	3
Humanities or Social Sciences Elective	3	Free Elective	3
Free Elective	3		
	18		15

Total Credit Hours: 127

1 CS 201 is a one-semester, accelerated course equivalent to the two-semester CS 115/CS 116 sequence.

2 Science electives (no lab required): Chosen from the natural sciences (biology, chemistry, material science, and physics), or courses marked with an (N) (natural science attribute) in the Undergraduate Bulletin. At least one course must be in a field other than physics.

3 Communication elective must be COM 421, COM 424, COM 425, COM 428, or COM 435.

4 Computer science electives: Any computer science course at the 300-level or higher (including graduate CS courses) may be used as a computer science elective, except CS 401 and CS 402. ECE 218 and ECE 441 may also be used as computer science electives. Higher mathematics or computational science courses at the 300-level or above can also be used as computer science electives, with CS department approval.

Specializations in Computer Science

Students in the CS program may elect to complete one of these specializations by choosing their computer science electives and free electives appropriately, or by taking extra classes. The student must receive department approval and notify the Office of Undergraduate Academic Affairs. A minimum of four courses are required for a specialization.

Computer Science Honors Research

A minimum of 13 credit hours are required for this specialization.

Code	Title	Credit Hours
CS 492	Intro to Computer Sci Research [1]	1
CS 491	Undergraduate Research [2]	6
or CS 497	Special Projects	
Graduate Computer Science Electives [3]		6

1. Students will be required to take CS 492 in their first or second year.
2. Students must complete an ambitious research project and associated honors thesis, advised by a computer science faculty member. The thesis/project culminates in a presentation to a committee for approval in their last semester (six credit hours of CS 491 or CS 497).
3. Students must take at least two adviser approved 500-level computer science courses.

Data Science

A minimum of four courses are required for this specialization. Only two courses may be applied as computer science electives.

Code	Title	Credit Hours
BUS 371	Marketing Fundamentals	3
CS 422	Data Mining	3
or CS 584	Machine Learning	
CS 451	Parallel/Distributed Computing	3
MATH 481	Intro to Stochastic Processes	3
or MATH 483	Design and Analysis of Exprmnt	

Note: MATH 481 has prerequisites of MATH 332 or MATH 333 and MATH 475; MATH 483 has a prerequisite of MATH 476.

Distributed and Cloud Computing

A minimum of four courses are required for this specialization.

Code	Title	Credit Hours
CS 442	Mobile Application Development	3
or CS 447	Distributed Objects	
CS 451	Parallel/Distributed Computing	3
CS 455	Data Communication	3
CS 553	Cloud Computing	3

Information and Knowledge Management Systems

A minimum of four courses are required for this specialization.

Code	Title	Credit Hours
CS 425	Database Organization	3
CS 482	Infor Knwldg Mgmt Syst	3
Select a minimum of two courses from the following:		6
CS 422	Data Mining	3
CS 429	Information Retrieval	3
CS 481	Intllgnc Txt Analys Knwldg Mgm	3
CS 585	Natural Language Processing	3

Information Security

A minimum of four courses are required for this specialization.

Code	Title	Credit Hours
CS 425	Database Organization	3
CS 458	Intro to Information Security	3
CS 455	Data Communication	3
CS 549	Cryptography	3
or CS 558	Advanced Computer Security	