BACHELOR OF SCIENCE IN ELECTRICAL ENGINEERING/ BACHELOR OF SCIENCE IN COMPUTER ENGINEERING

The dual degree, B.S.E.E./B.S.CP.E., combines all the essential elements of a broad-based, traditional B.S.E.E. degree with the modern and progressive aspects of a B.S.CP.E. degree. This program contributes to the foundation of the new millennium, where computer hardware and software are used in areas such as telecommunications, power electronics, digital signal processing, computer networks, and control systems. Freshmen entering the university with a significant number of Advanced Placement credits may be able to complete both degrees in four years.

Required Courses

Code	Title		Credit Hours
Electrical Engineering Requirements			**(39)**
ECE 100	Introduction to the Profession I		3
ECE 211	Circuit Analysis I		3
ECE 213	Circuit Analysis II		4
ECE 218	Digital Systems		4
ECE 242	Digital Computers and Computing		3
ECE 307	Electrodynamics		4
ECE 308	Signals and Systems		3
ECE 311	Engineering Electronics		4
ECE 319	Fundamentals of Power Engineering		4
ECE 441	Smart and Connected Embedded System Design		4
ECE 485	Computer Organization and Design		3
Computer Engineering Requirements			**(16)**
CS 115	Object-Oriented Programming I		2
CS 116	Object-Oriented Programming II		2
CS 330	Discrete Structures		3
CS 331	Data Structures and Algorithms		3
CS 351	Systems Programming		3
CS 450	Operating Systems		3
Professional ECE Electives			**(9-12)**
Select 9-12 credit hours			9-12
Computer Systems/Software Elective			**(3-4)**
Select one of the following:			3-4
ECE 407	Introduction to Computer Networks with Laboratory	4	
ECE 408	Introduction to Computer Networks	3	
ECE 443	Introduction to Computer Cyber Security	3	
ECE 449	Object-Oriented Programming and Machine Learning	3	
CS 425	Database Organization	3	
CS 487	Software Engineering I	3	
Hardware-Design Elective			**(4)**
ECE 429	Introduction to VLSI Design		4
or ECE 446	Advanced Logic Design		
Mathematics Requirements			**(24)**
MATH 151	Calculus I		5
MATH 152	Calculus II		5
MATH 251	Multivariate and Vector Calculus		4
MATH 252	Introduction to Differential Equations		4
MATH 333	Matrix Algebra and Complex Variables		3
MATH 374	Probability and Statistics for Electrical and Computer Engineers		3
Physics Requirements			**(11)**

PHYS 123	General Physics I: Mechanics		4
PHYS 221	General Physics II: Electricity and Magnetism		4
PHYS 224	General Physics III for Engineers		3
Chemistry Requirement			**(3)**
CHEM 122	Principles of Chemistry I Without Laboratory		3
Engineering Science Requirement			**(3)**
MMAE 200			3
or MMAE 320	Thermodynamics		
Science Elective			**(3)**
Select one of the following:			3
BIOL 105	Introduction to Biology	3	
BIOL 114	Introduction to Human Biology	3	
CHEM 126	Principles of Chemistry II Without Laboratory	3	
MS 201	Materials Science	3	
Free Elective			**(3)**
Select three credit hours			3
Humanities and Social Sciences Requirements			**(21)**
See Illinois Tech Core Curriculum, sections B and C			21
Interprofessional Projects (IPRO)			**(6)**
See Illinois Tech Core Curriculum, section E			6

Minimum degree credits required: 146

Bachelor of Science in Electrical Engineering/Bachelor of Science in Computer Engineering Curriculum

			Year 1
Semester 1	**Credit Hours**	**Semester 2**	**Credit Hours**
ECE 100	3	MATH 152	5
MATH 151	5	PHYS 123	4
CHEM 122	3	CS 116	2
CS 115	2	Science Elective[1]	3
Humanities 200-level Course	3	Social Sciences Elective	3
	16		**17**
			Year 2
Semester 1	**Credit Hours**	**Semester 2**	**Credit Hours**
MATH 252	4	MATH 251	4
PHYS 221	4	PHYS 224	3
ECE 211	3	ECE 213	4
ECE 218	4	ECE 242	3
CS 331	3	CS 330	3
	18		**17**
			Year 3
Semester 1	**Credit Hours**	**Semester 2**	**Credit Hours**
MATH 333	3	ECE 308	3
ECE 307	4	ECE 319	4
ECE 311	4	MMAE 200 or MMAE 320	3
IPRO Elective I	3	Social Sciences Elective (300+)	3
CS 351	3	Free Elective	3
	17		**16**
			Year 4
Semester 1	**Credit Hours**	**Semester 2**	**Credit Hours**
ECE 441	4	ECE 485[2]	3
CS 450	3	Computer Systems/Software Elective[3]	3-4
MATH 374	3	ECE 429 or 446	4
IPRO Elective II	3	Professional ECE Elective[4]	3-4
Humanities Elective (300+)	3	Social Sciences Elective (300+)	3
	16		**16-18**
			Year 5
Semester 1	**Credit Hours**		
Professional ECE Elective[4]	3-4		
Professional ECE Elective[4]	3-4		
Humanities Elective (300+)	3		
Humanities or Social Sciences Elective	3		
	12-14		

Total Credit Hours: 145-149

[1]   Science elective must be BIOL 105, BIOL 114, CHEM 126, or MS 201.
[2]   CS 470 may be substituted with adviser approval.
[3]   Computer systems/software elective: Choose one of ECE 407, ECE 408, ECE 443, ECE 449, CS 425, or CS 487.
[4]   ECE 400-level course with (P) designation. A maximum of three credit hours of either ECE 491 or ECE 497.