

# BS in Electrical Engineering

## Program Codes:

20FQ0115BS

## Degree Requirements

To earn a Bachelor of Science in Electrical Engineering degree from UIC, students need to complete university, college, and department degree requirements. The Department of Electrical and Computer Engineering degree requirements are outlined below. Students should consult the *College of Engineering* section for additional degree requirements and college academic policies. See the [ECE Department website](#) for any revisions of the EE curriculum.

Code	Title	Hours
<b>Summary of Requirements</b>		
Nonengineering and General Education Requirements		53
Required in the College of Engineering		58
Technical Electives		17
<b>Total Hours</b>		<b>128</b>

## Nonengineering and General Education Requirements

Code	Title	Hours
<b>Required Courses</b>		
ENGL 160	Academic Writing I: Writing in Academic and Public Contexts	3
ENGL 161	Academic Writing II: Writing for Inquiry and Research	3
Exploring World Cultures course <sup>a</sup>		3
Understanding the Creative Arts course <sup>a</sup>		3
Understanding the Past course <sup>a</sup>		3
Understanding the Individual and Society course <sup>a</sup>		3
Understanding U.S. Society course <sup>a</sup>		3
MATH 180	Calculus I <sup>b</sup>	4
MATH 181	Calculus II <sup>b</sup>	4
MATH 210	Calculus III <sup>b</sup>	3
MATH 220	Introduction to Differential Equations	3
MATH 310	Applied Linear Algebra	3
PHYS 141	General Physics I (Mechanics) <sup>b</sup>	4
PHYS 142	General Physics II (Electricity and Magnetism) <sup>b</sup>	4
PHYS 260	Introduction to Thermal Physics	2
CHEM 122	Matter and Energy <sup>c</sup>	3
CHEM 123	Foundations of Chemical Inquiry I <sup>b,c</sup>	2
<b>Total Hours</b>		<b>53</b>

<sup>a</sup> Students should consult the [General Education](#) section of the catalog for a list of approved courses in this category.

<sup>b</sup> This course is approved for the Analyzing the Natural World General Education category.

<sup>c</sup> General Education credit is given for successful completion of both CHEM 122 and CHEM 123.

## Required in the College of Engineering

Code	Title	Hours
<b>Electrical Engineering Core Courses</b>		
ENGR 100	Engineering Orientation <sup>a</sup>	1
CS 107	Introduction to Computing and Programming	4
ECE 115	Introduction to Electrical and Computer Engineering	4
ECE 225	Circuit Analysis	4
ECE 265	Introduction to Logic Design	4
ECE 266	Introduction to Embedded Systems	4
ECE 310	Discrete and Continuous Signals and Systems	3
ECE 311	Communication Engineering	4
ECE 317	Digital Signal Processing I	4
ECE 322	Introduction to Electromagnetics and Applications	4
ECE 340	Electronics I	4
ECE 341	Probability and Random Processes for Engineers	3
ECE 342	Electronics II	4
ECE 346	Solid State Device Theory	4
ECE 350	Principles of Automatic Control	4
ECE 396	Senior Design I	2
ECE 397	Senior Design II	2
ECE 499	Professional Development Seminar	0
<b>Total Hours</b>		<b>58</b>

<sup>a</sup> ENGR 100 is a one-semester-hour course, but the hour does not count toward the total hours required for graduation.

## Technical Electives

No more than a total of two courses below the 400 level may be used to meet the technical elective requirement. Also, at most one course from outside of the Department of Electrical and Computer Engineering may be used to meet the technical elective requirement.<sup>a</sup>

Code	Title	Hours
<b>Courses</b>		
Select 17 hours from the following:		17
PHYS 240	Fundamentals of Modern Quantum Theory	
ECE 333	Computer Communication Networks I	
ECE 347	Integrated Circuit Engineering	
ECE 366	Computer Organization	
ECE 407	Pattern Recognition I	
ECE 410	Advanced Circuit Analysis	
ECE 412	Introduction to Filter Synthesis	
ECE 415	Image Analysis and Computer Vision I	
ECE 417	Digital Signal Processing II	
ECE 418	Statistical Digital Signal Processing	
ECE 421	Introduction to Antennas and Wireless Propagation	

ECE 423	Electromagnetic Compatibility	
ECE 424	RF and Microwave Guided Propagation	
ECE 432	Digital Communications	
ECE 434	Multimedia Systems	
ECE 436	Computer Communication Networks II	
ECE 437	Wireless Communications	
ECE 440	Nanoelectronics	
ECE 442	Power Semiconductor Devices and Integrated Circuits	
ECE 445	Analysis and Design of Power Electronic Circuits	
ECE 448	Transistors	
ECE 449	Microdevices and Micromachining Technology	
ECE 451	Control Engineering	
ECE 452	Robotics: Algorithms and Control	
ECE 458	Electromechanical Energy Conversion	
ECE 465	Digital Systems Design	
ECE 466	Advanced Computer Architecture	
ECE 467	Introduction to VLSI Design	
ECE 468	Analog and Mixed - Signal Integrated Circuits	
ECE 469	Hardware Description Language Based Digital and Computer System Design	
MCS 425	Codes and Cryptography	
MCS 471	Numerical Analysis	
STAT 471	Linear and Non-Linear Programming	
<b>Total Hours</b>		<b>17</b>

<sup>a</sup> Students preparing for the Fundamentals of Engineering Examination, which leads to becoming a Licensed Professional Engineer, are advised to use these hours to take CME 201, and one of the following to prepare for the Fundamentals of Engineering Exam: CME 203, CME 260, or ME 211.

## Sample Course Schedule

Course	Title	Hours
<b>Freshman Year</b>		
<b>First Semester</b>		
MATH 180	Calculus I	4
CHEM 122	Matter and Energy	3
CHEM 123	Foundations of Chemical Inquiry I	2
ENGL 160	Academic Writing I: Writing in Academic and Public Contexts	3
ECE 115	Introduction to Electrical and Computer Engineering	4
ENGR 100	Engineering Orientation <sup>a</sup>	1
<b>Hours</b>		<b>16</b>
<b>Second Semester</b>		
MATH 181	Calculus II	4
PHYS 141	General Physics I (Mechanics)	4
ENGL 161	Academic Writing II: Writing for Inquiry and Research	3

CS 107	Introduction to Computing and Programming	4
<b>Hours</b>		<b>15</b>

### Sophomore Year

#### First Semester

MATH 210	Calculus III	3
PHYS 142	General Physics II (Electricity and Magnetism)	4
ECE 265	Introduction to Logic Design	4
General Education Core courses		6
<b>Hours</b>		<b>17</b>

#### Second Semester

MATH 220	Introduction to Differential Equations	3
PHYS 260	Introduction to Thermal Physics	2
ECE 266	Introduction to Embedded Systems	4
MATH 310	Applied Linear Algebra	3
General Education Core course		3
<b>Hours</b>		<b>15</b>

### Junior Year

#### First Semester

ECE 225	Circuit Analysis	4
ECE 310	Discrete and Continuous Signals and Systems	3
ECE 341	Probability and Random Processes for Engineers	3
ECE 346	Solid State Device Theory	4
General Education Core course		3
<b>Hours</b>		<b>17</b>

#### Second Semester

ECE 322	Introduction to Electromagnetics and Applications	4
ECE 311	Communication Engineering	4
ECE 317	Digital Signal Processing I	4
ECE 340	Electronics I	4
<b>Hours</b>		<b>16</b>

### Senior Year

#### First Semester

ECE 396	Senior Design I	2
ECE 350	Principles of Automatic Control	4
ECE 342	Electronics II	4
Technical Electives		4
General Education Core course		3
<b>Hours</b>		<b>17</b>

#### Second Semester

ECE 397	Senior Design II	2
ECE 499	Professional Development Seminar	0
Technical Electives		13
<b>Hours</b>		<b>15</b>
<b>Total Hours</b>		<b>128</b>

<sup>a</sup> ENGR 100 is one-semester-hour course, but does not count toward the total hours required for graduation