

# Bachelor Degree in Electrical Engineering

## 1. University Graduation Requirements

To receive a bachelor's degree in Electrical Engineering, a student must fulfill all requirements related to credit hours, grade point average, program of study, and courses.

## 2. Degree Requirements

Type of Requirement	Credit Hours
University Requirements	30
College Requirements	42
Specialization Requirements	56
Specialization Electives	6
<b>Total</b>	<b>134</b>

### ❖ First: University Requirements

University Requirements consist of 30 credit hours distributed as follows:

Course Number	Course Title	Credit Hours	Prerequisite
ARAB 101	Arabic Communication Skills	3	
ARAB 201	Advanced Academic Arabic	3	ARAB 101
CSC 101	Introduction to Computing	3	
ENGL 101	Basic Academic English I	3	
ENGL 102	Basic Academic English II	3	ENGL 101
ENGL 203	Advanced Academic English I	3	ENGL 102
SOCS 101	Islamic Civilization I	3	
SOCS 202	World Civilization	3	
Math 101	Calculus I	3	
	Free Elective	3	
<b>Total</b>		<b>30</b>	

➤ **A Free Elective Course: 3 credit hours**

Course Number	Course Title	Credit Hours	Prerequisite
ASTR 150	Introduction to Astronomy	3	
CHEM 150	Chemistry & Society	3	
FREN 101	Basic French 1	3	
SOCS 102	Islamic Civilization II	3	SOCS 101
SOCS 202	World Civilization II	3	SOCS 201
PHED 101	Physical Education 1	3	

❖ **Second: College Requirements:** College Requirements consist of 42 credit hours distributed as follows:

Number	Title of the Course	Credit Hours	Pre-requisite
MATH 102	Calculus II	3	MATH 101
STAT 230	Probability and Statistics	3	MATH 101
MATH 201	Calculus and Analytic Geometry III	3	MATH 102
MATH 202	Differential equations	3	MATH 102
MATH 215	Linear algebra and Numerical Techniques	3	MATH 202
PHYS 101	Physics I	3	
PHYS 102	Physics II	3	PHYS 101
PHYS 103L	Physics Lab.	1	PHYS 102
CHEM 101	Chemistry I	3	
CHEM 101L	Chemistry Lab	1	
COEN 300	Engineering Economy	3	MATH 202
COEN 401	Engineering ethics	1	COEN 300
ENGL 206	English Technical Writing	3	ENGL 203
ELEE 230	Programming for Engineers	3	CSC 101
CIVE 215	Computer Aided Engineering Drawings	1	MATH 102
ELEE 498	Final Year Project (1)	1	ELEE 350 & ENGL 206
ELEE 499	Final Year Project (2)	3	ELEE 498
ELEE 400	Summer internship training	1	ENGL 206
<b>Total</b>		<b>42</b>	

❖ **Third: Program Specialization Requirements:** Program specialization requirements consist of 62 credit hours: 56 compulsory credit hours, and 6 elective credit hours distributed as follows.

➤ **A: Compulsory Specialization Requirements:** 56 credit hours

distributed as follows.

Course Number	Course Title	Credit Hours	Pre-requisite	Co-requisite
ELEE 210	Electric Circuits I	3	PHYS 102	
ELEE 220	Logic Design	3	CSC 101	
ELEE 240	Electronics	3	ELEE 210	
ELEE 250	Electric Circuits II	3	ELEE 210	
ELEE 250L	Electric Circuits Lab	1		ELEE 250
ELEE 290	Digital Systems	3	ELEE 220	
ELEE 290L	Digital Systems Lab	1		ELEE 290
ELEE 340	Electronic Circuits	3	ELEE 240	
ELEE 340L	Electronic Lab	1	ELEE 240	
ELEE 440L	Electronic Circuits Lab	1	ELEE 340	
ELEE 350	Signals and Systems	3	ELEE 250 & MATH 202	
	Engineering Mechanics	3	PHYS 101	
ELEE 360	Electric Machines	3	ELEE 250	
ELEE 380	Control Systems	3	ELEE 250 & ELEE 350	
ELEE 390	Electromagnetics	3	MATH 201, MATH 202, PHYS 102	
ELEE 399L	MATLAB for Engineers	1	ELEE 230	
ELEE 470	Communication Systems	3	ELEE 350 & STAT 230	
ELEE 480L	Control Lab	1	ELEE 380	
MATH 225	Numerical Computing	3		MATH 215
ELEE 461	Fundamentals of Power Systems	3	ELEE 250	
ELEE 451	Digital Signal Processing	3	ELEE 350	
ELEE 485	Instrumentation	3	ELEE 380	
ELEE 470L	Machines Lab	1	ELEE 360	
ELEE 470L	Communications Lab	1	ELEE 370	
<b>Total</b>			<b>56</b>	



## **B: Elective Specialization Requirements - 6 credit hours to be chosen**

from the following list.

<b>Course Number</b>	<b>Course Title</b>	<b>Credit Hours</b>	<b>Prerequisite</b>
ELEE 462	Power Electronics	3	ELEE340
ELEE 463	Electric Drives	3	ELEE 360
ELEE 465	Power System Planning	3	ELEE 461
ELEE 468	Renewable Energy Systems	3	ELEE 250
ELEE 469	Power System Protection	3	ELEE 461
ELEE 403	Special Topics in electrical Engineering	3	
ELEE 443	RF and Microwave Circuits for Communications	3	ELEE 340 & ELEE 390
ELEE 471	Wireless Communications	3	ELEE 470
ELEE 490	Electromagnetic Waves and Transmission	3	ELEE 390
ELEE 491	Antenna Theory and Design	3	ELEE 390, ELEE 470
ELEE 422	Computer Architecture	3	ELEE 290
ELEE 423	Embedded System Design	3	ELEE 290
ELEE 431	Computer Networks	3	ELEE 350 & STAT 230
ELEE 442	Digital Integrated Circuits	3	ELEE 340 &ELEE 290

## Proposed Sequence of Study

### Year I

First Semester		18 Credit hours		
Code	Course	Title	Credits	Pre-requisites
	ARAB 101	Arabic Communication Skills	3	
	SOCS 101	Islamic Civilization I	3	
	CSC 101	Introduction to Computing	3	
	ENGL 101	Basic Academic English I	3	
	PHYS 101	Physics 101	3	
	MATH 101	Calculus I	3	
<b>TOTAL 18</b>				

### Year I

Second Semester		18 Credit hours		
Code	Course	Title	Credits	Pre-requisites
	ARAB 201	Advanced Academic Arabic	3	ARAB 101
	ENGL 102	Basic Academic English II	3	ENGL 101
	MATH 102	Calculus II	3	MATH 101
	PHYS 102	Physics II	3	PHYS 101
	CHEM 101	Chemistry I	3	
	ELEE 230	Programming for Engineers	3	CSC 101
<b>TOTAL 18</b>				

**Year II**

<b>Third Semester</b>		<b>18 Credit hours</b>		
	ENGL 203	Advanced Academic English I	3	ENGL 102
	MATH 201	Calculus and Analytic Geometry III	3	MATH 102
	MATH 202	Differential equations	3	MATH 102
	PHYS 103L	Physics Lab.	1	PHYS 102
	CIVE 205	Engineering Drawings	1	MATH 102
	MECH 230	Engineering Materials	3	CHEM 101
	SOCS 201	Islamic Civilization II	3	SOCS 101
<b>TOTAL 17</b>				

**Year II**

<b>Fourth Semester</b>		<b>15 Credit hours</b>		
<b>Code</b>	<b>Course</b>	<b>Title</b>	<b>Credits</b>	<b>Pre-requisites</b>
	STAT 230	Probability and Statistics	3	MATH 101
	MATH 215	Linear algebra and Numerical Techniques	3	MATH 202
	RSEE 260	Thermodynamics	2	MATH 202
	ENGL 206	English Technical Writing	2	ENGL 203
	RSEE 210	Circuits for Renewable Engineering	3	MATH 202
	RSEE 250	Digital Systems	3	MATH 202
<b>TOTAL 16</b>				

**Year III**

<b>Fifth Semester</b>		<b>18 Credit hours</b>		
<b>Code</b>	<b>Course</b>	<b>Title</b>	<b>Credits</b>	<b>Pre-requisites</b>
	ELEE 360	Machines	3	RSEE 210
	ELEE 350	Signals and Systems	3	RSEE 210 + MATH 202
	RSEE 320	Fundamental of Renewable Energy	3	RSEE 210
	MECH 342	Heat Transfer	3	RSEE 260
	RSEE 240	Electronics for Renewable Engineering	3	RSEE 210
	COEN 300	Engineering Economy	3	MATH 202
<b>Total 18</b>				

**Year III**

<b>Sixth Semester</b>		<b>18 Credit hours</b>		
<b>Code</b>	<b>Course</b>	<b>Title</b>	<b>Credits</b>	<b>Pre-requisites</b>
	ELEE 380	Control Systems	3	ELEE 350
	RSEE 310	Fundamental of Power Electronics	3	RSEE 240
	COEN 400	Engineering ethics and Public Speaking	3	COEN 300
	RSEE 340	Fundamental of Power Systems	3	ELEE 360
	RSEE 420	Renewable Engineering (1): Applied Photovoltaic	3	RSEE 320
	RSEE 245L	Circuit and Electronics Lab	1	RSEE 245
	ELEE 480L	Control Systems Lab.	1	ELEE 480
<b>Total 17</b>				

**Year III**

<b>Summer Semester</b>		<b>1 Credit hours</b>		
<b>Code</b>	<b>Course</b>	<b>Title</b>	<b>Credits</b>	<b>Pre-requisites</b>
	RSEE 400	Summer internship training	1	
<b>Total 1</b>				

**Year IV**

<b>Seventh Semester</b>		<b>15 Credit hours</b>		
<b>Code</b>	<b>Course</b>	<b>Title</b>	<b>Credits</b>	<b>Pre-requisites</b>
	RSEE 350	Solar Thermal Energy Design	3	RSEE 310
	RSEE 498	Final Year Project (1)	1	RSEE 320
	RSEE 460	Renewable Engineering (2): Wind Energy	3	RSEE 320
	SOCS 202	World Civilization	3	
	RSEE 460L	Photovoltaic Lab	1	RSEE 420
		Specialization Elective	3	-
		Specialization Elective	3	-
<b>Total 17</b>				

**Year IV**

<b>Eighth Semester</b>		<b>16 Credit hours</b>		
<b>Code</b>	<b>Course</b>	<b>Title</b>	<b>Credits</b>	<b>Pre-requisites</b>
	RSEE 499	Final Year Project (2)	3	RSEE 498
	RSEE 465	Smart City Applications	3	RSEE 320
	RSEE 470	Renewable Engineering (3): Other Renewable Energies	3	RSEE 320
	RSEE 475	Energy Economics and Managements	3	RSEE 310
		Specialization Elective	3	-
		Free Elective	3	
<b>TOTAL 18</b>				