

# Electronics and Electrical Engineering

## Bachelor of Science

### Description

The BS Electronics and Electrical Engineering program provides students with marketable degrees in fields much in demand enabling them to attain high-paying jobs and pursue successful careers. Given how central technology is to the economy and society more broadly, engineering graduates have a singular ability to attain leadership roles in a diverse array of workplace settings. The ongoing fourth industrial revolution is likely to ensure that technology will impact an increasing number of daily activities due to the rapid adoption of interconnected and networked devices. Human dependence on technology will spawn even more technologies and increase demand for those who can produce new technology products and services. Carolina University's integrated BS and MS engineering programs will empower graduates to be at the forefront of Industry 4.0 (or 4IR) and create a new generation of influential leaders equipped with a distinctive ethics and worldview.

The programs are offered as integrated BS and MS degrees enabling students to complete a master's degree in five years of full-time study. Students can exit with a BS degree if they complete 121 credits or continue on to finish an MS degree by taking 156-160 credits. Students who already possess a BS in the relevant area can enter directly into the MS program and graduate after completing 48 credits.

The BS Electronics and Electrical Engineering program is differentiated in many aspects. For instance, the integrated option of obtaining a master's degree in five years is very attractive and only offered by a few schools. Secondly, the program is differentiated by a substantially more affordable tuition rate – critical at a time of booming college debt and growing concerns about equity and access. Carolina University's new program puts a highly valuable degree program within the reach of a wider pool of aspirants who do not have the financial means to pursue such studies at the more expensive institutions. Furthermore, our emphasis on building capabilities of students who may not have experienced the benefits of sound preparation due to economic hardships, is different to the educational philosophy at other engineering programs that are not geared towards addressing the deficits of such students. Finally, Carolina University's engineering program integrates internships and work-integrated learning as essential components in order to build workplace skills and enhance employability.

### Admissions Requirements

- A high school diploma or GED
- GPA of 2.0 or higher
- Official transcripts from all previously attended schools
- Completed application with Carolina University

### Graduation Requirements

In order to become a candidate for graduation a student:

1. Shall have completed a minimum of 30 credit hours at CU;
2. Shall have maintained a minimum academic average of C (higher for some programs);
3. Shall have passed all courses in his/her curriculum and made a C or better in key courses designated as essential in each program;

4. Shall have completed at least 24 of the final 30 hours with Carolina University.

## **Courses**

### **General Education Core (36 Credit Hours) - must include the following:**

[GC 205 - Calculus I](#)

3 Credit Hours

[GC 206 - Calculus II](#)

3 Credit Hours

### **Professional Core (37 Credit Hours)**

[CS 110 - Programming I](#)

3 Credit Hours

[EL 100 - Introduction to Electrical Engineering](#)

1 Credit Hour

[EL 205 - Digital System Design w/Lab](#)

4 Credit Hours

[EL 210 - General Principles of Electric Circuits I w/Lab](#)

4 Credit Hours

[EL 215 - General Principles of Electric Circuits II w/Lab](#)

4 Credit Hours

[EL 235 - Semiconductor Devices w/Lab](#)

4 Credit Hours

[EL 250 - Analog Electronics w/Lab](#)

4 Credit Hours

[EL 310 - Signals and Systems](#)

3 Credit Hours

[EL 330 - High Frequency Communication Circuits with Lab](#)

4 Credit Hours

[MA 310 - Linear Algebra](#)

3 Credit Hours

[MA 315 - Ordinary Differential Equations](#)

3 Credit Hours

### **Professional Electives (30 Credit Hours)**

EL Courses (Choose 12 Credit Hours)

[EL 220 - Engineering Graphics](#)

2 Credit Hours

[EL 240 - Engineering Mechanics](#)

3 Credit Hours

[EL 320 - Random Signals and Noise](#)

3 Credit Hours

[EL 350 - RF & Microwave Circuits for Wireless Communication w/Lab](#)

4 Credit Hours

[EL 480 - Microprocessor and Microcontroller with Lab](#)

4 Credit Hours

[EL 410 - Digital Signal Processing with Lab](#)

3 Credit Hours

[EL 430 - Control Systems with Lab](#)

4 Credit Hours

[EL 440 - Communication Systems with Lab](#)

4 Credit Hours

[EL 450 - Advanced Digital System Designwith FPGA with Lab](#)

4 Credit Hours

[EL 499 - Senior Internship](#)

3 Credit Hours

MA Courses (Choose 12 Credit Hours)

[MA 205 - Calculus III](#)

3 Credit Hours

[MA 300 - Introduction to Probability and Sta](#)

3 Credit Hours

[MA 305 - Calculus IV](#)

3 Credit Hours

[MA 320 - Discrete Mathematics](#)

3 Credit Hours

[MA 410 - Partial Differential Equations](#)

3 Credit Hours

CS Courses (Choose 6 Credit Hours)

[CS 111 - Programming II](#)

3 Credit Hours

[CS 150 - Scripting](#)

3 Credit Hours

[CS 205 - Python Programming](#)

3 Credit Hours

[CS 210 - Algorithms and Data Structures](#)

3 Credit Hours

[CS 220 - Object Oriented Programming](#)

3 Credit Hours

[CS 222 - C# Programming](#)

3 Credit Hours

[CS 250 - Cloud Computing](#)

3 Credit Hours

**Free Electives (18 Credit Hours)**