## COMPUTER ENGINEERING, B.S.E.

### Degree Requirements (125-137 hours)

See College of Engineering and Computing (https://academicbulletins.sc.edu/undergraduate/engineering-computing/) for progression requirements and special academic opportunities.

### Program of Study

<table>
<thead>
<tr>
<th>Requirements</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Carolina Core</td>
<td>35-44</td>
</tr>
<tr>
<td>2. College Requirements</td>
<td>0</td>
</tr>
<tr>
<td>3. Program Requirements</td>
<td>57</td>
</tr>
<tr>
<td>4. Major Requirements</td>
<td>33</td>
</tr>
</tbody>
</table>

#### Founding Documents Requirement

All undergraduate students must take a 3-credit course or its equivalent with a passing grade in the subject areas of History, Political Science, or African American Studies that covers the founding documents including the United State Constitution, the Declaration of Independence, the Emancipation Proclamation and one or more documents that are foundational to the African American Freedom struggle, and a minimum of five essays from the Federalist papers. This course may count as a requirement in any part of the program of study including the Carolina Core, the major, minor or cognate, or as a general elective. Courses that meet this requirement are listed here (https://academicbulletins.sc.edu/undergraduate/founding-document-courses/).

### 1. Carolina Core Requirements (35-44 hours)

**CMW – Effective, Engaged, and Persuasive Communication: Written (6 hours)**

*Must be passed with a grade of C or higher.*

- ENGL 101
- ENGL 102

**ARP – Analytical Reasoning and Problem Solving (8 hours)**

*Must be passed with a grade of C or higher.*

- MATH 141
- MATH 142

**SCI – Scientific Literacy (8 hours)**

- CHEM 111 & CHEM 111L - *must be passed with a grade of C or higher*
- PHYS 211 & PHYS 211L - *must be passed with a grade of C or higher*

**GFL – Global Citizenship and Multicultural Understanding: Foreign Language (0-6 hours)**

Score two or better on foreign language placement test; or complete the 109 and 110 courses in FREN, GERM, LATN or SPAN; or complete the 121 course in another foreign language.

### 2. College Requirements (0 hours)

*No college-required courses for this program.*

### 3. Program Requirements (57 hours)

#### Supporting Courses (57 hours)

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>MATH 241</td>
<td>Vector Calculus</td>
<td>3</td>
</tr>
<tr>
<td>MATH 242</td>
<td>Elementary Differential Equations</td>
<td>3</td>
</tr>
<tr>
<td>MATH 344</td>
<td>Applied Linear Algebra</td>
<td>3</td>
</tr>
<tr>
<td>MATH 344L</td>
<td>Applied Linear Algebra Lab</td>
<td>1</td>
</tr>
<tr>
<td>MATH 374</td>
<td>Discrete Structures (must be passed with a grade of C or higher)</td>
<td>3</td>
</tr>
<tr>
<td>PHYS 212</td>
<td>Essentials of Physics II</td>
<td>3</td>
</tr>
<tr>
<td>PHYS 212L</td>
<td>Essentials of Physics II Lab</td>
<td>1</td>
</tr>
<tr>
<td>STAT 509</td>
<td>Statistics for Engineers</td>
<td>3</td>
</tr>
<tr>
<td>ENGL 462</td>
<td>Technical Writing</td>
<td>3</td>
</tr>
</tbody>
</table>

or ENGL 463 Business Writing

#### Foundational Courses

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or ENGL 463 Business Writing

#### Lower Division Computing

- CC-GFL courses (https://academicbulletins.sc.edu/undergraduate/carolina-core-courses/)
- any CC-GHS course (https://academicbulletins.sc.edu/undergraduate/carolina-core-courses/)
- any CC-GSS course (https://academicbulletins.sc.edu/undergraduate/carolina-core-courses/)
- any CC-AIU course (https://academicbulletins.sc.edu/undergraduate/carolina-core-courses/)
- any CC-CMS course (https://academicbulletins.sc.edu/undergraduate/carolina-core-courses/)
- any overlay or stand-alone CC-INF course (https://academicbulletins.sc.edu/undergraduate/carolina-core-courses/)
- CSCE 390 - *must be passed with a grade of C or higher*

1 Carolina Core Stand Alone or Overlay Eligible Requirements — Overlay-approved courses offer students the option of meeting two Carolina Core components in a single course. A maximum of two overlays is allowed. The total Carolina Core credit hours for this program must add up to a minimum of 35 hours.
Computer Engineering, B.S.E.

Must be passed with a grade of C or higher:

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>CSCE 145</td>
<td>Algorithmic Design I</td>
<td>4</td>
</tr>
<tr>
<td>CSCE 146</td>
<td>Algorithmic Design II</td>
<td>4</td>
</tr>
<tr>
<td>CSCE 190</td>
<td>Computing in the Modern World</td>
<td>1</td>
</tr>
<tr>
<td>CSCE 211</td>
<td>Digital Logic Design</td>
<td>3</td>
</tr>
<tr>
<td>CSCE 212</td>
<td>Introduction to Computer Architecture</td>
<td>3</td>
</tr>
<tr>
<td>CSCE 215</td>
<td>UNIX/Linux Fundamentals</td>
<td>1</td>
</tr>
<tr>
<td>CSCE 240</td>
<td>Advanced Programming Techniques</td>
<td>3</td>
</tr>
<tr>
<td>CSCE 274</td>
<td>Robotic Applications and Design</td>
<td>3</td>
</tr>
</tbody>
</table>

Electrical Engineering

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
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</tr>
</thead>
<tbody>
<tr>
<td>ELCT 102</td>
<td>Electrical Science</td>
<td>3</td>
</tr>
<tr>
<td>ELCT 201</td>
<td>Introductory Electrical Engineering Laboratory</td>
<td>3</td>
</tr>
<tr>
<td>ELCT 221</td>
<td>Circuits</td>
<td>3</td>
</tr>
<tr>
<td>ELCT 222</td>
<td>Signals and Systems</td>
<td>3</td>
</tr>
</tbody>
</table>

Total Credit Hours 57

4. Major Requirements (33-36 hours)

Must be passed with a grade of C or higher.

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<tr>
<th>Course</th>
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<th>Credits</th>
</tr>
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<tbody>
<tr>
<td>CSCE 311</td>
<td>Operating Systems</td>
<td>3</td>
</tr>
<tr>
<td>CSCE 313</td>
<td>Embedded Systems</td>
<td>3</td>
</tr>
<tr>
<td>CSCE 350</td>
<td>Data Structures and Algorithms</td>
<td>3</td>
</tr>
<tr>
<td>CSCE 416</td>
<td>Introduction to Computer Networks</td>
<td>3</td>
</tr>
<tr>
<td>CSCE 490</td>
<td>Capstone Computing Project I</td>
<td>3</td>
</tr>
<tr>
<td>CSCE 491</td>
<td>Capstone Computer Engineering Project</td>
<td>3</td>
</tr>
<tr>
<td>CSCE 492</td>
<td>Capstone Computing Project II</td>
<td>3</td>
</tr>
<tr>
<td>CSCE 611</td>
<td>Advanced Digital Design</td>
<td>3</td>
</tr>
</tbody>
</table>

Major Electives (9 hours)

Students must complete 9 hours of Major Electives below. Students may choose to complete a 12-hour concentration in Artificial Intelligence or Cybersecurity in place of the Major Electives.

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Select from the following:</td>
<td>9</td>
<td></td>
</tr>
<tr>
<td>CSCE 330</td>
<td>Programming Language Structures</td>
<td></td>
</tr>
<tr>
<td>CSCE 355</td>
<td>Foundations of Computation</td>
<td></td>
</tr>
<tr>
<td>ELCT 321</td>
<td>Digital Signal Processing</td>
<td></td>
</tr>
<tr>
<td>ELCT 331</td>
<td>Control Systems</td>
<td></td>
</tr>
<tr>
<td>Other approved CSCE courses numbered 510 and higher</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Total Credit Hours 9

Concentrations (12 hours)

Students may choose to complete a 12-hour concentration below in place of the 9 hours of Major Electives.

Artificial Intelligence Concentration (12 hours)

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>CSCE 580</td>
<td>Artificial Intelligence</td>
<td>3</td>
</tr>
<tr>
<td>Select three courses from the following:</td>
<td>9</td>
<td></td>
</tr>
<tr>
<td>CSCE 555</td>
<td>Algorithms in Bioinformatics</td>
<td></td>
</tr>
<tr>
<td>CSCE 567</td>
<td>Visualization Tools</td>
<td></td>
</tr>
<tr>
<td>CSCE 574</td>
<td>Robotics</td>
<td></td>
</tr>
</tbody>
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<tbody>
<tr>
<td>CSCE 578</td>
<td>Text Processing</td>
<td></td>
</tr>
<tr>
<td>CSCE 582</td>
<td>Bayesian Networks and Decision Graphs</td>
<td></td>
</tr>
<tr>
<td>CSCE 585</td>
<td>Machine Learning Systems</td>
<td></td>
</tr>
<tr>
<td>CSCE 587</td>
<td>Big Data Analytics</td>
<td></td>
</tr>
</tbody>
</table>

Cybersecurity Concentration (12 hours)

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>CSCE 201</td>
<td>Introduction to Computer Security</td>
<td>3</td>
</tr>
<tr>
<td>CSCE 522</td>
<td>Information Security Principles</td>
<td>3</td>
</tr>
<tr>
<td>CSCE 548</td>
<td>Building Secure Software</td>
<td>3</td>
</tr>
<tr>
<td>Select one course from the following:</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>CSCE 520</td>
<td>Database System Design</td>
<td></td>
</tr>
<tr>
<td>CSCE 557</td>
<td>Introduction to Cryptography</td>
<td></td>
</tr>
</tbody>
</table>

Total Credit Hours 12