COMPUTER ENGINEERING, B.S.E.

Degree Requirements (125-134 hours)

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

Program of Study

Requirements                        Credit Hours
1. Carolina Core                    35-41
2. College Requirements             0
3. Program Requirements             57
4. Major Requirements               33-36

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 States 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 (35-41 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.

- CC-GFL courses (https://academicbulletins.sc.edu/undergraduate/carolina-core-courses/)

GHS – Global Citizenship and Multicultural Understanding: Historical Thinking (3 hours)

- any CC-GHS course (https://academicbulletins.sc.edu/undergraduate/carolina-core-courses/)

GSS – Global Citizenship and Multicultural Understanding: Social Sciences (3 hours)

- any CC-GSS course (https://academicbulletins.sc.edu/undergraduate/carolina-core-courses/)

AIU – Aesthetic and Interpretive Understanding (3 hours)

- any CC-AIU course (https://academicbulletins.sc.edu/undergraduate/carolina-core-courses/)

CMS – Effective, Engaged, and Persuasive Communication: Spoken Component (3 hours)

- any CC-CMS course (https://academicbulletins.sc.edu/undergraduate/carolina-core-courses/)

INF – Information Literacy (0 hours)

- ENGL 102

VSR – Values, Ethics, and Social Responsibility (1 hour)

- CSCE 390 - must be passed with a grade of C or higher

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.

2. College Requirements (0 hours)

No college-required courses for this program.

3. Program Requirements (57 hours)

Supporting Courses (57 hours)

Course    Title                                      Credits

Foundational Courses
MATH 241  Vector Calculus                          3
MATH 242  Elementary Differential Equations        3
MATH 344  Applied Linear Algebra                   3
MATH 344L Applied Linear Algebra Lab               1
MATH 374  Discrete Structures (must be passed with a grade of C or higher) 3

PHYS 212  Essentials of Physics II                 3
PHYS 212L Essentials of Physics II Lab             1
STAT 509  Statistics for Engineers                 3
ENGL 462  Technical Writing or ENGL 463 Business Writing 3

Lower Division Computing

Must be passed with a grade of C or higher.
Computer Engineering, B.S.E.

CSCE 145  Algorithmic Design I  4
CSCE 146  Algorithmic Design II  4
CSCE 190  Computing in the Modern World  1
CSCE 211  Digital Logic Design  3
CSCE 212  Introduction to Computer Architecture  3
CSCE 215  UNIX/Linux Fundamentals  1
CSCE 240  Advanced Programming Techniques  3
CSCE 274  Robotic Applications and Design  3

Electrical Engineering
ELCT 102  Electrical Science  3
ELCT 201  Introductory Electrical Engineering Laboratory  3
ELCT 221  Circuits  3
ELCT 222  Signals and Systems  3

Total Credit Hours  57

4. Major Requirements (33-36 hours)

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 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>

Total Credit Hours  24

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>CSCE 330</td>
<td>Programming Language Structures</td>
<td>3</td>
</tr>
<tr>
<td>CSCE 355</td>
<td>Foundations of Computation</td>
<td>3</td>
</tr>
<tr>
<td>ELCT 321</td>
<td>Digital Signal Processing</td>
<td>3</td>
</tr>
<tr>
<td>ELCT 331</td>
<td>Control Systems</td>
<td>3</td>
</tr>
<tr>
<td>Other approved CSCE courses numbered 510 and higher</td>
<td>9</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>
</tbody>
</table>

Select three courses from the following:  9

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>CSCE 555</td>
<td>Algorithms in Bioinformatics</td>
<td>3</td>
</tr>
<tr>
<td>CSCE 567</td>
<td>Visualization Tools</td>
<td>3</td>
</tr>
<tr>
<td>CSCE 574</td>
<td>Robotics</td>
<td>3</td>
</tr>
</tbody>
</table>

Total Credit Hours  12

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>
</tbody>
</table>

Select one course from the following:  3

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>CSCE 520</td>
<td>Database System Design</td>
<td>3</td>
</tr>
<tr>
<td>CSCE 557</td>
<td>Introduction to Cryptography</td>
<td>3</td>
</tr>
</tbody>
</table>

Total Credit Hours  12