Bachelor of Science in Computer Engineering

Computer engineering encompasses studies of hardware, software, and systems issues that arise in the design, development, and application of computer systems. Computer engineers are particularly well suited to address the particular challenges that exist as computing systems interact with the real, physical world. This includes sensing, actuation, timing, security, and computing systems with widely varying form factors, ranging from servers to mobile devices to the Internet of Things (IoT).

Students working toward a Bachelor of Science in Computer Engineering (BScOE) degree must meet all requirements for an engineering degree (http://bulletin.wustl.edu/prior/2018-19/undergrad/engineering/requirements) from the School of Engineering & Applied Science. Required courses and technical electives cannot be taken on a pass/fail basis.

• Common Studies Program Requirements:

Computer engineering students must meet the common studies program requirements, which are required of all students pursuing an engineering degree. These requirements, as they pertain to BScOE students specifically, are described below:

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>Math 131</td>
<td>Calculus I</td>
<td>3</td>
</tr>
<tr>
<td>Math 132</td>
<td>Calculus II</td>
<td>3</td>
</tr>
<tr>
<td>Math 217</td>
<td>Differential Equations</td>
<td>3</td>
</tr>
<tr>
<td>Math 233</td>
<td>Calculus III</td>
<td>3</td>
</tr>
<tr>
<td>Physics 197</td>
<td>Physics I</td>
<td>4</td>
</tr>
<tr>
<td>Physics 198</td>
<td>Physics II</td>
<td>4</td>
</tr>
<tr>
<td>Natural Sciences elective</td>
<td></td>
<td>3</td>
</tr>
<tr>
<td>CWP 100</td>
<td>College Writing 1 (unless waived)</td>
<td>3</td>
</tr>
<tr>
<td>Engr 310</td>
<td>Technical Writing</td>
<td>3</td>
</tr>
<tr>
<td>Humanities and social sciences electives,</td>
<td></td>
<td>18</td>
</tr>
<tr>
<td>Total Units</td>
<td></td>
<td>47</td>
</tr>
</tbody>
</table>

Upon completing a course in the calculus sequence (Math 131-Math 132-Math 233) with a grade of C- or better, the student may apply to receive credit for the preceding courses in the calculus sequence by following the mathematics and statistics department's back credit policy (http://college.artsci.wustl.edu/policies/placement_credit/backcredit).

The Natural Sciences requirement is for 3 units designated NSM (Natural Sciences and Mathematics) from any of the following departments: Anthropology, Biology, Chemistry, Earth and Planetary Sciences, Environmental Studies, or Physics. These courses must be completed with a grade of C- or better.

The College Writing and Humanities and Social Sciences requirements are those required of all students in the School of Engineering & Applied Science.

• Computer Engineering Core Requirements:

The following courses are required of all computer engineering students:

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>CSE 131</td>
<td>Introduction to Computer Science</td>
<td>3</td>
</tr>
<tr>
<td>CSE 132</td>
<td>Introduction to Computer Engineering</td>
<td>3</td>
</tr>
<tr>
<td>ESE 230</td>
<td>Introduction to Electrical and Electronic Circuits</td>
<td>4</td>
</tr>
<tr>
<td>ESE 232</td>
<td>Introduction to Electronic Circuits</td>
<td>3</td>
</tr>
<tr>
<td>CSE 240</td>
<td>Logic and Discrete Mathematics</td>
<td>3</td>
</tr>
<tr>
<td>or Math 310</td>
<td>Foundations for Higher Mathematics</td>
<td></td>
</tr>
<tr>
<td>CSE 247</td>
<td>Data Structures and Algorithms</td>
<td>3</td>
</tr>
<tr>
<td>CSE 260M</td>
<td>Introduction to Digital Logic and Computer Design</td>
<td>3</td>
</tr>
<tr>
<td>ESE 326</td>
<td>Probability and Statistics for Engineering</td>
<td>3-6</td>
</tr>
<tr>
<td>or Math 3200</td>
<td>Elementary to Intermediate Statistics and Data Analysis</td>
<td></td>
</tr>
<tr>
<td>or QBA 120 &amp; QBA 121</td>
<td>Managerial Statistics I and Managerial Statistics II</td>
<td></td>
</tr>
<tr>
<td>or Psych 300</td>
<td>Introduction to Psychological Statistics</td>
<td></td>
</tr>
<tr>
<td>CSE 361S</td>
<td>Introduction to Systems Software</td>
<td>3</td>
</tr>
<tr>
<td>CSE 362M</td>
<td>Computer Architecture</td>
<td>3</td>
</tr>
<tr>
<td>CSE 422S</td>
<td>Operating Systems Organization</td>
<td>3</td>
</tr>
<tr>
<td>CSE 462M</td>
<td>Computer Systems Design</td>
<td>3</td>
</tr>
<tr>
<td>or CSE 465M</td>
<td>Digital Systems Laboratory</td>
<td></td>
</tr>
<tr>
<td>Total Units</td>
<td></td>
<td>37-40</td>
</tr>
</tbody>
</table>

Each of these core courses must be passed with a grade of C- or better.

• Computer Engineering Technical Electives:

In addition to the core courses, at least 18 units of technical electives, drawn from either of the following:

- CSE courses with suffix S, M, T or A,
- ESE courses at the 300 level or higher.

The above can include courses at the graduate level; however, they must still meet one of the two criteria above. Up to 6 units of Independent Study (CSE 400E, CSE 497-CSE 499, ESE 400, ESE 497) can count toward technical electives. There is no limit as to how many independent study courses can count toward the general 120 units.