BS GENERAL ENGINEERING

Program Learning Outcomes

1. An ability to apply knowledge of mathematics, science, and engineering
2. An ability to design and conduct experiments, as well as to analyze and interpret data
3. An ability to design a system, component, or process to meet desired needs within realistic constraints such as economic, environmental, social, political, ethical, health and safety, manufacturability, and sustainability
4. An ability to function on multidisciplinary teams
5. An ability to identify, formulate, and solve engineering problems
6. An understanding of professional and ethical responsibility
7. An ability to communicate effectively
8. The broad education necessary to understand the impact of engineering solutions in a global, economic, environmental, and societal context
9. A recognition of the need for, and an ability to engage in life-long learning
10. A knowledge of contemporary issues
11. An ability to use the techniques, skills, and modern engineering tools necessary for engineering practice

Degree Requirements and Curriculum

In addition to the program requirements listed on this page, students must also satisfy requirements outlined in more detail in the Minimum Requirements for Graduation (http://catalog.calpoly.edu/generalrequirementsbachelorsdegree/#generaleducationtext) section of this catalog, including:

- 60 units of upper division courses
- Graduation Writing Requirement (GWR)
- 2.0 GPA
- U.S. Cultural Pluralism (USCP)

Note: No major, support or concentration courses may be selected as credit/no credit.

MAJOR COURSES

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>CE 204</td>
<td>Mechanics of Materials I</td>
<td>3</td>
</tr>
<tr>
<td>CSC/CPE 101</td>
<td>Fundamentals of Computer Science</td>
<td>4</td>
</tr>
<tr>
<td>EE 201</td>
<td>Electric Circuit Theory</td>
<td>4</td>
</tr>
<tr>
<td>&amp; EE 251</td>
<td>Electric Circuits Laboratory</td>
<td></td>
</tr>
<tr>
<td>ENGR 110</td>
<td>Introduction to Engineering</td>
<td>2</td>
</tr>
<tr>
<td>IME 144</td>
<td>Introduction to Design and Manufacturing</td>
<td>4</td>
</tr>
<tr>
<td>IME 314</td>
<td>Engineering Economics</td>
<td>3</td>
</tr>
<tr>
<td>MATE 210 &amp; 215</td>
<td>Materials Engineering and Materials Laboratory I</td>
<td>4</td>
</tr>
<tr>
<td>ME 211</td>
<td>Engineering Statics</td>
<td>3</td>
</tr>
<tr>
<td>ME 212</td>
<td>Engineering Dynamics</td>
<td>3</td>
</tr>
<tr>
<td>ME 302</td>
<td>Thermodynamics I</td>
<td>3</td>
</tr>
<tr>
<td>ME 341</td>
<td>Fluid Mechanics I</td>
<td>3</td>
</tr>
<tr>
<td>Select from the following:</td>
<td></td>
<td>4</td>
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<tr>
<td>ME 350</td>
<td>Heat Transfer</td>
<td></td>
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</tbody>
</table>

Select from the following:

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
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</thead>
<tbody>
<tr>
<td>MATE 325</td>
<td>Transport Phenomena I</td>
</tr>
<tr>
<td>MATE 326</td>
<td>Transport Phenomena II</td>
</tr>
<tr>
<td>MATE 327</td>
<td>Transport Phenomena III</td>
</tr>
<tr>
<td>And 1 additional unit of an upper-division Technical Elective</td>
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Select from the following:

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
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<tbody>
<tr>
<td>ENGR 459</td>
<td>Interdisciplinary Senior Design Project I</td>
</tr>
<tr>
<td>ENGR 460</td>
<td>Interdisciplinary Senior Design Project II</td>
</tr>
<tr>
<td>ENGR 461</td>
<td>Interdisciplinary Senior Design Project III</td>
</tr>
</tbody>
</table>

Or

Senior Project in appropriate engineering discipline

General Curriculum in General Engineering or Individualized Course of Study

SUPPORT COURSES

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>CHEM 124 &amp; 125</td>
<td>General Chemistry for Physical Science and Engineering I</td>
<td>4</td>
</tr>
<tr>
<td>CHEM 127 &amp; 128</td>
<td>General Chemistry for Agriculture and Life Science I</td>
<td>8</td>
</tr>
<tr>
<td>CHEM 149</td>
<td>Technical Writing for Engineers (A3)</td>
<td>3</td>
</tr>
<tr>
<td>MATH 141 &amp; 142</td>
<td>Calculus I and Calculus II (B1)</td>
<td>8</td>
</tr>
<tr>
<td>MATH 143</td>
<td>Calculus III (Add'l Area B)</td>
<td>4</td>
</tr>
<tr>
<td>MATH 241</td>
<td>Calculus IV</td>
<td>4</td>
</tr>
<tr>
<td>MATH 244</td>
<td>Linear Analysis I</td>
<td>4</td>
</tr>
<tr>
<td>Select from the following:</td>
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<td>4</td>
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<tr>
<td>MATH 344</td>
<td>Linear Analysis II</td>
<td></td>
</tr>
<tr>
<td>STAT 312</td>
<td>Statistical Methods for Engineers</td>
<td></td>
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<tr>
<td>STAT 350</td>
<td>Probability and Random Processes for Engineers (B6)</td>
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</tr>
<tr>
<td>PHYS 141</td>
<td>General Physics IA (Add'l Area B)</td>
<td>4</td>
</tr>
<tr>
<td>PHYS 132 &amp; 133</td>
<td>General Physics II and General Physics III</td>
<td>8</td>
</tr>
</tbody>
</table>

Select from the following:

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
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</thead>
<tbody>
<tr>
<td>CHEM 126</td>
<td>General Chemistry for Physical Science and Engineering III</td>
</tr>
<tr>
<td>CHEM 129</td>
<td>General Chemistry for Agriculture and Life Science III</td>
</tr>
<tr>
<td>CHEM 216</td>
<td>Organic Chemistry I</td>
</tr>
<tr>
<td>CHEM 217</td>
<td>Organic Chemistry II</td>
</tr>
<tr>
<td>CHEM 220</td>
<td>Organic Chemistry Laboratory For Life Sciences II</td>
</tr>
<tr>
<td>CHEM 221</td>
<td>Organic Chemistry Laboratory II</td>
</tr>
<tr>
<td>CHEM 312</td>
<td>Survey of Organic Chemistry</td>
</tr>
</tbody>
</table>
General Curriculum in BS General Engineering or Individualized Course of Study (Select one)

Available to students who have completed their Sophomore year in any engineering major. This program is for directed, highly motivated students. Permits students to pursue a course of study which meets their individual needs and interests. The individualized course of study consists of 40 units of technical electives with a minimum of 33 units at the 300-400 level. Courses are selected by the student with the advice and approval of the student's academic advisor and department chair.

General Education (GE) Requirements

1. 72 units required, 32 of which are specified in Major and/or Support.
2. See the complete GE course listing (http://catalog.calpoly.edu/generalrequirementsbachelorsdegree/#generaleducationtext).
3. Minimum of 8 units required at the 300 level.

<table>
<thead>
<tr>
<th>Area A</th>
<th>Communication</th>
</tr>
</thead>
<tbody>
<tr>
<td>A1</td>
<td>Expository Writing</td>
</tr>
<tr>
<td>A2</td>
<td>Oral Communication</td>
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</tbody>
</table>