BA LIBERAL ARTS AND ENGINEERING STUDIES

Program Learning Objectives
Graduates of the Liberal Arts and Engineering Studies program receive a solid foundation in engineering and scientific principles, as well as a cultural appreciation that supports them in careers requiring significant levels of technical and cultural fluency. To support these goals, the primary learning objectives are to:

1. Think critically and creatively in the process of solving technosocial problems considering philosophical, aesthetic and expressive concerns.
2. Communicate effectively through a variety of media in diverse, multicultural perspectives and facilitate communication between technical and non-technical collaborators.
3. Use mathematics, science, and engineering principles to produce solutions to problems within the student’s Liberal Arts and Engineering concentrations.
4. Function effectively as a member of interdisciplinary or international teams, formulating sustainable solutions to problems at the intersection of technology and society.
5. Demonstrate ethical and professional responsibilities associated with the creation, use and integration of technology.
6. Serve as informed and responsible citizens in a global culture and remain involved with learning and helping society improve.

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) section of this catalog, including:

- 60 units of upper division courses
- 2.0 GPA
- Graduation Writing Requirement (GWR)
- 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>CHEM 124</td>
<td>General Chemistry for Physical Science and Engineering I (B3/B4)</td>
<td>4</td>
</tr>
<tr>
<td>ENGL 149</td>
<td>Technical Writing for Engineers (A3)</td>
<td>4</td>
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<tr>
<td>LAES 301</td>
<td>Project-Based Learning in Liberal Arts and Engineering Studies</td>
<td>4</td>
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<tr>
<td>LAES 302</td>
<td>Advanced Project-Based Learning in Liberal Arts and Engineering Studies</td>
<td>4</td>
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<tr>
<td>LAES 461</td>
<td>Senior Project in Liberal Arts and Engineering Studies</td>
<td>4</td>
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<tr>
<td>LAES 462</td>
<td>Capstone Senior Seminar in Liberal Arts and Engineering Studies</td>
<td>4</td>
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<tr>
<td>MATH 141</td>
<td>Calculus I (B1)</td>
<td>4</td>
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<tr>
<td>MATH 142</td>
<td>Calculus II (B1)</td>
<td>4</td>
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<tr>
<td>MATH 143</td>
<td>Calculus III (B5)</td>
<td>4</td>
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<tr>
<td>MATH 241</td>
<td>Calculus IV</td>
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<tr>
<td>MATH 244</td>
<td>Linear Analysis I</td>
<td>4</td>
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<tr>
<td>PHYS 141</td>
<td>General Physics IA</td>
<td>4</td>
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<tr>
<td>PHYS 132</td>
<td>General Physics II</td>
<td>4</td>
</tr>
<tr>
<td>PHYS 133</td>
<td>General Physics III</td>
<td>4</td>
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<tr>
<td>STAT 312</td>
<td>Statistical Methods for Engineers</td>
<td>4</td>
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<tr>
<td>or STAT 321</td>
<td>Probability and Statistics for Engineers and Scientists</td>
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<tr>
<td>or STAT 350</td>
<td>Probability and Random Processes for Engineers</td>
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Study Abroad or Global Perspectives courses
300-400 level | 8

Engineering Concentration or Individualized Course of Study
Minimum 12 units at 300-400 level | 34-35

Liberal Arts Concentration or Individualized Course of Study
Minimum 12 units at 300-400 level | 24

GENERAL EDUCATION (GE)
(See GE program requirements below.) | 40-52

FREE ELECTIVES | 1-14

Total units | 180

1 Required in Major; also satisfies GE
2 Students must complete 60 upper-division units and a total of 180 units overall. Additional units may be required.
3 If GE courses are used to satisfy Support or Concentration requirements, additional units may be required to complete the 180 total unit requirement or 60 units of upper division.

Concentrations
LAES students must select one concentration from Engineering and one from Liberal Arts. Students may choose to follow an individualized course of study in Engineering or the the Liberal Arts constructed in consultation with LAES advisors.

Engineering (select one)
- Computer Graphics (http://catalog.calpoly.edu/collegesandprograms/interdisciplinaryprograms/liberalartsandengineeringstudies/computergraphicsconcentration)
- Electrical Engineering (Power) (http://catalog.calpoly.edu/collegesandprograms/interdisciplinaryprograms/liberalartsandengineeringstudies/electricengineeringpowerconcentration)
- Industrial/Manufacturing Engineering - System Design (http://catalog.calpoly.edu/collegesandprograms/interdisciplinaryprograms/liberalartsandengineeringstudies/systemdesignconcentration)
- Usability Studies (http://catalog.calpoly.edu/collegesandprograms/interdisciplinaryprograms/liberalartsandengineeringstudies/usabilitystudiesconcentration)

Individualized Course of Study in Engineering
Consists of 34 units of an advisor-approved integrated course of study from courses offered in the College of Engineering designed to meet...
the LAES learning objectives, with at least 12 of the units at the upper division level. Courses must be drawn from at least two engineering disciplines.

**Liberal Arts (select one)**

- Interactive Communication - Cinematic Focus
  (http://catalog.calpoly.edu/collegesandprograms/interdisciplinaryprograms/liberalartsandengineeringstudies/ba liberalartsandengineeringstudies/interactivecommunicationcinematicfocusconcentration)
- Interactive Communication - Theatrical Focus
  (http://catalog.calpoly.edu/collegesandprograms/interdisciplinaryprograms/liberalartsandengineeringstudies/ba liberalartsandengineeringstudies/interactivecommunicationtheatricalfocusconcentration)
- Publishing Technology (http://catalog.calpoly.edu/collegesandprograms/interdisciplinaryprograms/liberalartsandengineeringstudies/ba liberalartsandengineeringstudies/publishingtechnologyconcentration)
- Technical Communication (http://catalog.calpoly.edu/collegesandprograms/interdisciplinaryprograms/liberalartsandengineeringstudies/ba liberalartsandengineeringstudies/technicalcommunicationconcentration)

**Individualized Course of Study in the Liberal Arts**

Consists of 24 units of an advisor-approved integrated course of study from courses offered in the College of Liberal Arts designed to meet the LAES learning objectives, with at least half of the units at the upper division level.

Students may complete a minor program selected from pre-approved minors. These minors include any minor offered by the College of Liberal Arts, as well as interdisciplinary, cross-college minors in which students complete a minimum of half of the units in the College of Liberal Arts (e.g., Indigenous Studies in Natural Resources & the Environment; Sustainable Environments).

**General Education (GE) Requirements**

- 72 units required, 20-32 of which are specified in Major, depending on concentration.
- Minimum of 12 units required at the 300-400 level.

**Area A Communication**

A1 Expository Writing 4
A2 Oral Communication 4
A3 Reasoning, Argumentation, and Writing (4 units in Major) 0

**Area B Science and Mathematics**

B1 Mathematics/Statistics (8 units in Major) 1 0
B2 Life Science 4
B3 Physical Science (4 units in Major) 1 0
B4 One lab taken with either a B2 or B3 course 0
B5 (4 units in Major) 1 0

**Area C Arts and Humanities**

C1 Literature 4
C2 Philosophy 4
C3 Fine/Performing Arts (may be in concentration) 0-4
C4 Upper-division elective (may be in concentration) 0-4

**Area D/E Society and the Individual**

D1 The American Experience (Title 5, Section 40404 requirement) 4
D2 Political Economy 4
D3 Comparative Social Institutions 4
D4 Self Development (CSU Area E) 4
D5 Upper-division elective 4

**Area F Technology Elective**

F Upper-division elective (may be in concentration) 0-4

Total units 40-52

1 Required in Major; also satisfies GE