BS AGRICULTURAL SYSTEMS MANAGEMENT

Program Learning Objectives
1. An ability to select and apply the knowledge, techniques, skills, and modern tools of the discipline to broadly-defined engineering technology activities;
2. An ability to select and apply a knowledge of mathematics, science, engineering, and technology to engineering technology problems that require the application of principles and applied procedures or methodologies;
3. An ability to conduct standard tests and measurements; to conduct, analyze, and interpret experiments; and to apply experimental results to improve processes;
4. An ability to design systems, components, or processes for broadly-defined engineering technology problems appropriate to program educational objectives;
5. An ability to function effectively as a member or leader on a technical team;
6. An ability to identify, analyze, and solve broadly-defined engineering technology problems;
7. An ability to conduct standard tests and measurements; to conduct, analyze, and interpret experiments; and to apply experimental results to improve processes;
8. An ability to conduct standard tests and measurements; to conduct, analyze, and interpret experiments; and to apply experimental results to improve processes;
9. An ability to identify, analyze, and solve broadly-defined engineering technology problems;
10. An ability to conduct standard tests and measurements; to conduct, analyze, and interpret experiments; and to apply experimental results to improve processes;
11. A commitment to quality, timeliness, and continuous improvement.

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 or support courses may be selected as credit/no credit.

MAJOR COURSES
BRAE 128 Careers in Bioresource and Agricultural Engineering 2
BRAE 129 Laboratory Skills and Safety 1
BRAE 133 Introduction to Engineering Design Graphics 1
BRAE 142 Agricultural Power and Machinery Management 4
BRAE 151 CAD for Agricultural Engineering 1
BRAE 152 3-D Solids Modeling 1
BRAE 203 Agricultural Systems Analysis 4
BRAE 237 Introduction to Engineering Surveying 2-4
or BRAE 239 Engineering Surveying 2-4
BRAE 301 Hydraulic and Mechanical Power Systems 4
BRAE 321 Agricultural Safety 3
BRAE 324 Principles of Agricultural Electrification 4
BRAE 340 Irrigation Water Management 4
BRAE 342 Agricultural Materials 4
BRAE 343 Mechanical Systems Analysis 4
BRAE 348 Energy for a Sustainable Society (Area F) 4
BRAE 418 Agricultural Systems Management I 4
BRAE 419 Agricultural Systems Management II 4
BRAE 425 Computer Controls for Agriculture 3
BRAE 432 Agricultural Buildings 4
BRAE 438 Drip/Micro Irrigation 4
or BRAE 440 Agricultural Irrigation Systems 4
BRAE 460 Senior Project Organization 1
BRAE 461 Senior Project I 2
BRAE 462 Senior Project II 2

Approved Electives
See Approved Electives below

SUPPORT COURSES
AGB 212 Agricultural Economics 4
AGB 301 Food and Fiber Marketing 4
AGB 310 Agribusiness Credit and Finance 4
AGB 369 Agricultural Personnel Management 4
BUS 212 Financial Accounting for Nonbusiness Majors 4
or AGB 214 Agribusiness Financial Accounting 4
CHEM 110 World of Chemistry (B3&B4) 4
or CHEM 127 General Chemistry for Agriculture and Life Science I 4
ENGL/COMS 145 Reasoning, Argumentation, and Writing (A3) 4
or ENGL 148 Reasoning, Argumentation and Professional Writing 4
Select from the following: 4
MATH 119 Precalculus Trigonometry (B1) 1
MATH 123 Precalculus Trigonometry 1
or STAT 217 Introduction to Statistical Concepts and Methods 4
or STAT 218 Applied Statistics for the Life Sciences 4
MATH 221 Calculus for Business and Economics (B1) 4
PHYS 121 College Physics I 4
SS 121 Introductory Soil Science 4

Animal or plant production course
Any AEPS, ASCI, DSCI course except for internship or enterprise courses.

GENERAL EDUCATION (GE)
(See GE program requirements below.) 52

FREE ELECTIVES
Free Electives 0
Total units 180-182

Approved Electives
Minimum of 6 units must be upper division
No more than 4 units of internship or enterprise may be used
Select from the following:

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
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</thead>
<tbody>
<tr>
<td>AGED 102</td>
<td>Introduction to Agricultural Education</td>
</tr>
<tr>
<td>BRAE 200</td>
<td>Special Problems for Undergraduates (4 units maximum)</td>
</tr>
<tr>
<td>BRAE 236</td>
<td>Principles of Irrigation</td>
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<tr>
<td>BRAE 302</td>
<td>Servo Hydraulics</td>
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<tr>
<td>BRAE 331</td>
<td>Irrigation Theory</td>
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<tr>
<td>BRAE 335</td>
<td>Internal Combustion Engines</td>
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<tr>
<td>BRAE 337</td>
<td>Landscape Irrigation</td>
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<tr>
<td>BRAE 344</td>
<td>Fabrication Systems</td>
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<tr>
<td>BRAE 345</td>
<td>Aerial Photogrammetry and Remote Sensing</td>
</tr>
<tr>
<td>BRAE 400</td>
<td>Special Problems (4 units maximum)</td>
</tr>
<tr>
<td>BRAE 405</td>
<td>Chemigation</td>
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<tr>
<td>BRAE/EE 434</td>
<td>Automotive Engineering for a Sustainable Future</td>
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<tr>
<td>BRAE 435</td>
<td>Drainage</td>
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<tr>
<td>BRAE 438</td>
<td>Drip/Micro Irrigation</td>
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<tr>
<td>or BRAE 440</td>
<td>Agricultural Irrigation Systems</td>
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<tr>
<td>BRAE 447</td>
<td>Advanced Surveying with GIS Applications</td>
</tr>
<tr>
<td>BRAE 448</td>
<td>Bioconversion</td>
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<tr>
<td>BRAE 450</td>
<td>Solar Photovoltaic System Engineering</td>
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<tr>
<td>BRAE 532</td>
<td>Water Wells and Pumps</td>
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<tr>
<td>CHEM 212</td>
<td>Introduction to Organic Chemistry</td>
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<tr>
<td>FSN 125</td>
<td>Introduction to Food Science</td>
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<td>FSN 204</td>
<td>Food Processing Operations</td>
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<td>FSN 230</td>
<td>Elements of Food Processing</td>
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<tr>
<td>FSN 275</td>
<td>Elements of Food Safety</td>
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<tr>
<td>FSN 330</td>
<td>Introduction to Principles of Food Engineering</td>
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<tr>
<td>FSN 334</td>
<td>Food Packaging</td>
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<tr>
<td>FSN 341</td>
<td>Fermented Foods</td>
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<tr>
<td>FSN 354</td>
<td>Packaging Function in Food Processing</td>
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<tr>
<td>FSN 370</td>
<td>Food Plant Sanitation and Prerequisite Programs</td>
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<tr>
<td>FSN 375</td>
<td>Food Safety</td>
</tr>
<tr>
<td>FSN 444</td>
<td>Food Engineering</td>
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<tr>
<td>IME 141</td>
<td>Manufacturing Processes: Net Shape</td>
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<tr>
<td>IME 142</td>
<td>Manufacturing Processes: Materials Joining</td>
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<tr>
<td>IME 143</td>
<td>Manufacturing Processes: Material Removal</td>
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<tr>
<td>IME 144</td>
<td>Introduction to Design and Manufacturing</td>
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<tr>
<td>IME 157</td>
<td>Electronics Manufacturing</td>
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<tr>
<td>IME 319</td>
<td>Human Factors Engineering</td>
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<td>IME 320</td>
<td>Human Factors and Technology</td>
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<tr>
<td>ITP 330</td>
<td>Packaging Fundamentals</td>
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<tr>
<td>ITP 341</td>
<td>Packaging Polymers and Processing</td>
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<tr>
<td>NR/LA 218</td>
<td>Applications in GIS</td>
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<tr>
<td>NR 306</td>
<td>Natural Resource Ecology and Habitat Management</td>
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<tr>
<td>NR/CRP 408</td>
<td>Water Resource Law and Policy</td>
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<tr>
<td>NR 416</td>
<td>Environmental Impact Analysis and Management</td>
</tr>
<tr>
<td>SS 221</td>
<td>Soil Health and Plant Nutrition</td>
</tr>
</tbody>
</table>

Plant or Animal Production Course
Any AEPS, ASCI, DSCI course except for internship or enterprise courses

Total units 14

1 Required in Major or Support; also satisfies GE.
2 Consultation with advisor is recommended prior to selecting approved electives; bear in mind your selections may impact pursuit of post-baccalaureate studies and/or goals.

General Education (GE) Requirements

- 72 units required, 20 of which are specified in Major and/or Support.
- See the complete GE course listing (http://catalog.calpoly.edu/generalrequirementsbachelorsdegree/#generaleducationtext).
- Minimum of 12 units required at the 300 level.

**Area A**

- Expository Writing 4
- Oral Communication 4
- Reasoning, Argumentation and Writing (4 units in Support) 0

**Area B**

- Mathematics/Statistics (8 units in Support) 0
- Life Science 4
- Physical Science (4 units in Support) 0
- One lab taken with either a B2 or B3 course

**Area C**

- Literature 4
- Philosophy 4
- Fine/Performing Arts 4
- Upper-division elective 4
- (Choose one course from C1-C5) 4

**Area D/E**

- The American Experience (Title 5, Section 40404 requirement) 4
- Political Economy 4
- Comparative Social Institutions 4
- Self Development (CSU Area E) 4
<table>
<thead>
<tr>
<th>Area F</th>
<th>Technology</th>
</tr>
</thead>
<tbody>
<tr>
<td>F</td>
<td>Upper-division elective (4 units in Major)</td>
</tr>
</tbody>
</table>

Total units: 52

1 Required in Major or Support; also satisfies GE.