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, analyze, and interpret experiments; and to apply experimental results to improve processes;
8. An ability to design systems, components, or processes for broadly-defined engineering technology problems appropriate to program educational objectives;
9. An ability to function effectively as a member or leader on a technical team;
10. An ability to identify, analyze, and solve broadly-defined engineering technology problems;
11. An ability to conduct standard tests and measurements; to conduct, analyze, and interpret experiments; and to apply experimental results to improve processes;
12. An ability to apply written, oral, and graphical communication in both technical and non-technical environments; and an ability to identify and use appropriate technical literature;
13. An ability to understand the need for and an ability to engage in self-directed continuing professional development;
14. An understanding of and a commitment to address professional and ethical responsibilities including a respect for diversity;
15. A knowledge of the impact of engineering technology solutions in a societal and global context; and
16. 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**

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>BRAE 128</td>
<td>Careers in Bioresource and Agricultural Engineering</td>
<td>2</td>
</tr>
<tr>
<td>BRAE 129</td>
<td>Laboratory Skills and Safety</td>
<td>1</td>
</tr>
<tr>
<td>BRAE 133</td>
<td>Introduction to Engineering Design Graphics</td>
<td>1</td>
</tr>
<tr>
<td>BRAE 142</td>
<td>Agricultural Power and Machinery Management</td>
<td>4</td>
</tr>
<tr>
<td>BRAE 151</td>
<td>CAD for Agricultural Engineering</td>
<td>1</td>
</tr>
<tr>
<td>BRAE 152</td>
<td>3-D Solids Modeling</td>
<td>1</td>
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</table>

<table>
<thead>
<tr>
<th>Course</th>
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<th>Units</th>
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<tbody>
<tr>
<td>BRAE 203</td>
<td>Agricultural Systems Analysis</td>
<td>4</td>
</tr>
<tr>
<td>BRAE 237</td>
<td>Introduction to Engineering Surveying</td>
<td>2-4</td>
</tr>
<tr>
<td>or BRAE 239</td>
<td>Engineering Surveying</td>
<td></td>
</tr>
<tr>
<td>BRAE 301</td>
<td>Hydraulic and Mechanical Power Systems</td>
<td>4</td>
</tr>
<tr>
<td>BRAE 321</td>
<td>Agricultural Safety</td>
<td>3</td>
</tr>
<tr>
<td>BRAE 324</td>
<td>Principles of Agricultural Electrification</td>
<td>4</td>
</tr>
<tr>
<td>BRAE 340</td>
<td>Irrigation Water Management</td>
<td>4</td>
</tr>
<tr>
<td>BRAE 342</td>
<td>Agricultural Materials</td>
<td>4</td>
</tr>
<tr>
<td>BRAE 343</td>
<td>Mechanical Systems Analysis</td>
<td>4</td>
</tr>
<tr>
<td>BRAE 348</td>
<td>Energy for a Sustainable Society (Area F)</td>
<td>4</td>
</tr>
<tr>
<td>BRAE 418</td>
<td>Agricultural Systems Management I</td>
<td>4</td>
</tr>
<tr>
<td>BRAE 419</td>
<td>Agricultural Systems Management II</td>
<td>4</td>
</tr>
<tr>
<td>BRAE 425</td>
<td>Computer Controls for Agriculture</td>
<td>3</td>
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<tr>
<td>BRAE 432</td>
<td>Agricultural Buildings</td>
<td>4</td>
</tr>
<tr>
<td>BRAE 438</td>
<td>Drip/Micro Irrigation</td>
<td>4</td>
</tr>
<tr>
<td>or BRAE 440</td>
<td>Agricultural Irrigation Systems</td>
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<tr>
<td>BRAE 460</td>
<td>Senior Project Organization</td>
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<tr>
<td>BRAE 461</td>
<td>Senior Project I</td>
<td>2</td>
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<tr>
<td>BRAE 462</td>
<td>Senior Project II</td>
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</table>

**Approved Electives**
See Approved Electives below

**SUPPORT COURSES**

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>AGB 212</td>
<td>Agricultural Economics</td>
<td>4</td>
</tr>
<tr>
<td>AGB 301</td>
<td>Food and Fiber Marketing</td>
<td>4</td>
</tr>
<tr>
<td>AGB 310</td>
<td>Agribusiness Credit and Finance</td>
<td>4</td>
</tr>
<tr>
<td>AGB 369</td>
<td>Agricultural Personnel Management</td>
<td>4</td>
</tr>
<tr>
<td>BUS 212</td>
<td>Financial Accounting for Nonbusiness Majors</td>
<td>4</td>
</tr>
<tr>
<td>or AGB 214</td>
<td>Agribusiness Financial Accounting</td>
<td></td>
</tr>
<tr>
<td>CHEM 110</td>
<td>World of Chemistry (B3&amp;B4)</td>
<td>4</td>
</tr>
<tr>
<td>or CHEM 127</td>
<td>General Chemistry for Agriculture and Life Science I</td>
<td></td>
</tr>
<tr>
<td>ENGL/COMS 145</td>
<td>Reasoning, Argumentation, and Writing (A3)</td>
<td>4</td>
</tr>
<tr>
<td>or ENGL 148</td>
<td>Reasoning, Argumentation and Professional Writing</td>
<td></td>
</tr>
</tbody>
</table>

Select from the following:

- MATH 119 Precalculus Trigonometry (B1) | 4
- STAT 217 Introduction to Statistical Concepts and Methods
- or STAT 218 Applied Statistics for the Life Sciences
- 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: 14

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

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.
3 May substitute 2 units of any upper-division courses not used to satisfy the requirement in the major.

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 Communication
A1 Expository Writing 4
A2 Oral Communication 4
A3 Reasoning, Argumentation and Writing (4 units in Support) 1

Area B Science and Mathematics
B1 Mathematics/Statistics (8 units in Support) 1
B2 Life Science 4
B3 Physical Science (4 units in Support) 1
B4 One lab taken with either a B2 or B3 course

Area C Arts and Humanities
C1 Literature 4
C2 Philosophy 4
C3 Fine/Performing Arts 4
C4 Upper-division elective 4
Area C elective (Choose one course from C1-C5) 4

Area D/E Society and the Individual
D1 The American Experience (Title 5, Section 40404 requirement) 4
<table>
<thead>
<tr>
<th></th>
<th>Course Description</th>
<th>Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>D2</td>
<td>Political Economy</td>
<td>4</td>
</tr>
<tr>
<td>D3</td>
<td>Comparative Social Institutions</td>
<td>4</td>
</tr>
<tr>
<td>D4</td>
<td>Self Development (CSU Area E)</td>
<td>4</td>
</tr>
<tr>
<td>D5</td>
<td>Upper-division elective</td>
<td>4</td>
</tr>
<tr>
<td>F</td>
<td>Area F Technology</td>
<td></td>
</tr>
<tr>
<td>F</td>
<td>Upper-division elective (4 units in Major)</td>
<td>0</td>
</tr>
</tbody>
</table>

Total units: 52

1 Required in Major or Support; also satisfies GE.