BS AGRICULTURAL SYSTEMS MANAGEMENT

Program Learning Objectives
1. An ability to apply knowledge, techniques, skills and modern tools of mathematics, science, engineering, and technology to solve broadly defined engineering problems appropriate to the discipline;
2. An ability to design systems, components, or processes meeting specified needs for broadly-defined engineering problems appropriate to the discipline;
3. An ability to apply written, oral, and graphical communication in broadly defined technical and non-technical environments; and an ability to identify and use appropriate technical literature;
4. An ability to conduct standard tests, measurements, and experiments and to analyze and interpret the results to improve processes; and
5. An ability to function effectively as a member or leader on a technical team.
6. An understanding of basic agricultural technologies and agribusiness principles necessary for technical operations and business management careers in agriculture and related industries.

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 142</td>
<td>Agricultural Power and Machinery Management</td>
<td>4</td>
</tr>
<tr>
<td>BRAE 150</td>
<td>Design Graphics and CAD for Agricultural Engineering</td>
<td>2</td>
</tr>
<tr>
<td>BRAE 152</td>
<td>3-D Solids Modeling</td>
<td>1</td>
</tr>
<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>
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<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 317</td>
<td>Agricultural Systems Management Theory</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>
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<tr>
<td>BRAE 343</td>
<td>Mechanical Systems Analysis</td>
<td>4</td>
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<tr>
<td>BRAE 348</td>
<td>Energy for a Sustainable Society (Upper-Division B)</td>
<td>4</td>
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<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>
</tr>
<tr>
<td>BRAE 432</td>
<td>Agricultural Buildings</td>
<td>4</td>
</tr>
<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 460</td>
<td>Senior Project Organization</td>
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</tr>
<tr>
<td>BRAE 461</td>
<td>Senior Project I</td>
<td>2</td>
</tr>
</tbody>
</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 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 (B1 &amp; B3)</td>
<td>4</td>
</tr>
<tr>
<td>or CHEM 127</td>
<td>General Chemistry for Agriculture and Life Science</td>
<td>4</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 (B4) 1
- STAT 217 Introduction to Statistical Concepts and Methods (B4) 1
- STAT 218 Applied Statistics for the Life Sciences (B4) 1
- MATH 221 Calculus for Business and Economics (GE Electives) 1
- PHYS 121 College Physics I
- SS 120 Introductory Soil Science

Animal or Plant Production Course

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

GENERAL EDUCATION (GE)

(See GE program requirements below.)

FREE ELECTIVES

Free Electives

Total units: 180-182

Approved Electives

Minimum of 9 units must be upper division
No more than 4 units of internship or enterprise may be used
Select from the following:

- 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 333 Aquacultural Engineering
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 436 Food and Agriculture Process Water Engineering
BRAE 438 or BRAE 440 Drip/Micro Irrigation 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 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

Any AEPS, ASCI, DSCI course except for internship or enterprise courses

Total units 16

1 Required in Major or Support; also satisfies General Education (GE) requirement.
2 If a course is taken to meet a Major requirement, it cannot be double-counted as an Approved Elective.
3 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.
- If any of the remaining 52 units is used to satisfy a Major or Support requirement, additional units of Free Electives may be needed to complete the total units required for the degree.
- See the complete GE course listing (http://catalog.calpoly.edu/generalrequirementsbachelorsdegree/#generaleducationtext).
- A grade of C- or better is required in one course in each of the following GE Areas: A1 (Oral Communication), A2 (Written Communication), A3 (Critical Thinking), and B4 (Mathematics/Quantitative Reasoning).

Area A English Language Communication and Critical Thinking
A1 Oral Communication 4
A2 Written Communication 4
A3 Critical Thinking (4 units in Support) 0

Area B Scientific Inquiry and Quantitative Reasoning
B1 Physical Science (4 units in Support) 0
B2 Life Science 4
B3 One lab taken with either a B1 or B2 course
B4 Mathematics/Quantitative Reasoning (4 units in Support) 0

Upper-Division B (4 units in Major) 0

Area C Arts and Humanities

Lower-division courses in Area C must come from three different subject prefixes.
C1 Arts: Arts, Cinema, Dance, Music, Theater 4
C2 Humanities: Literature, Philosophy, Languages other than English 4

Lower-Division C Elective - Select a course from either C1 or C2 4

Upper-Division C 4
<table>
<thead>
<tr>
<th>Area D</th>
<th>Social Sciences</th>
<th>Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>D1</td>
<td>American Institutions (Title 5, Section 40404 Requirement)</td>
<td>4</td>
</tr>
<tr>
<td>D2</td>
<td>Lower-Division D - Select courses from two different subject prefixes.</td>
<td>8</td>
</tr>
<tr>
<td></td>
<td>Upper-Division D</td>
<td>4</td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>Area E</th>
<th>Lifelong Learning and Self-Development</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Lower-Division E</td>
<td>4</td>
</tr>
</tbody>
</table>

**GE Electives in Areas B, C, and D**

Select courses from two different areas; may be lower-division or upper-division courses.

**GE Electives (4 units in Support plus 4 units in GE)**

4

Total units 52

1 Required in Major or Support; also satisfies General Education (GE) requirement.