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.

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 (https://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 142	Agricultural Power and Machinery Management	4
BRAE 150	Design Graphics and CAD for Agricultural Engineering	2
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	
BRAE 301	Hydraulic and Mechanical Power Systems	4
BRAE 317	Agricultural Systems Management Theory	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 (Upper-Division B) [1]	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 [2]	4
or BRAE 440	Agricultural Irrigation Systems	
BRAE 460	Senior Project Organization	1
BRAE 465	Senior Project Operation, Testing, and Safety	2
Approved Electives [2, 3]		
See Approved Electives below		12
SUPPORT COURSES		
AGB 212	Agricultural Economics	4
AGB 260	Agribusiness Data Literacy	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	
CHEM 110	World of Chemistry (B1 & B3) [1]	4
or CHEM 127	General Chemistry for Agriculture and Life Science I	
ENGL 147	Writing Arguments about STEM (A3) [1]	4
Select from the following:		4
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]	4
PHYS 121	College Physics I	4
SS 120	Introductory Soil Science	4
Animal or Plant Production Course		
Any ASCI, DSCI, PLSC course except for internship or enterprise courses.		3
GENERAL EDUCATION (GE)		
(See GE program requirements below.)		52
FREE ELECTIVES		
Free Electives		0
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:		12
Any AGB course eligible for the Agribusiness minor		
AGC 102	Orientation to Agricultural Communication & Agricultural Science	

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/NR 349	Water for a Sustainable Society
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	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
BRAE 533	Irrigation Project Design
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	Principles of Food Engineering
FSN 334	Food Packaging
FSN 340	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
Animal or Plant Production Course	
Any ASCI, DSCI, PLSC course except for internship or enterprise courses	
Total units	**12**

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 (https://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) [1]	0
Area B	**Scientific Inquiry and Quantitative Reasoning**	
B1	Physical Science (4 units in Support) [1]	0
B2	Life Science	4
B3	One lab taken with either a B1 or B2 course	
B4	Mathematics/Quantitative Reasoning (4 units in Support) [1]	0
Upper-Division B (4 units in Major) [1]		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
Area D	**Social Sciences - Select courses in Area D from at least two different prefixes**	
D1	American Institutions (Title 5, Section 40404 Requirement)	4
D2	Lower-Division D	4
Upper-Division D		4
Area E	**Lifelong Learning and Self-Development**	
Lower-Division E		4
Area F	**Ethnic Studies**	
F	Ethnic Studies	4
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) [1]		4
Total units		**52**

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