

AGRICULTURAL SYSTEMS MANAGEMENT (BS)

Offered at: San Luis Obispo Campus

The mission of the Agricultural Systems Management (ASM) program is to provide a "learn by doing" undergraduate educational experience that prepares students for systems management practice in support of agriculture and related industries throughout the western U.S. The ASM program is ABET accredited by the Engineering Technology Accreditation Commission.

Students receive broad agricultural training with a business and management emphasis in the following areas: project management, construction management, process management, plant production, livestock production, food and fiber processing, environmental information management, water/irrigation, and processing and manufacturing. Students have the opportunity to develop management expertise through interdisciplinary experiences in agricultural technology and business-oriented coursework.

The objectives of the ASM program are to produce graduates who, in 3-5 years after graduation, are successful as one of the following:

- Individuals of professional responsibility and leadership in technical, business, or management positions within agriculture or related industries
- Adapting to new challenges and opportunities through the application of acquired knowledge in agricultural systems management
- Actively pursuing professional development such as a degree in an advanced degree program, professional license, or technical certification

Agricultural Systems Management graduates demonstrate a knowledge and understanding of basic agricultural technologies and agribusiness principles necessary for technical operations and business management careers in agriculture and related industries; an understanding of modern science and practice within a specialized agricultural area of interest; and ability to apply quantitative, analytical processes for developing solutions to technological, business or management problems associated with production, processing, or the distribution of products and support services in agriculture and related industries; an understanding of the interconnected "systems" of agriculture; and ability to safely and properly handle the materials, machines, sensors, tools and techniques of modern agricultural or technical operations; and an ability to communicate and perform as effective agricultural systems management professionals in the solution of problems crossing discipline or cultural boundaries.

Career opportunities are available in the manufacturing, sales, service of agricultural equipment and machinery; construction management, management and production of animals and crops; processing of food and fiber; and management of water/irrigation facilities. The program is accredited by the Engineering Technology Accreditation Commission of ABET (<https://www.abet.org>), under the General Criteria with no applicable program criteria.

Program Learning Objectives

1. Apply knowledge, techniques, skills and modern tools of mathematics, science, engineering, and technology to solve broadly defined engineering problems appropriate to the discipline.
2. Design systems, components, or processes meeting specified needs for broadly-defined engineering problems appropriate to the discipline.
3. 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. Conduct standard tests, measurements, and experiments and to analyze and interpret the results to improve processes.
5. Function effectively as a member as well as a leader on technical teams.

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 section of this catalog, including:

- 40 units of upper-division courses
- 2.0 GPA
- Graduation Writing Requirement (GWR)
- U.S. Cultural Pluralism (USCP)

Note: No Major or Support courses may be selected as credit/no credit. In addition, no more than 12 units of cooperative or internship courses can count towards your degree requirements.

Code	Title	Units
MAJOR COURSES		
BRAE 1128	Careers in BioResource and Agricultural Engineering	2
BRAE 1150	Design Graphics and CAD for Agricultural Engineering	2
BRAE 1239	Engineering Surveying	3
BRAE 2142	Agricultural Power and Machinery Management	3

BRAE 2203	Systems Management I	4
BRAE 3301	Hydraulic and Mechanical Power Systems	3
BRAE 3317	Systems Management II	4
BRAE 3340	Irrigation Water Management (Upper-Division 2/5) ¹	3
BRAE 3343	Mechanical Systems Analysis	4
BRAE 3348	Energy for a Sustainable Society	3
BRAE 4419	Systems Management III	3
BRAE 4425	Agricultural Mechatronics	5
BRAE 4432	Agricultural Buildings	4
BRAE 4440	Agricultural Irrigation Systems	4
BRAE 4460	Senior Project I	1
BRAE 4461	Senior Project II	2
SUPPORT COURSES		
AGB 2212	Agricultural Economics	3
AGB 2214	Agribusiness Financial Accounting	3
AGB 2260	Agribusiness Data Literacy	3
AGB 3308	Introduction to Agribusiness Finance	3
AGB 3369	Agricultural Personnel Management	3
Select from the following: (5A & 5C) ¹		4
CHEM 1110	World of Chemistry	
CHEM 1120	Fundamentals of Chemical Structure and Properties	
Select from the following: (2) ¹		3
MATH 1007	Precalculus	
STAT 1110	Applied Statistical Concepts and Methods	
MATH 1267	Business Calculus	3
PHYS 1121	College Physics I	4
Approved Electives		
See Approved Electives course list below		9
GENERAL EDUCATION (GE)		
(See GE program requirements below)		33
FREE ELECTIVES		
Free Electives		0
Total Units		121

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

Approved Electives

Code	Title	Units
Select from the following: ¹		9
BRAE 2200	Special Problems for Undergraduates	
BRAE 3344	Fabrication Systems	
BRAE 3345	Photogrammetry and Remote Sensing with GIS Applications	
BRAE/NR 3349	Water for a Sustainable Society	
BRAE 4400	Special Problems	
BRAE 4447	Advanced Surveying with GIS Applications	
BRAE 4448	Bioconversion	
BRAE 5405	Chemigation	
BRAE 5435	Hydrology and Drainage	
BRAE 5436	Food and Agriculture Process Water Engineering	
BRAE 5532	Water Pumps and Wells	
BRAE 5533	Irrigation Project Design	

CRP/NR 4408	Water Resource Law and Policy
EE 4434	Transportation Electrification and Energy Storage Systems
FDSC 1110	Introduction to Food Science and Sustainability
FSN 2202	Introduction to Human Nutrition
FSN 2245	Elements of Food Safety
FSN 2250	Food and Nutrition: Culture and Customs
FSN 3305	Nutrition and Exercise for Health and Disease Prevention
FSN 3316	Fermented Foods
IME 1141	Introduction to Metal Casting and Prototyping
IME 1142	Materials Joining
IME 1143	Introduction to Design and Manufacturing
IME 3320	Human Factors and Technology
ITP 3330	Packaging Fundamentals
ITP 3341	Packaging Polymers and Processing
LA/NR 2218	Introduction to Geographic Information Systems (GIS)
NR 3306	Natural Resource Ecology and Habitat Management
NR 4416	Environmental Impact Analysis and Management
NUTR 3310	Maternal and Child Nutrition
NUTR 3315	Nutrition in Aging
SS 1120	Introductory Soil Science
SS 2221	Soil Health and Plant Nutrition

Animal or Plant Production Course

Select any ASCI, DSCI, PLSC course ¹
Total Units
9

¹ The following internship or enterprise courses may not be taken as an approved elective: ASCI 2001, ASCI 2002, ASCI 2003, ASCI 2004, ASCI 2005, ASCI 2006, ASCI 2007, ASCI 2008, ASCI 2009, ASCI 2010, ASCI 2011, ASCI 2012, ASCI 2013, ASCI 2014, ASCI 2015, ASCI 2016, ASCI 2017, ASCI 3339, ASCI 4001, ASCI 4002, ASCI 4003, ASCI 4004, ASCI 4005, ASCI 4006, ASCI 4007, ASCI 4008, ASCI 4009, ASCI 4010, ASCI 4011, ASCI 4012, ASCI 4013, ASCI 4014, ASCI 4015, ASCI 4478, PLSC 2205, PLSC 2212, PLSC 2333, or PLSC 3339.

General Education (GE) Requirements

General Education (GE) Requirements

- 43 units required, 10 of which are specified in Major and/or Support.
- If any of the remaining 33 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/academic-standards-policies/general-requirements-bachelors-degree/#generaleducationtext>).
- A grade of C- or better is required in one course in each of the following GE Areas: 1A (English Composition), 1B (Critical Thinking), 1C (Oral Communication), and 2 (Mathematics and Quantitative Reasoning).

Lower-Division General Education

Area 1	English Communication and Critical Thinking	
1A	Written Communication	3
1B	Critical Thinking	3
1C	Oral Communication	3
Area 2	Mathematics and Quantitative Reasoning	
2	Mathematics and Quantitative Reasoning (3 units in Support) ¹	0
Area 3	Arts and Humanities	
3A	Arts	3
3B	Humanities: Literature, Philosophy, Languages other than English	3
Area 4	Social and Behavioral Sciences (Area 4 courses must come from at least two different course prefixes.)	
4A	American Institutions (Title 5, Section 40404 Requirement)	3

4B	Social and Behavioral Sciences	3
Area 5	Physical and Life Sciences	
5A	Physical Sciences (3 units in Support) ¹	0
5B	Life Sciences	3
5C	Laboratory (may be embedded in a 5A or 5B course) (1 units in Support) ¹	0
Area 6	Ethnic Studies	
6	Ethnic Studies	3
Upper-Division General Education		
Upper-Division 2/5	Mathematics and Quantitative Reasoning or Physical and Life Sciences (3 units in Major) ¹	0
Upper-Division 3	Arts and Humanities	3
Upper-Division 4	Social and Behavioral Sciences (Area 4 courses must come from at least two different course prefixes.)	3
Total Units		33

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

Coming soon