

AGRICULTURAL SCIENCE (BS)

Offered at: San Luis Obispo Campus

The BS Agricultural Science program is a flexible program in agriculture, allowing students multiple options and opportunities to select courses according to their areas of interest.

The major was developed to provide students with direction as they consider career options in the agricultural industry. Students complete coursework deemed broad and general to ensure a systems perspective in agriculture. Foundation courses are meant to help students identify an area of emphasis.

The six emphasis areas are:

- Agricultural Engineering Technology
- Agribusiness
- Animal Science
- Plant, Crop, and Soil Science
- Forestry and Natural Resources
- Ornamental Horticulture

Many of the emphasis areas have courses embedded within them that lead to the completion of a minor. Students should consult with their academic advisor when considering a minor or minors.

Teaching Credential

Students can declare their candidacy for teaching while pursuing the undergraduate degree. The minor in Agricultural Education should be declared early during the student's academic career to ensure requirements for obtaining certification to teach are met. Early field experiences are a part of the minor and are required for entrance into the credential program.

Teacher candidates are required to enroll in post-baccalaureate work to obtain the Single Subject in Agriculture and Agricultural Specialist credentials. Candidates must complete a minimum of 30 units of post-baccalaureate coursework. The Single Subject Content Advisor in Agricultural Education can provide more information. It is to the advantage of the post-baccalaureate teaching candidates to be simultaneously enrolled in the Master of Agricultural Education degree program.

Program Learning Objectives

1. Demonstrate a high degree of agricultural science literacy.
2. Develop and demonstrate effective leadership skills in agricultural science and related environments.
3. Analyze and communicate effectively the major issues across agriculturally related sciences.
4. Demonstrate cultural competencies in an increasingly global agricultural industry and society.
5. Demonstrate critical thinking and problem-solving skills in the agricultural sciences.
6. Integrate technology into agricultural sciences practices.

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/academic-standards-policies/general-requirements-bachelors-degree/>) 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		
AGC 1102	Orientation to Agricultural Communication & Agricultural Science	1
AGC 4404	Applications of Agricultural Leadership	3
AGC 4426	Presentation Methods in Agricultural Communication	3
AGC 4452 or AG 4452	Current Trends and Issues in Agricultural Communication Leadership Seminar on Issues Affecting California Agriculture, Food Systems, and Natural Resources	3-4
AGC 4463	Senior Project	3
AGED 4410 or AGC 3314	Computer Applications in Agricultural Education California Fairgrounds and Expositions	1-3
AGED 4421	Agricultural Mechanics	3
Foundations in Agriculture Courses		
Agribusiness		
AGB 2202	Introduction to Sales	3
AGB 2212	Agricultural Economics	3
AGB 3301 or WVIT 3343	Food Marketing Branded Wine Marketing	3
Animal Science		
ASCI 1101	Principles of Animal Physiology	3
ASCI 1102 & ASCI 1103	Animal Management Systems and Animal Science Laboratory	4
Ag Systems Technology		
BRAE 1141	Agricultural Machinery Safety	2
BRAE 3340	Irrigation Water Management (Upper-Division 2/5) ¹	3
Plant Science		
PLSC 1120 & 1120L	Principles of Plant Sciences and Principles of Plant Sciences Lab	3
PLSC 3301	Horticultural Production Techniques	3
Natural Resources		
NR 3308 or NR 3323	Fire and Society (Upper-Division 4) ¹ Human Dimensions in Natural Resources Management	3
SS 1120 or SS 1130	Introductory Soil Science Soils in Environmental and Agricultural Systems	3-4
Safe Practices in Handling Food Products		
DSCI 2229 or FSN 2245	General Dairy Manufacturing Elements of Food Safety	3-4
Approved Electives		
Select courses from the Guide to Approved Electives - Emphasis Areas below		18
SUPPORT COURSES		
Select from the following: (5B) ¹		3-4
BIO 1111	General Biology	
BIO 1151	Life: Molecules and Cells	
BOT 1121	General Botany	
MCRO 2221	Introduction to Microbiology	
CHEM 1110	World of Chemistry (5A & 5C) ¹	4
Select from the following: (2) ¹		3-4
MATH 1006	College Algebra	
MATH 1007	Precalculus	
MATH 1261	Calculus I	
MATH 1264	Calculus for Data Science I	
MATH 1267	Business Calculus	
GENERAL EDUCATION (GE)		

(See GE program requirements below)	27
FREE ELECTIVES	
Free Electives ²	5-12
Total Units	120

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

² If a General Education (GE) course 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.

Guide to Approved Agricultural Electives - Emphasis Areas

Approved Agricultural Electives have been categorized by Emphasis Area to guide students. Advisor approval of Agricultural Electives is not required, but consultation with an advisor is recommended to ensure that the required number of upper-division units is met. Also, bear in mind that selection may impact pursuit of post-baccalaureate studies and/or goals. It is imperative for students seeking a teaching credential to select one Emphasis Area and adhere to the approved list of courses.

Code	Title	Units
REQUIRED COURSES		
Select Emphasis Area of choice:		18
Agricultural Engineering Technology		
BRAE 1150	Design Graphics and CAD for Agricultural Engineering	
BRAE 2142	Agricultural Power and Machinery Management	
BRAE 2220	Introduction to Biological Systems	
BRAE 3335	Internal Combustion Engines	
BRAE 3348	Energy for a Sustainable Society	
BRAE/MSCI 4438	Aquaculture	
BRAE 4440	Agricultural Irrigation Systems	
Agribusiness		
AGB 2214	Agribusiness Financial Accounting	
AGB 2260	Agribusiness Data Literacy	
AGB 3304	Innovation and Entrepreneurship in Agribusiness	
AGB 3309	Advanced Sales Techniques	
AGB 3312	Agricultural Policy	
AGB 3313	Agriculture Economic Analysis	
AGB 3322	Principles of Agribusiness Management	
AGB 3369	Agricultural Personnel Management	
AGB 4404	Food Retail Management	
AGB 4445	Produce Marketing	
AGC 3318	Fairgrounds and Facility Management	
AGC 4475	Crisis Communication in Food and Agriculture	
Animal Science		
ASCI 2005	Dairy Fit and Show Enterprise	
ASCI 2210	Meat Science	
ASCI 2226	Livestock Evaluation	
ASCI 2230	Beef and Dairy Cattle Management	
ASCI 2231	Swine and Poultry Management	
ASCI 2232	Small Ruminant and Rangeland Management	
ASCI 2233	Companion Animal Management	
ASCI 2239	Principles of Rangeland Management	
ASCI 3311	Advanced Beef Cattle System Management	
ASCI 3321	Zoonoses and Veterinary Public Health Concerns	
ASCI 3350	Nonruminant Nutrition	
ASCI 4425	Meat Industry Study Tour	
ASCI 4484	Poultry Meat and Egg Production and Processing	

DSCI 2230	General Dairy Husbandry
Plant, Crop, and Soil Science	
PLSC 1132	Introduction to Fruit Crop Production
PLSC 1150	California Row Crop Production
PLSC 3301	Horticultural Production Techniques
PLSC 3321	Weed Biology and Management
PLSC 3360	Advanced Fruit Crop Production
PLSC 4421	Postharvest Technology
PLSC 4441	Biological Control for Pest Management
SS 2221	Soil Health and Plant Nutrition
SS 3321	Soil Morphology
SS 4444	Soil Judging
Forestry and Natural Resources	
BIO 2217	Wildlife Conservation Biology
ES 3360	Indigeneity and the Land
LA/NR 3317	The World of Spatial Data and Geographic Information Technology
NR 1142	Environmental Management
NR 2208	Dendrology
NR 3306	Natural Resource Ecology and Habitat Management
NR 3308	Fire and Society
NR 3312	Technology of Wildland Fire Management
NR 3321	Water Resources Technology and Society
NR 3323	Human Dimensions in Natural Resources Management
NR 4402	Forest Health and Disturbance Ecology
NR 4404 & CRP 4404	Environmental Law and Environmental Law
NR/CRP 4408	Water Resource Law and Policy
Ornamental Horticulture	
BOT 1121	General Botany
PLSC 1123	Introduction to Sustainable Site Horticulture
PLSC 1124	Plant Propagation
PLSC 2225	Floral Design
PLSC 2234	Introduction to Plant Materials
PLSC 3304	Introduction to Plant Breeding
PLSC 3334	Advanced Plant Materials
PLSC 4437	Sustainable Landscape Management

General Education (GE) Requirements

General Education (GE) Requirements

- 43 units required, 16 of which are specified in Major and/or Support.
- If any of the remaining 27 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 units in Support) ¹	0
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 units in Major) ¹	0
Total Units		27

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

Agricultural Science

Suggested Four-Year Flowcharts are planning guides and do not represent a required course sequence. Courses may be completed in a different order, provided requisite requirements are satisfied.

First Year

Term 1		Units
AGC 1102	Orientation to Agricultural Communication & Agricultural Science	1
ASCI 1101	Principles of Animal Physiology	3
BIO 1111	General Biology (5B) ¹	3-4
or BIO 1151	or Life: Molecules and Cells	
or BOT 1121	or General Botany	
or MCRO 2221	or Introduction to Microbiology	
BRAE 1141	Agricultural Machinery Safety	2
General Education Requirement (1A)		3
General Education Requirement (1C)		3

Units

15

Term 2		
ASCI 1102 & ASCI 1103	Animal Management Systems and Animal Science Laboratory	4
CHEM 1110	World of Chemistry (5A & 5C) ¹	4
PLSC 1120 & 1120L	Principles of Plant Sciences and Principles of Plant Sciences Lab	3
General Education Requirement (1B)		3
Units		14
Second Year		
Term 1		
AGB 2202	Introduction to Sales	3
MATH 1006 or MATH 1007 or MATH 1261 or MATH 1264 or MATH 1267	College Algebra (2) ¹ or Precalculus or Calculus I or Calculus for Data Science I or Business Calculus	3-4
SS 1120 or SS 1130	Introductory Soil Science or Soils in Environmental and Agricultural Systems	3-4
General Education Requirement		3
Free Elective ²		1-2
Units		14
Term 2		
AGB 2212	Agricultural Economics	3
DSCI 2229 or FSN 2245	General Dairy Manufacturing or Elements of Food Safety	3-4
General Education Requirement		3
General Education Requirement		3
Free Elective ²		3
Units		15
Third Year		
Term 1		
AGC 3314 or AGED 4410	California Fairgrounds and Expositions or Computer Applications in Agricultural Education	1-3
AGB 3301 or WVIT 3343	Food Marketing or Branded Wine Marketing	3
AGED 4421	Agricultural Mechanics	3
Approved Elective		3
Free Elective ²		1-4
Units		15
Term 2		
BRAE 3340	Irrigation Water Management (Upper-Division 2/5) ¹	3
NR 3308 or NR 3323	Fire and Society (Upper-Division 4) ¹ or Human Dimensions in Natural Resources Management	3
PLSC 3301	Horticultural Production Techniques	3
Approved Elective		3
General Education Requirement		3
Units		15
Fourth Year		
Term 1		
AGC 4404	Applications of Agricultural Leadership	3
AGC 4452 or AG 4452	Current Trends and Issues in Agricultural Communication or Leadership Seminar on Issues Affecting California Agriculture, Food Systems, and Natural Resources	3-4
Approved Elective		3
Approved Elective		3
General Education Requirement		3
Units		15
Term 2		
AGC 4426	Presentation Methods in Agricultural Communication	3
AGC 4463	Senior Project	3
Approved Elective		3
Approved Elective		3
General Education Requirement		3

Free Elective ²		0-4
	Units	17
	Total Units	120

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² If a General Education (GE) course 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.