

SUSTAINABLE AGRICULTURE & FOOD SYSTEMS, BACHELOR OF SCIENCE

College of Agricultural & Environmental Sciences

1150 PES; 530-752-1603; Sustainable Agriculture & Food Systems (<https://www.lawr.ucdavis.edu/students/undergrad-programs/sustainable-agriculture-and-food-systems/>)

Sustainable Agriculture & Food Systems is an interdisciplinary major hosted by the Department of Land, Air, & Water Resources (<http://lawr.ucdavis.edu>).

The Sustainable Agriculture & Food Systems (SA&FS) major serves students interested in improving the sustainability of agriculture and food systems. This major prepares graduates to understand the interdisciplinary and systems-based aspects of sustainability and provides them with the knowledge, leadership skills and experiences required to excel in agricultural and food systems professions.

The Program

This program is designed to develop students' competencies for addressing the environmental, social, and economic challenges and opportunities associated with agricultural and food systems sustainability. The program emphasizes an experiential learning approach to sustainability education, allowing students to choose between three tracks within the major. Students in the Agriculture & Ecology track focus on crop and animal production systems, ecology, and practices that mitigate negative impacts while producing environmental and social benefits. Students in the Food & Society track focus on issues related to the social, cultural, political and community development aspects of agriculture and food systems. Students in the Economics & Policy track focus on issues related to agricultural and resource economics, policy and management. The program provides students with practical experiences through courses with on- and off-campus fieldwork and through internship placements at sites related to students' interests and focus of study.

Lead Faculty Advisor

Lead Faculty Advisor. M. Abou Najm (Land, Air & Water Resources)

Track I Advisor. M. Abou Najm (Land, Air & Water Resources)

Track II Advisor. R. Galt (Human Ecology), A. Haven Kiers (Human Ecology)

Track III Advisor. M. Abou Najm (Land, Air & Water Resources)

Advising Center for the major is located in 1150 PES; 530-752-1603.

Internships & Career Alternatives

Sustainable Agriculture & Food Systems students are required to complete an internship in the field before graduation. Internships have been arranged with local, county, & state agricultural agencies, production farms and commercial processors & retailers, domestic & international non-governmental organizations, and rural & urban community development programs. Graduates are prepared to pursue a broad range of careers related to agricultural production & food system management, rural & urban community services, education & development, and agricultural & environmental sciences, as well as careers in agricultural, environmental, and economic policy & analysis.

Positions may be in private industry, government and public service agencies and in the non-profit sector, nationally and internationally. The major also prepares students for graduate studies in a wide range of fields related to agriculture and food systems.

The major requirements below are in addition to meeting University Degree Requirements (<https://catalog.ucdavis.edu/undergraduate-education/university-degree-requirements/>) & College Degree Requirements (<https://catalog.ucdavis.edu/undergraduate-education/college-degree-requirements/>); unless otherwise noted. The minimum number of units required for the Sustainable Agriculture & Food Systems Bachelor of Science is 135.

Code	Title	Units
English Composition Requirement		
See College requirement. (https://catalog.ucdavis.edu/undergraduate-education/college-degree-requirements/agricultural-environmental-sciences/)		4-8
(1) Either two courses emphasizing written expression or one course emphasizing written expression and one course emphasizing oral expression, with a grade of C- (or P) or better. The following UC Davis courses satisfy this requirement:		
One course from ENL 003; UWP 001, UWP 001Y, UWP 001V, UWP 048, UWP 049, UWP 101, UWP 101Y, UWP 101V, UWP 102 series, or UWP 104 series; AND one course selected from the courses not selected above, or from CMN 001 or CMN 001V; COM 001, COM 002, COM 003, COM 004, or NAS 005.		
(2) Advanced Placement English score of 4 of 5 PLUS any course listed in 1(a) or 1(b) above EXCEPT UWP 001 or ENL 003.		
(3) By successfully passing the English Composition Examination administered by the College of Letters & Science upon completion of 70 units of degree credit (the examination does not yield credit).		
Must include CMN 001 or CMN 001V.		
English Composition Requirement Subtotal		4-8
Core Courses		
<i>Plant Science</i>		
PLS 015	Introduction to Sustainable Agriculture	4
<i>Community & Regional Development</i>		
CRD 020	Food Systems	4
ANS 112	Sustainable Animal Agriculture	3-4
or PLS 150	Sustainability & Agroecosystem Management	
<i>Agricultural & Resource Economics</i>		
ARE 121	Economics of Agricultural Sustainability	4
<i>Plant Science</i>		
PLS 190	Seminar on Alternatives in Agriculture	2
<i>Environmental Science & Policy</i>		
SAF 191A	Workshop on Food System Sustainability	3
or ESP 191A DISCC		
SAF 191B	Workshop on Food System Sustainability	3
or ESP 191B DISCONTINUED		
Core Courses Subtotal		23-24
Internship Requirement		
Students must complete at least 8 units of internship, which may be combined off-campus or on-campus units.		8
Internship Requirement Subtotal		8

Applied Production		
Choose one:		2-3
PLP 040	Edible Mushroom Cultivation	
PLS 049	Organic Crop Production Practices	
PLS 131	(Discontinued)	
VEN 101A	Viticultural Practices	
VEN 101B	Viticultural Practices	
VEN 101C	Viticultural Practices	
ENH 120	Management of Container Media	
Animal Science		
Choose one:		2
ANS 041L	Domestic Animal Production Laboratory	
ANS 049A	Animal Management Practices: Aquaculture	
ANS 049B	Animal Management Practices: Beef	
ANS 049C	Animal Management Practices: Dairy	
ANS 049D	Animal Management Practices: Goats	
ANS 049E	Animal Management Practices: Horses	
ANS 049F	Animal Management Practices: Laboratory Animals	
ANS 049G	Animal Management Practices: Meats	
ANS 049H	Animal Management Practices: Poultry	
ANS 049I	Animal Management Practices: Sheep	
ANS 049J	Animal Management Practices: Swine	
Choose one:		2-3
ABT 049	Field Equipment Operation	
ABT 052	Field Equipment Welding	
ABT 101	Engine Technology	
ABT/IAD 142	Equipment & Technology for Small Farms	
FST 050	Introduction to Food Preservation	
Applied Production Subtotal		6-8
Tracks		
Choose one track:		94-110
Track I: Agriculture & Ecology (p. 2)		
Track II: Food & Society (p. 3)		
Track III: Economics & Policy (p. 4)		
Tracks Subtotal		94-110
Total Units		135-158

Track I: Agriculture & Ecology

Focuses on crop and animal production systems, ecology, and practices that mitigate negative impacts while producing environmental and social benefits.

Code	Title	Units
Preparatory Subject Matter		
Mathematics		
MAT 016A	(Discontinued) **	3
MAT 016B	(Discontinued) **	3
PLS 120	Applied Statistics in Agricultural Sciences	4
or STA 100	Applied Statistics for Biological Sciences	
Chemistry		
CHE 002A	General Chemistry	5

CHE 002B	General Chemistry	5
Physics		
PHY 001A	Principles of Physics	3
Biological Science		
BIS 002B	Introduction to Biology: Principles of Ecology & Evolution	5
BIS 002C	Introduction to Biology: Biodiversity & the Tree of Life	5
Plant Science		
VEN 002	Introduction to Viticulture	2
Animal Science		
ANS 001	Domestic Animals & People	4
or ANS 002	Introductory Animal Science	
Food Science & Technology		
FST 001	Principles of Food Science	3
Economics		
ECN 001A	Principles of Microeconomics	4
or ECN 001AV	Principles of Microeconomics	
or ECN 001AY	Principles of Microeconomics	
Community & Regional Development		
CRD 001	The Community	4
Philosophy		
Choose one:		4
PHI 014	Ethical & Social Problems in Contemporary Society	
PHI 015	Introduction to Bioethics	
PHI 024	Introduction to Ethics	
Choose one:		4-5
ANT 002	Cultural Anthropology	
POL 001	American National Government	
or POL 001Y	American National Government	
POL 004	Basic Concepts in Political Theory	
SOC 001	Introduction to Sociology	
or SOC 001V	Introduction to Sociology	
SOC 003	Social Problems	
Preparatory Subject Matter Subtotal		58-59
Depth Subject Matter		
Agricultural & Resource Economics		
Choose one:		3-4
ARE 112	Fundamentals of Organization Management	
ARE 120	Agricultural Policy	
ARE 145	Farm & Rural Resources Appraisal	
ARE 147	Resource & Environment Policy Analysis	
ARE 150	Agricultural Labor	
Environmental Science & Policy		
Choose one:		3-4
ESP 161	Environmental Law	
ESP 169	Water Policy & Politics	
HYD 150	Water Law	
Soil Science		
SSC 100	Principles of Soil Science	4-5
or SSC 109	Sustainable Nutrient Management	

Choose two:	6-8
ENT 119	Apiculture
HYD/ESM/ABT 110	Irrigation Systems & Water Management
PLS 105	Concepts in Pest Management
PLS 111	Principles of Crop Production
PLS 112	Forage Crop Production
PLS 113	Biological Applications in Fruit Tree Management
PLS/IAD 160	Agroforestry: Global & Local Perspectives
PLS 171	Principles & Practices of Plant Propagation
SSC 111	Soil Microbiology
SSC 112	Soil Ecology
Additional upper division restricted electives chosen in consultation with the track faculty advisor.	20
Depth Subject Matter Subtotal	36-41
Total Units	94-100

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Course(s) discontinued; for additional guidance on the Mathematics requirement, see Major Advising (<https://lawr.ucdavis.edu/students/undergrad-programs/sustainable-agriculture-and-food-systems/general-advising/>).

Code	Title	Units
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Track II: Food & Society

Focuses on issues related to the social, cultural, political and community development aspects of agriculture and food systems.

Code	Title	Units
Preparatory Subject Matter		
<i>Philosophy</i>		
PHI 005	Critical Reasoning	4
or PHI 031	Appraising Scientific Reasoning	
Choose one:		4
PHI 014	Ethical & Social Problems in Contemporary Society	
PHI 015	Introduction to Bioethics	
PHI 024	Introduction to Ethics	
<i>Statistics</i>		
STA 013	Elementary Statistics	4
or STA 013Y	Elementary Statistics	
Choose at least one:		4-5
CRD 151	Community Field Research: Theory & Analysis	
LDA/ABT 150	Introduction to Geographic Information Systems	
STA 103	Applied Statistics for Business & Economics	
SOC 106	Intermediate Social Statistics	
<i>Chemistry</i>		
CHE 002A	General Chemistry	5
<i>Biological Science</i>		

BIS 002A	Introduction to Biology: Essentials of Life on Earth	4-5
or BIS 010	Everyday Biology	

Plant Science

PLS 002	Botany & Physiology of Cultivated Plants	4
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Choose one: 3-5

BIS 002B	Introduction to Biology: Principles of Ecology & Evolution	
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ESP 001	Environmental Analysis	
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WFC 010	Wildlife Ecology & Conservation	
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Food Science & Technology

FST 001	Principles of Food Science	3
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Soil Science

SSC 010	Soils in Our Environment	3
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Economics

ECN 001A	Principles of Microeconomics	4
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or ECN 001AV	Principles of Microeconomics	
or ECN 001AY	Principles of Microeconomics	

Political Science

POL 001	American National Government	4
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or POL 001Y	American National Government	
or POL 004	Basic Concepts in Political Theory	

Choose one: 4-5

ANT 002	Cultural Anthropology	
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SOC 001	Introduction to Sociology	
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or SOC 001V	Introduction to Sociology	
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SOC 003	Social Problems	
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Community & Regional Development

CRD 001	The Community	4
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CRD 002	(Discontinued) ¹	4
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Preparatory Subject Matter Subtotal 58-63

Depth Subject Matter

Agricultural & Resource Economics

Choose one: 4-5

ARE 112	Fundamentals of Organization Management	
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ARE 145	Farm & Rural Resources Appraisal	
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ARE 147	Resource & Environment Policy Analysis	
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ARE 150	Agricultural Labor	
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Choose one: 3-4

ARE 176	Environmental Economics	
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ESP 160	The Policy Process	
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ESP 161	Environmental Law	
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ESP 169	Water Policy & Politics	
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ESP 172	Public Lands Management	
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ESP 179	Environmental Impact Assessment	
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Choose 12 units: 12

ANT/ESP 101	Ecology, Nature, & Society	
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CRD 118	Technology & Society	
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CRD 142	Rural Change in the Industrialized World	
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CRD 149	Community Development Perspectives on Environmental Justice	
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CRD 152	Community Development	
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SOC 130	Race Relations	
SOC 160	Sociology of the Environment	
Choose one:		4
AMS 101G	Special Topics: New Directions in American Culture Studies	
AMS 156	Race, Culture & Society in the United States	
HIS 108	Global Environmental History	
HIS 172	American Environmental History	
NAS 123	Native Foods & Farming of the Americas	
or NAS 123V	Native Foods & Farming of the Americas	
NAS 162	California Indian Environmental Policy II	
PHI 109	Philosophy of the Social Sciences	
WMS 104	Feminist Research	
WMS 136	Critical Food Studies	
Additional upper division restricted electives chosen in consultation with the track faculty advisor.		20
Depth Subject Matter Subtotal		43-45
Total Units		101-108

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See your academic advisor for replacement course.

Track III: Economics & Policy

Focuses on issues related to agricultural and resource economics, policy and management.

Code	Title	Units
Preparatory Subject Matter		
<i>Mathematics</i>		
MAT 016A	(Discontinued) **	3
MAT 016B	(Discontinued) **	3
STA 013	Elementary Statistics	4
or STA 013Y	Elementary Statistics	
Choose one:		4
ARE 106	Econometric Theory & Applications	
STA 103	Applied Statistics for Business & Economics	
SOC 106	Intermediate Social Statistics	
<i>Chemistry</i>		
CHE 002A	General Chemistry	5
<i>Biological Science</i>		
BIS 002A	Introduction to Biology: Essentials of Life on Earth	4-5
or BIS 010	Everyday Biology	
<i>Plant Science</i>		
PLS 002	Botany & Physiology of Cultivated Plants	4
Choose one:		3-5
BIS 002B	Introduction to Biology: Principles of Ecology & Evolution	
ESP 001	Environmental Analysis	
WFC 010	Wildlife Ecology & Conservation	
<i>Food Science & Technology</i>		
FST 001	Principles of Food Science	3

<i>Soil Science</i>		
SSC 010	Soils in Our Environment	3
<i>Economics</i>		
ECN 100A	Intermediate Micro Theory: Consumer & Producer Theory	4
or ECN 100AV	Intermediate Micro Theory: Consumer & Producer Theory	
ECN 100B	Intermediate Micro Theory: Imperfect Competition & Market Failure	4
<i>Political Science</i>		
POL 001	American National Government	4
or POL 001Y	American National Government	
or POL 004	Basic Concepts in Political Theory	
Choose one:		4-5
ANT 002	Cultural Anthropology	
SOC 001	Introduction to Sociology	
or SOC 001V	Introduction to Sociology	
SOC 003	Social Problems	
<i>Community & Regional Development</i>		
CRD 001	The Community	4
<i>Philosophy</i>		
Choose one:		4
PHI 014	Ethical & Social Problems in Contemporary Society	
PHI 015	Introduction to Bioethics	
PHI 024	Introduction to Ethics	
Preparatory Subject Matter Subtotal		60-64
Depth Subject Matter		
<i>Agricultural & Resource Economics</i>		
Choose one:		3-4
ARE 112	Fundamentals of Organization Management	
ARE 145	Farm & Rural Resources Appraisal	
ARE 150	Agricultural Labor	
ARE 157	Analysis for Operations & Production Management	
Choose 11-12 units:		11-12
ARE 120	Agricultural Policy	
ARE 130	Agricultural Markets	
ARE 147	Resource & Environment Policy Analysis	
ARE 176	Environmental Economics	
ESP 160	The Policy Process	
ESP 161	Environmental Law	
ESP 169	Water Policy & Politics	
ESP 172	Public Lands Management	
ESP 179	Environmental Impact Assessment	
Choose 8 units:		8
ANT 101	Ecology, Nature, & Society	
CRD 118	Technology & Society	
CRD 142	Rural Change in the Industrialized World	
CRD 149	Community Development Perspectives on Environmental Justice	
CRD 152	Community Development	

SOC 130	Race Relations	
SOC 160	Sociology of the Environment	
Additional restricted electives chosen in consultation with an advisor.		20
Depth Subject Matter Subtotal		42-44
Total Units		102-108

**

Course(s) discontinued; for additional guidance on the Mathematics requirement, see Major Advising (<https://lawr.ucdavis.edu/students/undergrad-programs/sustainable-agriculture-and-food-systems/general-advising/>).