Sustainable Plant Systems

Academic Year 2024—2025

An interdisciplinary program that focuses on advancing the science of modern agriculture, plant management, and crop production in ways that maximize efficiency, the quality of yields, and strives to conserve and use natural resources responsibly

College of Agriculture, Life & Environmental Sciences

Sustainable Plant Systems Major Curriculum Requirements

General Education	Needs	Available Course Options
Entry Course	1 course	UNIV 101 Introduction to the General Education Experience
Foundation Mathematics	1 course	MATH 113 Elements of Calculus MATH 119A Math of Biological Systems: a calc based approach ***Recommended!*** MATH 122B First-Semester Calculus MATH 125 Calculus I
Foundation Composition	1 course	ENGL 102 First-Year Composition (2nd Semester) ENGL 108 Foundations Writing for English as an Additional Language ENGL 109H Advanced First-Year Composition
Foundation 2nd Language	1 course	Second Semester Proficiency (i.e. SPAN 102) or higher Approved Equivalent Credits or Testing Scores
Core Requirements	7 courses	Four Exploring Perspectives Courses • One Artist Course • One Humanist Course • One Natural Scientist Course ***(Satisfied by Supporting Coursework i.e., CHEM 151)*** • One Social Scientist Course Three Building Connections Courses • Various Options
Portfolio	1 course	UNIV 301 General Education Portfolio
Supporting Coursework	**Needs**	**Available Course Options**
First Semester Introductory Chemistry	4 units	CHEM 151 Chemical Thinking I, or approved equivalent
Second Semester Introductory Chemistry	4 units	CHEM 152 Chemical Thinking II, or approved equivalent
Advanced Chemistry	3 units	CHEM 241A Lectures in Organic Chemistry (1st Semester) CHEM 242A Honors Lectures in Organic Chemistry CHEM 246A Lectures in Organic Chemistry ENVS 462 Environmental Soil and Water Chemistry
Calculus	3 units	MATH 113 Elements of Calculus MATH 119A Math of Biological Systems: a calc based approach MATH 122B First-Semester Calculus MATH 125 Calculus I
Statistics	3 units	MATH 263 Introduction to Statistics and Biostatistics MATH 363 Introduction to Statistical Methods AREC 239 Intro to Statistics and Data Analysis ENVS 275 Data Analysis for Life and Environmental Sciences
Physics	3 units	PHYS 102 Introduction to Physics I
Major Core	**Needs**	**Available Course Options**
Soil Science	4 units	ENVS 200 Introduction to Sol Science and ENVS 201 Soils Laboratory
Soil Fertility & Nutrition	3 units	ENVS 316 Soil Fertility and Plant Nutrition
Plant Biology	4 units	PLS 240 Plant Biology
Genetics	4 units	ECOL 320 Genetics PLS 312 Animal and Plant Genetics
Plant Propagation	3 units	PLS 330 Principles and Techniques of Plant Propagation and Culture
Insect and Pest Management	3 units	ENTO 300 Insect Pest Management for Desert Cropping Systems ENTO 468 Integrated Pest Management ENTO 497C Controlled Environment Agriculture IPM
Plant Pathology	3 units	PLP 305 Introduction to Plant Pathology
Applied Plant Physiology	3 units	PLS 360 Plant Growth and Physiology PLS 475A Applied Plant Physiology
Soil Ecology of Sustainable Systems	3 units	ENVS 401 Sustainable Management of Arid Lands and Salt-Affected Soils ENVS 431 Soil Genesis ENVS 450 Green Infrastructure

Sustainable Plant Systems Major Curriculum Requirements

Career Preparation	Needs	Available Course Options
Colloquia	1 course	ENVS 195B Careers in Crop Production PLS 195A How Will We Feed and Clothe 9-Billion People in 2050?
Communications	3 units	ALC 422 Communicating Knowledge n Agriculture and the Life Sciences ENVS 408 Scientific Writing for Environmental, Agriculture, and Life Sciences ENVS 415 Translating Environmental Science
Career Preparation	3 units	CALS 195C and PLS 498 Senior Capstone
Internship/Applied Course	3 units	BE, ENVS, or PLS 392/492 Directed Research BE, ENVS, or PLS 393/493 Internship BE, ENVS, or PLS 399/499 Independent Study

Must chose one of the three emphases to complete the degree

Emphases and their Curriculum Requirements

Agronomy and Horticulture

This path in our sustainable plant systems major will help you learn the appropriate management of the crop ecosystem and critical aspects of soil-plant relationships.

You will focus on low water use and disease-resistant plants that increase crop yield and plant health in fields where land size often constrains production.

Agronomy and Sustainability	6 units	ENVS 401 Sustainable Management of Arid Lands & Salt-Affected Soils PLS 306 Crop Science and Production
Agronomy and Physics	3 units	ENVS 420 Environmental Physics ENVS 470 Soils Physics
Agronomy and Biotech and Genetics	3 units	PLS 340 Introduction to Biotechnology PLS 415 Plant Breeding and Genetics PLS 424R Plant Biotechnology PLS 449A Plant Generics and Genomics
Agronomy and Weed Science	3 units	PLS 300 Applied Weed Science PLS 400 Noxious, Invasive Plants of Arizona
Agronomy Electives	15 units	Various Options Available

Controlled Environment Agriculture

This path in our sustainable plant systems major will help you cultivate technologies to efficiently produce plants and plant-based products.

You will learn how to optimize resource consumption and use environmentally, socially and economically sustainable growing systems in arid lands and urban settings

Controlled Environment Agriculture Core Requirements	27* units	BAT 310 Introduction to Biosystems Analytics BE 201 Intro to Biosystems Analytics, Technology, and Engineering BE 217 + BE 217L Introduction to Hydroponics Lecture and Lab BE 234 Future of Food BE 247 Introduction to Sensors and Controls BE 334 Aquaponics Design BE 350 + BE 350L Advanced Hydroponic Crop Production Lecture and Lab BE 444 Aquaponics Engineering BE 479 Applied Instrumentation for Controlled Environment Agriculture CSC 110 Introduction to Computer Programming I ENTO 497C Controlled Environment Agriculture IPM ***(If not taken for CORE)*** PLS 302 The Science of Cannabis PLS 235 Introduction to Urban Horticulture PLS 483 Controlled Environment Systems
***Once the Career Prep Internship/Applied Units are Completed, Three of the 27 Units May Be Experiential**	(3) unit	BE 391 Preceptorship BE 392/492 Directed Research BE 393/493 Internship BE 399/499 Independent Study

Emphases and their Curriculum Requirements

Urban Horticulture

This path in our sustainable plant systems major will help you develop methods for producing and managing edible and ornamental plants.

You will focus on lessening inputs and environmental impact and promoting human health and economic well-being.

Urban Horticulture Core	9 units	LAR 420 Plant Materials PLS 235 Introduction to Urban Horticulture PLS 303 Arboriculture
Urban Horticulture Electives	18 units	Various Options Available

Sustainable Plant Systems Minor Curriculum Requirements

Introductory Chemistry	Needs	Available Course Options
Chemistry	1 course	CHEM 141 General Chemistry Lecture I: Quantitative CHEM 151 Chemical Thinking I ***Recommended!*** Approved Transfer Course
Core Science	**Needs**	**Available Course Options**
Soil Science	4 courses	ENVS 200 Introduction to Sol Science and ENVS 201 Soils Laboratory
Plant Biology		PLS 240 Plant Biology
Colloquia Courses ***(max one is allowed)***		ENVS 195A Careers in Environmental Science PLS 195A How Will We Feed and Clothe 9-Billion People in 2050? PLS 195B The Science Underpinning GMOs and Organics
Electives	**Needs**	**Available Course Options**
Upper Division Electives	9 units	Various Options Available

With SPS you get

A solid foundation in:

- Applied Plant Science
- Soil Science
- Knowledge of Environmental Science

PLUS

- A Fresh Perspective on Sustainability
- Hands-on and Field Experience

For more information contact your SPS advisor

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