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.
## Sustainable Plant Systems Major Curriculum Requirements

<table>
<thead>
<tr>
<th>General Education</th>
<th>Needs</th>
<th>Available Course Options</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Entry Course</strong></td>
<td>1 course</td>
<td>UNIV 101 Introduction to the General Education Experience</td>
</tr>
</tbody>
</table>
| **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 Soil 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 | ENTO 300 Insect Pest Management for Desert Cropping Systems  
ENTO 468 Integrated Pest Management  
ENTO 497C Controlled Environment Agriculture IPM |
| Insect and Pest Management | 3 units | PLS 330 Principles and Techniques of Plant Propagation and Culture |
| 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

<table>
<thead>
<tr>
<th>Career Preparation</th>
<th>Needs</th>
<th>Available Course Options</th>
</tr>
</thead>
</table>
| 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 in 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 |

### 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.

<table>
<thead>
<tr>
<th>Emphasis</th>
<th>Units</th>
<th>Courses</th>
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</table>
| 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 Genetics 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.

<table>
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<tr>
<th>Emphasis</th>
<th>Units</th>
<th>Courses</th>
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</table>
| 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

<table>
<thead>
<tr>
<th>Emphasis</th>
<th>(3) unit</th>
<th>Courses</th>
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</thead>
</table>
|                                 |          | 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.

<table>
<thead>
<tr>
<th>Urban Horticulture Core</th>
<th>Units</th>
<th>Available Course Options</th>
</tr>
</thead>
<tbody>
<tr>
<td>LAR 420 Plant Materials</td>
<td>9</td>
<td></td>
</tr>
<tr>
<td>PLS 235 Introduction to Urban Horticulture</td>
<td></td>
<td></td>
</tr>
<tr>
<td>PLS 303 Arboriculture</td>
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<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Urban Horticulture Electives</th>
<th>Units</th>
<th>Available Course Options</th>
</tr>
</thead>
<tbody>
<tr>
<td>Various Options Available</td>
<td>18</td>
<td></td>
</tr>
</tbody>
</table>

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 | ENVS 200 Introduction to Soils Science and ENVS 201 Soils Laboratory

Plant Biology 4 courses | 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

Colloquia Courses *(max one is allowed)* | Available Course Options
---|---
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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