

## Subplan: Plant Sciences

### Aim:

To prepare students for careers in plant or microbial biology at the molecular, cellular, organismal, and population levels.

### Learning objectives:

In addition to achieving the learning objectives of the major, graduates of this subplan will be able to...

- XXXXX
- XXXXX

### Required general coursework

Students must meet all University of Arizona and UA College of Agriculture and Life Sciences requirements for graduation. These include:

- Composition requirements
- Second language requirements
- General education requirements (Natural Sciences requirements are satisfied by major coursework)
- Overall required units, upper division units, and 4-year institution units

### Required and elective major coursework

Course number	Course name	Units
<i>Mathematics requirements and supporting coursework (35-38 credits)</i>		
Mathematics: Complete <b>one</b> of the following:		
MATH 113	Elements of Calculus	3
MATH 122A+122B	Functions for Calculus + First-Semester Calculus	5
MATH 125	Calculus I	3
Science Communication: Complete <b>one</b> of the following:		
ENVS 408	Scientific Writing	3
ENVS 415	Translating Environmental Science	3
ENGL 308	Technical Writing	3
COMM 312	Applied Organizational Communication	3
ENGL 307	Business Writing	3
AGED 422	Communicating Knowledge in Ag & Life Science	3
Complete <b>all</b> of the following:		
PHYS 102+181	Introductory Physics I, lecture + lab	4
CHEM 141+143 or 151	General Chemistry I, lecture + lab	4
CHEM 142+144 or 152	General Chemistry II, lecture + lab	4
CHEM 241A+243A	Organic Chemistry I, lecture + lab	4
BIOC 384	Foundations in Biochemistry	3
MCB 181R+L	Introductory Biology I, lecture + lab	4
ECOL 182R	Introductory Biology II, lecture	3
AREC 239 or BIOS 376	Introduction to Statistics and Data Analysis or Introduction to Biostatistics	4 or 3
<i>Core courses for major (21 credits)</i>		
PLS 195A	Colloquium - How Will We Feed and Clothe 9-billion People in 2050?	1

Plant Sciences	Plant Sciences (generic) subplan	<i>Draft</i>
PLS 240	Plant Biology	4
PLS 305	Introductory Plant Pathology	3
PLS 312	Animal and Plant Genetics	4
PLS 359	Plant Cell Structure and Function	3
PLS 360	Plant Growth and Physiology	3
PLS 361	Plant Physiology Lab	1
PLS 498	Senior Capstone	2
<i>Required courses for subplan (15 credits)</i>		
ECOL 335	Evolutionary Biology	3
PLS 440	Mechanisms in Plant Development	3
PLS 448A	Plant Biochemistry and Metabolic Engineering	3
PLS 449A	Plant Genetics + Genomics	3
PLS 458	Plant Molecular Biology	3
<i>Approved electives for subplan (enough to bring total to 28 for subplan).</i>		
PLS 307	Evolution of Food Plants	3
PLS 329A	Microbial Diversity	3
PLS 330	Principals and Techniques of Plant Propagation and Culture	3
PLS 333	General Virology	3
PLS 340	Introduction to Biotechnology	3
PLS 340L	Biotechnology Laboratory	2
PLS 415	Plant Breeding and Genetics	3
PLS 424R	Plant Biotechnology	3
PLS 424L	Plant Biotechnology Laboratory	2
PLS 428R	Microbial Genetics	3
PLS 428L	Microbial Genetics lab	2
PLS 452	Antibiotics – A Biological Perspective	3
PLS 472	Plant Systematics	4
PLS 475A	Applied Plant Physiology	3
PLS 479	Applied Instrumentation for Controlled Environmental Ag	3
PLS 480	Medicinal Plants	3
PLS 483	Controlled Environment Systems	3
BE/CHEE 481A	Engineering of Biological Processes	3
BE 487	Metagenomics: From Genes to Ecosystems	3
BIOC 385	Metabolic Biochemistry	3
ECOL 326	Genomics	3
ECOL 340	Evolution of Plant Form and Function	3
MCB 404	Bioethics	3
MCB 416A	Bioinformatics and Genomic Analysis	3
MCB 422	Problem Solving with Genetic Tools	3
MCB 473	Recombinant DNA Methods and Applications	4
MIC 328R	Microbial Physiology	3
MIC 328L	Microbial Physiology laboratory	1
MIC 350	Core Concepts in Molecular Microbiology	3
MIC 421B	Microbiological Techniques	5
MIC 430	Food Microbiology & Biotechnology	3
MIC 430L	Advanced Food Science & Microbiology Laboratory	2
NSC/PLS 3XX	Fermented Foods, Beverages, and other Plant Products	3
NSC 351R	Fundamentals of Food Science	3