

# CURRICULUM OVERVIEW

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## Plant Systems

Career and Technical Education Series



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## Plant Systems Course Overview

Plant Systems is a semester-length high school elective that introduces students to the basics of plant biology, soil science, agriculture, and horticulture, along with the environmental management practices involved in each, including integrated pest management, biotechnology, growth techniques, and crop management. Students will learn the basic parts of a plant, how plants are scientifically classified, and how they interact with water, air, nutrients, and light to undergo the processes of photosynthesis and respiration. Plant reproduction, including pollination, germination, and dispersal of seeds, is also presented.

- **Unit 1: What is Plant Science:** This unit serve as an introduction to plant science in terms of plant biology, soil management, basic conservation techniques, as well as the career tracks common in agriculture, horticulture, landscape design, and biotech research.
- **Unit 2: Plant Structure and Function:** Unit 2 focuses on the specifics of plant biology and is the most technical unit in the course. Information about plant anatomy briefly introduced in Unit 1 is discussed in more detail, encompassing specifics about flowers and plant reproduction with regard to seeds, pollination, and germination.
- **Unit 3: Crop Management:** Unit 3 is divided into chapters on precision agriculture and crop management, mostly as they relate to agriculture.
- **Unit 4: Specialty Crops:** Unit 4 focuses more on horticulture, especially as it pertains to greenhouse crops and orchards.
- **Unit 5: Plant Science Careers:** The course's final unit concentrates on careers in the plant sciences. This encompasses a lesson on agricultural economics, which is key to understanding how the agriculture industry affects the U.S. economy as a whole, and by extension the job market for anyone interested in agronomy, horticulture, or landscape design.

Unit 1: What Is Plant Science?		
Plant Systems	Assignments	
	1. Course Overview	10. Soil Nutrient Management
	2. What Is Plant Science?	11. Conservation Practices
	3. Project: Investigating Careers in the Plant Sciences	12. Project: Putting Your State Soil into Practice
	4. The Scientific Classification of Plants	13. Quiz 2: Soil
	5. Project: Understanding Phyla	14. Special Project*
	6. Plant and Seed Identification	15. Test
	7. Quiz 1: Introduction	16. Course Project Part 1: The CSA Concept: Interview a Farmer*
	8. Soil Types	17. Glossary and Credits
	9. Project: Determining Soil Types	

Unit 2: Plant Structure and Function		
Plant Systems	Assignments	
	1. Plant Anatomy	9. Respiration
	2. Project: Illustrating the Features of Flowers	10. Biotechnology and Agriculture in Society
	3. Seeds	11. Project: Investigating Golden Rice
	4. Pollination and Plant Reproduction	12. Quiz 2: Plant Physiology
	5. Project: Pollination and Colony Collapse Disorder	13. Special Project*
	6. Quiz 1: Plant Anatomy	14. Test
	7. Photosynthesis	15. Course Project Part 2: Develop a Farm Map*
	8. Project: The Effects of Light on Plant Growth	16. Glossary and Credits

Unit 3: Crop Management		
Plant Systems	Assignments	
	1. Growing Climates of the United States	9. Yield Calculations
	2. Yield Calculations and Pest Identification	10. Crop Management and Stewardship of Natural Resources
	3. Project: Integrated Pest Management for a Model Crop	11. Project: Sustainable Agriculture in Your State: A Research Study Profile
	4. Agricultural Technology	12. Quiz 2: Crop Management Plans
	5. Project: Precision Agriculture in Your State: A Web Page Summary for the Chamber of Commerce	13. Special Project*
	6. Quiz 1: Precision Agriculture	14. Test
	7. Crop Management and Pesticides	15. Course Project Part 3: Create a Crop Plan*
	8. Project: Interview a Farmer about Crop Nutrient Management Plans	16. Glossary and Credits
Unit 4: Specialty Crops		
Plant Systems	Assignments	
	1. Greenhouses and Production Methods	9. Project: Design Principles of Famous Gardens
	2. Project: The Greenhouse Effect	10. Turfgrass
	3. Greenhouse Growth Techniques	11. Project: Water Management for Golf Courses
	4. Greenhouse Retail Products	12. Quiz 2: Landscape and Orchards
	5. Project: Schedule for a Bedding Plant-Mum-Poinsettia Greenhouse Operation	13. Special Project*
	6. Quiz 1: Greenhouses	14. Test
	7. Orchards	15. Course Project Part 4: Outline an Integrated Pest Management Plan*
	8. Landscape Design	16. Glossary and Credits
Unit 5: Plant Science Careers		
Plant Systems	Assignments	
	1. Careers in Agronomy	11. Project: Agronomics: Studies from the Economic Research Service
	2. Careers in Horticulture	12. Plant Science Career Outlooks
	3. Project: Interview a Master Gardener	13. Quiz 2: Employers and Economics
	4. Careers in Landscape Design	14. Special Project*
	5. Project: Investigating Landscape Urbanism	15. Test
	6. Quiz 1: Training and Career Areas	16. Course Project Part 5: Create a Nutrient Management Plan*
	7. Plant Science Employers	17. Glossary and Credits
	8. Project: Conducting a Job Shadow	
	9. Agricultural Economics	
	10. Agricultural Economics	
Unit 6: Course Project, Review, and Exam		
Plant Systems	Assignments	
	1. Course Project Part 6: Create Your Website *	2. Review
		3. Exam

(\*) Indicates alternative assignment