

Plant Science Basics

Curriculum Overview

Designed for:

High school students in agriculture, horticulture or botany courses

Length:

The activities in this curriculum require between 10 to 14 hours to complete. With supplemental materials, this curriculum can be adapted to a longer block of time.

Goal:

To help participants understand basic plant science fundamentals through a variety of hands-on activities and resources.

Synopsis:

This curriculum helps participants learn about basic plant science fundamentals as it relates to horticulture, agriculture, botany or science. It introduces participants to the structure of plant cells, roots, stems, leaves and flowering plants. The lessons integrate hands-on activities and resources throughout each lesson. A Dicot Plant Leaf model and Plant Cell model offer an enlarged 3-D view, made of durable plastic to be used as a demonstrator and passed around for participants to view. The Plant Science Poster Set provides an easy visual reference to participants on the parts of a flower, parts of a leaf/root/stem, and plant identification features including venation, margin and shape. The Plant Science Trivia Cards also provide an engaging and fun small group and class-wide activity to reinforce identification of venation, margin and shape. The lessons also include research projects and lab activities to bring all of the information together.

Lesson Themes Include:

- Introduction to plant science
- Plant cell structure
- Roots, stems and leaves
- Flowering plants
- Plant identification features
- Photosynthesis, respiration and transpiration
- Exploring botany and plant science careers

Curriculum Components:

- Teacher's guide – complete lessons, including detailed steps of activities, time and materials needed, student handouts and instruction information
- Presentation slides
- Student materials
- Assessment tools

Learning Objectives:

Lesson	Title	Approximate Time
1	Introduction to Plant Science <ul style="list-style-type: none"> • Define plant science • Classify different types of plants • Identify the uses of plants 	35-45 minutes
2	Plant Cell Structure <ul style="list-style-type: none"> • Define key vocabulary terms relating to plant cell structure • Accurately draw and label the parts of a plant cell • Identify the function of plant cell parts 	85-130 minutes

Lesson	Title	Approximate Time
3	Leaves, Roots and Stems <ul style="list-style-type: none"> • Identify the function of leaves, roots and stems • Identify the internal parts of a leaf, root and stem from a cross-section diagram • Accurately label the external parts of a leaf, root or stem and the function of each 	115-195 minutes
4	Flowering Plants <ul style="list-style-type: none"> • Define what a flowering plant is • Accurately identify the parts of a flower • Dissect a real flower and identify the parts • Understand key vocabulary terms relating to flowering plants and their definitions 	65 minutes
5	Plant Identification Features <ul style="list-style-type: none"> • Accurately identify nine different leaf venations • Describe and recognize 40 common leaf shapes • Accurately identify 12 different leaf margins • Understand how plant identification features can be used together to identify plants 	105-130 minutes
6	Photosynthesis, Respiration and Transpiration <ul style="list-style-type: none"> • Explain the process of photosynthesis • Define photosynthesis, respiration and transpiration • Articulate how photosynthesis, respiration and transpiration functions in plant growth and development • Describe the reactants and products of photosynthesis and the source of reactions from the environment 	100-115 minutes
7	Exploring Botany and Plant Science Careers <ul style="list-style-type: none"> • Identify several professions in the botany and plant science fields • Consider if any of the occupations covered in class are appropriate for them 	85-160 minutes