

Curriculum at a Glance

Botany

Level: 300

Grades 11 and 12

This one-semester course covers basic principles of botany, emphasizing the major roles of plants on earth. Students will learn how all living things depend on the existence of plants, and the many ways in which humans use plants. Topics include the physiology and morphology of plants, photosynthesis, the major biogeochemical cycles, basic principles of agriculture and horticulture, and how botany can be used in forensic investigation. Students will learn by doing hands-on projects both individually and in teams, peer learning, lecture, readings, and hands-on labs. The semester culminates with a final project, which will be presented in class during the midterm/final.

Unit Name	Content
Introduction to Botany	<ul style="list-style-type: none">● What is botany?● Scientific method in botany● What are plants?● Why are plants important?
Botany Basics	<ul style="list-style-type: none">● Ecology<ul style="list-style-type: none">○ Organization of life○ Biomes (characterized by types of plants)○ Energy; radiant, chemical, kinetic, potential; 1st & 2nd laws of thermodynamics● Cells<ul style="list-style-type: none">○ Prokaryotic vs eukaryotic○ Plant vs animal
Plant Life	<ul style="list-style-type: none">● Plant tissues<ul style="list-style-type: none">○ Ground, dermal, vascular, simple, complex● Plant structure

	<ul style="list-style-type: none"> ○ Roots (soils) , stems, leaves ○ Monocots vs dicots ● Energy needs; photosynthesis, cellular respiration ● Transport; vascular vs nonvascular plants ● Reproduction <ul style="list-style-type: none"> ○ Alternation of generations, sexual vs asexual, pollinators ● Habitat requirements <ul style="list-style-type: none"> ○ Abiotic & biotic factors ● Response <ul style="list-style-type: none"> ○ Plant hormones ○ Gravitropism, geotropism, phototropism, photoperiodism ○ Radiation, insecticides, pesticides ● Adaptations/evolution
Applications	<ul style="list-style-type: none"> ● Importance of plants in our lives <ul style="list-style-type: none"> ○ Food, gardening, medicine, beverages, art, beauty, textiles, recreation, transport, shelter, etc. ○ Forensic botany & palynology