

Horticulture 18053

Rationale Statement:

Horticulture is designed to give students a background in horticultural science and the many career opportunities in the nursery, garden, turf and landscape industries. It addresses the biology and genetics involved in the production, processing and marketing of horticulture plants and productions. Increased interest in the quality of the environment, conservation, and restoration projects are stimulating growth in the industry. Quality nursery and landscape operations require skilled, educated employees. Classroom and laboratory content will be enhancing by utilizing appropriate equipment and technology. Mathematics, science (physical science, biology, Chemistry), English and human relations skills will be reinforced in the course. Worked-based learning opportunities appropriate for this course are school-based enterprise and field trips. Opportunities for application of clinical and leadership skills are provided by participation in FFA through activities, conference and skills competitions. Each student will be expected to complete a Supervised Agricultural Experience (SAE) program and/or Internship Project.

Suggested grade level: 9th – 12th

Topics covered:

- Plant classification
- Plant physiology
- Plant growth
- Plant propagation
- Pest management
- Water management
- Soil/media management
- Plant nutrients
- Managing plant growth
- Turf grass production
- Nursery production
- Vegetable/Fruit production
- Horticulture careers
- Record keeping
- Hydroponics

Indicator #1: Explain plant classifications.

Bloom's Taxonomy Level	Standard and Examples
Understanding	<p>HORT1.1 Describe plant classification.</p> <p>Examples:</p> <ul style="list-style-type: none"> • Classify plants using botanical growth habits, landscape uses, culture requirement and a simple botanical key. • Discuss plant selection and identification for local landscape applications.
Understanding	<p>HORT1.2 Identify horticultural plants.</p> <p>Examples:</p> <ul style="list-style-type: none"> • Identify landscaping plants. • Identify vegetables and fruits. • Identify floriculture crops. • Identify trees and shrubs. • Identify plants using a dichotomous key

Indicator #2: Define the basic principles of plant physiology and propagation.

Bloom's Taxonomy Level	Standard and Examples
Understanding	<p>HORT2.1 Explain the basic principles of plant physiology and growth.</p> <p>Examples:</p> <ul style="list-style-type: none"> • Describe photosynthesis, osmosis, transpiration, respiration, plant and cell structures. • Illustrate the factors affecting plant growth. • Sketch plant parts and identify their functions. • Choose potted foliage and flower parts for varied light levels. • Interpret plant growth deficiencies.

Applying	<p>HORT2.2 Demonstrate the propagation of plants by seeds and cuttings.</p> <p>Examples:</p> <ul style="list-style-type: none"> • Maintain dormant plants. • Propagate plants by seeds. • Transplant seedlings at the appropriate two leaf stage. • Plant bulbs and force to bloom. • Propagate plants in a soilless media. • Plan planting schedules. • Propagate plants by taking cuttings and by division.
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Indicator #3: Describe pest management in the horticultural industry.

Bloom's Taxonomy Level	Standard and Examples
Understanding	<p>HORT3.1 Identify the principles of pest management.</p> <p>Examples:</p> <ul style="list-style-type: none"> • Identify common plant diseases, insects, and weeds by using picture examples. • Describe methods of pest control for a specific pest. • Identify the proper chemicals in a specific application. • Discuss the requirements for pesticide applicators certification. • List the steps in chemical application. • List and compare the biological pest control methods. • Discuss integrated pest management.

Indicator #4: Analyze soil and water properties as they affect plant growth.

Bloom's Taxonomy Level	Standard and Examples
Analyzing	<p>HORT 4.1 Examine water and soil (media) management practices.</p> <p>Examples:</p> <ul style="list-style-type: none"> • Examine the different types of soil: clay, loam, silt and sand. • Compare and contrast the effect soil structure and texture have on water-holding ability. • Experiment with soil amendments. • Compare methods of soil conservation and the evaluate results.

Analyzing	<p>HORT 4.2 Examine soils and planting media.</p> <p>Examples:</p> <ul style="list-style-type: none"> • Distinguish soil mix materials and characteristics. • Test soil pH. • Select soil media. • Sterilize soils/soilless materials. • Select fertilizer to be used for a given soil type and plant. • Experiment with outdoor seedbed preparation.
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Indicator #5: Identify plant nutrients and their affects on proper plant growth.

Bloom's Taxonomy Level	Standard and Examples
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Understanding	<p>HORT5.1 Identify plant nutrition practices for ornamental plants as they relate to plant growth and health.</p> <p>Examples:</p> <ul style="list-style-type: none"> • Select fertilizers based on analysis. • Identify primary plant nutrients: Nitrogen, Phosphorous and Potassium. • Test soil mix for fertility by using a soil testing kit. • Read and interpret fertilizer labels and use proper application practices.
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Indicator #6: Demonstrate the importance of managing plant growth.

Bloom's Taxonomy Level	Standard and Examples
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Applying	<p>HORT6.1 Demonstrate the correct principles of pruning and training horticulture plants.</p> <p>Examples:</p> <ul style="list-style-type: none"> • Choose various plant materials and safely prune them according to plant and landscape requirement to manage growth and/or fruit and flower production. • Trim and prune hedges/shrubs. • Prune trees as outlined by the arbor industry standards.
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Indicator #7: Demonstrate the proper principles of turf grass production.

Bloom's Taxonomy Level	Standard and Examples
Applying	<p>HORT7.1 Employ selection, installation and maintenance of turf grass.</p> <p>Examples:</p> <ul style="list-style-type: none"> • Install and/or maintain a lawn area. • Demonstrate lawn seeding. • Compare methods of laying sod. • Demonstrate lawn or turf maintenance practices. • Demonstrate maintenance and operation of lawn equipment. • Demonstrate safe operation and maintenance of hand and power equipment.

Indicator #8: Employ the principles of a nursery production.

Bloom's Taxonomy Level	Standard and Examples
Applying	<p>HORT8.1 Demonstrate the care and maintenance of nursery stock.</p> <p>Examples:</p> <ul style="list-style-type: none"> • Propagate and maintain a horticulture crop to the point of sale. • Demonstrate planting of nursery stock in containers. • Demonstrate pruning of nursery stock as needed.

Indicator #9: Demonstrate the principles of producing vegetable/fruit crops.

Bloom's Taxonomy Level	Standard and Examples
Applying	<p>HORT9.1 Demonstrate the care and maintenance of vegetable/fruit crops.</p> <p>Examples:</p> <ul style="list-style-type: none"> • Illustrate a plan for planting a garden. • Prepare seedbed for garden seeds. • Maintain and operate garden equipment. • Choose methods of weed control in a garden. • Interpret the maturity of fruits and vegetables. • Prepare fruit/vegetable produce for marketing. • Choose markets for fruit/vegetable produce.

Indicator #10: Examine horticulture careers and industry.

Bloom's Taxonomy Level	Standard and Examples
Analyzing	<p>HORT10.1 Examine horticulture career paths.</p> <p>Examples:</p> <ul style="list-style-type: none"> • Examine the scope, size and economic impact of the Horticulture industry in the United States. • Distinguish strategies for obtaining employment. • Complete a job application. • Develop an employment resume. • Compare careers in the horticulture industry.

Indicator #11: Employ record keeping practices.

Bloom's Taxonomy Level	Standard and Examples
Applying	<p>HORT11.1 Keep records of business transactions and production records.</p> <p>Examples:</p> <ul style="list-style-type: none"> • Demonstrate proper production record keeping. • Write a marketing plan for specific crops. • Write a financial statement for a sample greenhouse.

Indicator #12: Identify the principles of specialized growing procedures.

Bloom's Taxonomy Level	Standard and Examples
Understanding	<p>HORT12.1 Explain the basics of hydroponics production.</p> <p>Examples:</p> <ul style="list-style-type: none"> • Discuss the history of hydroponics. • Explain why hydroponics is more prevalent in other countries than in the United States. • Identify suitable hydroponics site characteristics. • Classify basic hydroponics equipment and tools used in a greenhouse.
Understanding	<p>HORT12.2 Classify how different hydroponics systems operate.</p> <p>Examples:</p> <ul style="list-style-type: none"> • Classify different types of growth medium including rockwool, perlite bag culture, wood based, gravel and sand. • Demonstrate the basic techniques used in growing tomatoes, cucumbers, lettuce and peppers hydroponically. • Explain the commercial crops produced hydroponically. • Explain specific nutrient requirements for a hydroponic crop. • Identify and adjust in pH in solutions.