

STRANDS AND STANDARDS

NURSERY OPERATION



Course Description

Students will develop knowledge and skills in nursery operation and landscape management practices that will prepare the students to select appropriate plant materials and to design, install, and maintain interior and exterior plantings and hardscapes. They will also learn to maintain the facilities and equipment associated with this industry.

Intended Grade Level	9-12
Units of Credit	0.5
Core Code	30.01.00.00.165
Concurrent Enrollment Core Code	N/A
Prerequisite	N/A
Skill Certification Test Number	134
Test Weight	0.5
License Type	CTE and/or Secondary Education 6-12
Required Endorsement(s)	
Endorsement 1	Agriculture (CTE/General)
Endorsement 2	Ornamental Horticulture
Endorsement 3	N/A

STRAND 1

Students will explain the role of FFA in agricultural education.

Standard 1

Discuss the history and organization of FFA as it relates to the complete program of agricultural education.

- Explain the interrelationship of classroom and laboratory instruction, supervised agricultural experience, and FFA.
- Describe how, when, and why FFA was organized.
- Identify key FFA historical events.
- Identify the mission and strategies, colors, motto, emblem and parts of the emblem, and organizational structure of FFA.
- Recite and explain the meaning of the FFA Creed.
- Discuss the meaning and purpose of a program of activities and its committee structure.
- List FFA chapter officers, and discuss the role of each.

Standard 2

Identify opportunities in FFA.

- Describe FFA opportunities that develop leadership skills, personal growth, and career success.
- Summarize major state and national activities available to FFA members.

Standard 3

Describe FFA degrees, awards, and career development events (CDEs).

- List and explain the FFA degree areas.
- Identify FFA proficiency awards.
- List and discuss various team and individual CDEs.

STRAND 2

Students will explain the role of supervised agricultural experience (SAE) programs in agricultural education.

Standard 1

Examine the responsibilities and benefits associated with an SAE.

- Explain the meaning and benefits of supervised agricultural experience.
- Explain the characteristics of an effective SAE program and the responsibilities of those involved.

Standard 2

Determine the types of SAE programs.

- Compare entrepreneurship SAEs and placement SAEs.
- Describe research/experimentation SAEs.
- Describe exploratory SAEs.

Standard 3

Plan an SAE program.

- Identify the steps in planning an SAE program.
- Describe the function of a business/training plan and/or agreement in an SAE program.
- Develop a short-range plan and a long-range plan for an SAE program.
- Relate classroom and laboratory instruction to an SAE program.

Standard 3

Maintain and use SAE records.

- Explain the importance of keeping records on an SAE program.
- Explain how SAE records are organized.
- Follow approved procedures to make entries in SAE records.

STRAND 3

Students will demonstrate an understanding of nursery components

Standard 1

Explain nursery practices.

- Compare the different types of nurseries.
- Explain how a plant hardiness zone map and plant heat-zone map are used.
- Describe the three types of packaging of nursery crops and contrast the advantages and disadvantages of each (e.g., ball and burlap, container, and bare root).
- Explain how nursery stock is measured (e.g., trunk diameter, height, container size, etc.).
- Determine factors for selecting a nursery site.

Standard 2

Identify and categorize nursery plants.

- Explain systems used to classify plants.
- Classify nursery plants according to the hierarchical classification system, life cycles, plant use, and status as monocotyledons or dicotyledons.
- Identify flowering and shade trees.
- Identify fruit and nut trees and shrubs.
- Identify ornamental trees and shrubs.
- Identify ornamental grasses, ground covers, and vines

Standard 3

Propagate nursery crops.

- Compare and contrast sexual and asexual reproduction in nursery crops.
- Diagram the process of plant pollination and fertilization of flowering plants.
- Describe the process of and conditions required for seed germination.
- Demonstrate techniques for growing nursery crops from seed.
- Describe optimal conditions for asexual propagation.
- Demonstrate techniques used to propagate plants by grafting, cutting, division, separation, and layering.
- Transplant nursery crops.

Standard 4

Describe proper tree and shrub maintenance practices and procedures.

- Identify symptoms of water stress in trees and shrubs.
- Explain recommended watering practices for trees and shrubs.
- Identify symptoms of nutrient deficiency in trees and shrubs.
- Explain guidelines for fertilizing trees and shrubs.
- Describe how mulching and composting are used to retain moisture and supplement nutrients in nursery operations.
- Identify tools used for pruning trees and shrubs.
- Demonstrate various techniques for pruning trees and shrubs.
- Describe the use of growth regulators in tree and shrub production.

Standard 5

Examine the physical and chemical properties of growing media in a nursery application.

- Describe the components of growing media.
- Describe the functions of growing media.
- Determine desirable properties of growing media.
- Evaluate the advantages and disadvantages of soilless media.
- Demonstrate proper techniques for sampling growing media.
- Test and determine pH level of various growing media.
- Interpret pH test results of a growing medium sample.
- Describe pH and how it is modified.

Performance Objective

- Identify by name flowering and shade trees.
- Identify by name fruit and nut trees and shrubs.
- Identify by name ornamental trees and shrubs.
- Identify by name ornamental grasses, ground covers, and vines.

STRAND 4

Students will describe integrated pest management in a nursery operation

Standard 1

Describe the principles of integrated pest management (IPM).

- Explain IPM.
- Identify benefits of IPM.
- Describe pest control strategies associated with IPM.

Standard 2

Identify plant pests and diseases and their causes.

- Identify types of plant pests and disorders.
- Identify plant, insect, animal, and fungal pests.
- Identify infectious and noninfectious plant diseases.

Standard 3

Explain procedures for the safe handling, use, and storage of pesticides.

- Explain risks and benefits associated with the materials and methods used in plant pest management.
- Interpret pesticide labels.
- Explain procedures for mixing and storing pesticides.
- Describe types of pesticide controls and formulations.
- Explain the safety practices that should be followed when applying pesticides.
- Describe the proper disposal of surplus pesticides and empty containers.
- Evaluate environmental and consumer concerns regarding pest management strategies.

Performance Objective

- Identify by name types of plant pests and disorders.

STRAND 5

Students will demonstrate an understanding of nursery equipment and irrigation systems.

Standard 1

Plan, install, and maintain a nursery irrigation system.

- Determine plant needs for irrigation.
- Calculate water flow in gallons per minute (GPM).
- Identify and select components of irrigation systems, including pipes and joints.
- Plan and illustrate a distribution system.
- Calculate the cost of the parts, supplies, and labor for system installation.
- Cut, fit, and install PVC/poly pipes and fittings.
- Install valves and emitters.
- Perform an irrigation system test.
- Replace or repair irrigation system components.

Standard 2

Demonstrate the use of equipment and tools in nursery operations.

- Identify common equipment and tools and their use in nursery operations.
- Explain the meaning and importance of the operator’s manual.
- Identify the location and use of controls on equipment.
- Follow safe practices in the use of nursery operation equipment.

Standard 3

Properly maintain equipment used in nursery operations.

- Complete basic tire inspections and perform maintenance for safe tire performance.
- Check the oil level, and add oil if necessary.
- Check the fuel level, and add fuel if necessary.
- Service the air cleaner.

Performance Objective

- Plan, install, and maintain a nursery irrigation system.

STRAND 6

Students will explain nursery business concepts.

Standard 1

Prepare and price nursery plants for sale.

- Assess typical mark-up and pricing strategies.
- Attach price tags and care instructions.
- Describe effective packaging and delivery.
- Display nursery materials for sale.

Standard 2

Describe nursery business management.

- Demonstrate customer relations skills.
- Demonstrate the importance of effective inventory management.
- Recognize costs related to nursery production.
- Analyze the importance of marketing, promotion, and sales.
- Describe career opportunities in the nursery industry.
- Explain laws, codes, and regulations that affect the nursery industry.
- Demonstrate the importance of safety for nursery operation employees.

Skill Certificate Test Points by Strand

Test Name	Test #	Number of Test Points by Strand										Total Points	Total Questions
		1	2	3	4	5	6	7	8	9	10		
Nursery Operation	134	2	1	11	15	1	18					48	48