



## **EXAM INFORMATION**

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**Items**

56

**Points**

68

**Prerequisites**

NONE

**Grade Level**

9-12

**Course Length**

ONE SEMESTER

**Career Cluster**

AGRICULTURE, FOOD AND NATURAL  
RESOURCES

**Performance Standards**

INCLUDED

**Certificate Available**

YES

## **DESCRIPTION**

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Students will demonstrate knowledge and skills related to the floriculture industry. Floral design and greenhouse operations and management are the primary focus. Students will be prepared to create floral arrangements, produce commercial plant species in a controlled environment, and manage commercial and experimental greenhouse operations.

## **EXAM BLUEPRINT**

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STANDARD	PERCENTAGE OF EXAM
1- Student Organizations in Agricultural Education	3%
2- Agricultural Experience in Agricultural Education	3%
3- Greenhouse Crop Production Techniques	74%
4- Greenhouse Business Concepts	20%



## **STANDARD 1**

STUDENTS WILL DEVELOP PERSONAL, LEADERSHIP, AND CAREER SKILLS THROUGH STUDENT ORGANIZATIONS PARTICIPATION

- Objective 1** Assess the role of student organization participation in developing personal and leadership skills.
1. Identify important personal skills and the strategies used in developing the skills.
  2. Identify important leadership skills and the role of student organization participation in developing the skills.
- Objective 2** Assess the role of student organization participation in developing career skills.
1. List and describe proficiency awards appropriate for horticulture
  2. List and describe career development events appropriate for horticulture.
  3. Relate the importance of supervised agricultural experience to student organization achievement.
  4. Utilize student organization and supervised agricultural experience participation to gain advanced degrees of student organization membership.

Standard 1 Performance Evaluation included below (Optional)

## **STANDARD 2**

STUDENTS WILL EXPLAIN THE MAINTENANCE AND EXPANSION OF SUPERVISED AGRICULTURAL EXPERIENCE PROGRAMS

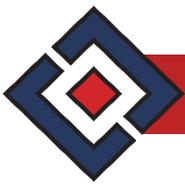
- Objective 1** Maintain and use agricultural experience records.
1. Explain how agricultural experience records are maintained from year to year.
  2. Explain how to summarize and analyze agricultural experience records.
- Objective 2** Devise long-range plans for expanding agricultural experience programs.
1. Evaluate the overall quality of a current agricultural experience and determine how to make it more productive or profitable.
  2. Explain factors that should be considered in expanding an agricultural experience program.
  3. Explain how placement agricultural experience and ownership agricultural experience programs may be expanded.

Standard 2 Performance Evaluation included below (Optional)

## **STANDARD 3**

STUDENTS WILL DEMONSTRATE GREENHOUSE CROP PRODUCTION TECHNIQUES

- Objective 1** Describe greenhouse structures.
1. Differentiate greenhouse designs.
  2. Review considerations for greenhouse frameworks.
  3. Identify and describe greenhouse glazing materials.



4. Describe the functions of the head house.
5. Describe greenhouse bench options.
6. Identify and operate supplemental lighting systems.

## Objective 2

Explain greenhouse climate control.

1. Describe methods of heating greenhouse structures.
2. Contrast major greenhouse cooling and ventilation systems.
3. Discuss how energy curtains are used to maintain greenhouse temperatures.
4. Analyze greenhouse climate controls.

## Objective 3

Describe automated greenhouse systems.

1. Assess automated planting systems.
2. Identify automated systems for moving plants in the greenhouse.
3. Compare automated watering systems.

## Objective 4

Examine the components and properties of growing media.

1. Describe the components of growing media.
2. Describe the functions of growing media.
3. Determine desirable properties of growing media.
4. Evaluate the advantages and disadvantages of soilless media.

## Objective 5

Investigate chemical characteristics of growing media.

1. Demonstrate proper techniques for sampling growing media.
2. Test and determine pH level of various growing media.
3. Interpret pH test results of a growing media sample.

## Objective 6

Supply nutrients to greenhouse crops.

1. Explain plant nutrition.
2. Describe pH and how it is modified.
3. Describe the components of a fertilizer.
4. Explain the methods of applying fertilizers to horticulture crops.

## Objective 7

Explain the effects of light, temperature, and water on plant growth.

1. Examine the effect of light on greenhouse crops.
2. Describe the influence of temperature on greenhouse crops.
3. Explain how watering practices influence greenhouse crop production.

## Objective 8

Identify and explain the functions of plant growth regulators.

1. Compare the functions of plant hormones.
2. Examine commercial uses for plant growth regulators.

## Objective 9

Propagate greenhouse crops.

1. Compare and contrast sexual and asexual reproduction.
2. Explain pollination, cross-pollination, and self-pollination of flowering plants.
3. Diagram the process of plant fertilization.
4. Describe the process of seed germination.
5. Explain the conditions required for seed germination.
6. Explain the importance of seed viability and vigor.



7. Demonstrate techniques for sowing seed.
8. Describe optimal conditions for asexual propagation.
9. Demonstrate techniques used to propagate plants by cuttings, division, separation, and layering.
10. Transplant greenhouse plant materials.

**Objective 10** Grow greenhouse crops.

1. Plan a growing schedule to maximize the production of the greenhouse facility.
2. Explain the importance of proper spacing of greenhouse crops and recommended spacing practices.
3. Select the appropriate container and medium for a greenhouse crop.
4. Explain the purposes for pinching greenhouse crops and the techniques used.
5. Describe disbudding procedures.
6. Demonstrate proper watering techniques.
7. Demonstrate production of potted flowering crops.
8. Demonstrate production of bulb crops.
9. Demonstrate production of bedding plants.
10. Demonstrate production of foliage plants

**Objective 11** Discuss pest management techniques.

1. Identify categories of pests (e.g., weeds, insects, fungi, etc.).
2. Explain best management practices while maintaining environmental integrity.
3. Discuss alternative pest control techniques.
4. Demonstrate safe practices in selecting, applying, storing, and disposing chemicals.
5. Explain integrated pest management (IPM).

Standard 3 Performance Evaluation included below (Optional)

## **STANDARD 4**

### **STUDENTS WILL EXPLAIN GREENHOUSE BUSINESS CONCEPTS**

**Objective 1** Prepare greenhouse crops for sale.

1. Clean plants and containers.
2. Decorate plants and containers.
3. Calculate mark-up.
4. Attach price tags and care instructions.

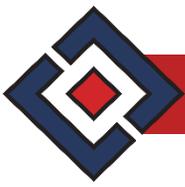
**Objective 2** Explain the basics of marketing in the greenhouse industry.

1. Recognize ways of maintaining and increasing the effectiveness of horticultural business displays.
2. Recognize how advertising is used.
3. Complete sales tickets.
4. Use proper telephone techniques.



- Objective 3 Describe greenhouse business management.
1. Differentiate the types of greenhouse businesses.
  2. Recognize costs related to production.
  3. Describe career opportunities associated with greenhouse management.

Standard 4 Performance Evaluation included below (Optional)



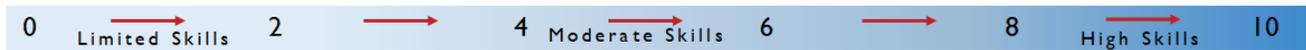
## Greenhouse Management Performance Standards (Optional)

Performance assessments may be completed and evaluated at any time during the course. The following performance skills are to be used in connection with the associated standards and exam. To pass the performance standard the student must attain a performance standard average of **8 or higher** on the rating scale. Students may be encouraged to repeat the objectives until they average **8 or higher**.

Students Name \_\_\_\_\_

Class \_\_\_\_\_

### PERFORMANCE RATING SCALE



#### STANDARD 1 Student Organization in Agricultural Education

Score:

- Students will attend a student organization meeting

#### STANDARD 2 Agricultural Experience in Agricultural Education

Score:

- Students will use the approved record book to record financial transactions and activities on an agricultural experience.

#### STANDARD 3 Greenhouse Crop Production

Score:

- Propagate plants using both seed and cuttings
- Perform typical plant maintenance including, transplanting, watering, pinching, and disbudding
- Students will develop a growing schedule to maximize the production of a green house facility
- Student will prepare greenhouse plants for sale

#### STANDARD 4 Greenhouse Business Concepts

Score:

- Student will develop short and long-range leadership and personal development goals
- Student will prepare greenhouse plants for sale

### PERFORMANCE STANDARD AVERAGE SCORE: