# Horticulture Course No. 18052 Credit: 1.0

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| **Student name:** |  | **Graduation Date:** |  |

Pathways and CIP Codes: **Diversified Agricultural Science (01.0000); Science and Industry Operations (01.1101).**

Course Description: **Technical Level:** General Horticulture courses expose students to the art and science of growing plants, shrubs, trees, flowers, fruits, and vegetables. In doing so, they cover a wide variety of topics, including greenhouse and nursery operations, soils and media mixtures, fruit and vegetable production, turf/golf course management, interior and exterior plant scaping, irrigation systems, weed and pest control, and floral design.

Directions:The following competencies are required for full approval of this course. Check the appropriate number to indicate the level of competency reached for learner evaluation.

**RATING SCALE:**

4. Exemplary Achievement: Student possesses outstanding knowledge, skills or professional attitude.

3. Proficient Achievement:Student demonstrates good knowledge, skills or professional attitude. Requires limited supervision.

2. Limited Achievement:Student demonstrates fragmented knowledge, skills or professional attitude. Requires close supervision.

1. Inadequate Achievement:Student lacks knowledge, skills or professional attitude.

0. No Instruction/Training:Student has not received instruction or training in this area.

## Benchmark 1: Post-Secondary Education Preparation

### Competencies

| **#** | **DESCRIPTION** | **RATING** |
| --- | --- | --- |
| 1.1 | Research and compare three different colleges or technical programs with programs in Horticulture or the plant systems pathway. |  |
| 1.2 | Describe how interest, training, and skills in ornamental horticulture can be adapted to a variety of career fields. |  |

## Benchmark 2: EMPLOYABILITY SKILLS

### Competencies

| **#** | **DESCRIPTION** | **RATING** |
| --- | --- | --- |
| 2.1 | Prepare and revise a resume, resume, and follow up letter. |  |
| 2.2 | Complete a job application. |  |
| 2.3 | Practice proper telephone etiquette. |  |
| 2.4 | Accept and provide criticism in an appropriate manner. |  |

## Benchmark 3: Plant Taxonomy

### Competencies

| **#** | **DESCRIPTION** | **RATING** |
| --- | --- | --- |
| 3.1 | List the important roles played by green plants in our lives and the earth’s ecosystem. |  |
| 3.2 | Explain the difference between genus, species, and variety and why scientific names are used. |  |
| 3.3 | Identify at least 30 plants by their common and scientific binomial name. |  |

## Benchmark 4: Plant Structures

### Competencies

| **#** | **DESCRIPTION** | **RATING** |
| --- | --- | --- |
| 4.1 | Identify parts of a cell. |  |
| 4.2 | Differentiate between monocot and dicot seeds. |  |
| 4.3 | List and describe the purpose of the four main parts of the plant. |  |
| 4.4 | Explain the functions of each part of a flower. |  |
| 4.5 | Explain the functions of a fruit. |  |

## Benchmark 5: Plant Growth Processes

### Competencies

| **#** | **DESCRIPTION** | **RATING** |
| --- | --- | --- |
| 5.1 | Explain and describe the processes of photosynthesis, respiration, translocation, and transpiration. |  |
| 5.2 | Describe the aboveground requirements needed for good plant growth. |  |
| 5.3 | Understand and use the textural triangle to identify different soil types. |  |
| 5.4 | Explain three ways to improve soil drainage and two ways to increase moisture retention of soil. |  |
| 5.5 | List two functions of Nitrogen, Phosphorus, and Potassium in plants. |  |
| 5.6 | Analyze the use of growth stimulants, retardants, and rooting hormones in the horticulture industry. |  |
| 5.7 | Evaluate a soil sample and make fertilizer recommendations. |  |

## Benchmark 6: Plant Propagation

### Competencies

| **#** | **DESCRIPTION** | **RATING** |
| --- | --- | --- |
| 6.1 | Diagram the similarities and differences between asexual and sexual propagation. |  |
| 6.2 | Compare and Contrast self-fertilization and cross-fertilization. |  |
| 6.3 | Describe the requirements for seed germination and growth. |  |
| 6.4 | Test and calculate seed germination percentage. |  |
| 6.5 | Perform Asexual Propagation by the following methods: Leaf and Bud cuttings, Herbaceous, softwood, semi-hardwood and hardwood stem cuttings, root cuttings, and separation of bulbs, corms, tubers, tuberous roots, and rhizomes. |  |
| 6.6 | Describe the application of advanced propagation techniques: grafting, patch and T budding, mound and air layering, micro propagation, and tissue culture. |  |

## Benchmark 7: Integrated Pest Management

### Competencies

| **#** | **Description** | **RATING** |
| --- | --- | --- |
| 7.1 | Explain what integrated pest management means. |  |
| 7.2 | Outline a pest control program, explaining when biological control should be used and at what point chemicals must be used. |  |
| 7.3 | Examine five pesticide labels and identify the types of each and the degree of toxicity of each and demonstrate the recommended precautions in the mixing and handling of each. |  |
| 7.4 | Summarize the impact of insecticides, pesticides, fungicides, rodenticides, molluscicides, nematicides, and herbicides in an integrated pest management program. |  |

## Benchmark 8: GREENHOUSE PRACTICES

### Competencies

| **#** | **Description** | **RATING** |
| --- | --- | --- |
| 8.1 | Compare and contrast the different types of growing structures. |  |
| 8.2 | List the characteristics of various greenhouse and shade house coverings. |  |
| 8.3 | Diagram three common methods of arranging greenhouse benches. |  |
| 8.4 | Construct a greenhouse crop production schedule. |  |
| 8.5 | Compare and contrast the various types of media. |  |
| 8.6 | Describe methods of spacing, watering, and fertilizing greenhouse crops. |  |
| 8.7 | Demonstrate proper methods of potting and transplanting mature plants. |  |
| 8.8 | Demonstrate proper methods of using rooting hormones. |  |
| 8.9 | Demonstrate proper methods of sowing seeds. |  |
| 8.10 | Demonstrate proper methods of transplanting seedlings or cuttings. |  |
| 8.11 | Demonstrate proper methods of pinching of plants and flowers. |  |
| 8.12 | Demonstrate proper methods of fertilizer applications. |  |
| 8.13 | Demonstrate proper methods of watering. |  |
| 8.14 | Identify 20 plants typically grown in a greenhouse. |  |
| 8.15 | Compare and Contrast different hydroponic systems. |  |
| 8.16 | Produce a crop in a greenhouse. |  |

## Benchmark 9: NURSERY AND LANDSCAPE INDUSTRY

### Competencies

| **#** | **Description** | **Rating** |
| --- | --- | --- |
| 9.1 | Describe the nursery industry in the United States. |  |
| 9.2 | Compare the different types of nurseries. |  |
| 9.3 | Compare the relationship of the nursery industry to the landscape industry. |  |
| 9.4 | Identify ten trees used in the landscape industry. |  |
| 9.5 | Identify ten shrubs used in the landscape industry. |  |
| 9.6 | Identify three turf grasses. |  |
| 9.7 | Identify three ornamental grasses. |  |
| 9.8 | Identify five groundcovers used in the landscape industry. |  |
| 9.9 | List the five principles of landscape design and examples of an application of each principle. |  |

## Benchmark 10: Floriculture Industry

### Competencies

| **#** | **Description** | **rating** |
| --- | --- | --- |
| 10.1 | Identify ten foliage plants. |  |
| 10.2 | Identify 20 florists crops. |  |
| 10.3 | List and describe the basic principles of floral design. |  |
| 10.4 | Identify the basic floral design shapes. |  |
| 10.5 | Design a circular floral arrangement. |  |
| 10.6 | Identify basic tools and materials used in floral design. |  |
| 10.7 | Demonstrate the four wiring procedures used with the appropriate flowers. |  |
| 10.8 | Design a corsage and a boutonniere. |  |

## Benchmark 11: Vegetable Gardening

### Competencies

| **#** | **Description** | **Rating** |
| --- | --- | --- |
| 11.1 | Draw to scale a garden plan that includes at least ten vegetables and varieties that meet your areas USDA Hardiness Zone. |  |
| 11.2 | Determine the type and amount of fertilizer for a specific crop by using a soil test recommendation. |  |
| 11.3 | Establish weed control programs using mulches, cultivation, and herbicides. |  |
| 11.4 | Construct a vegetable garden. |  |

## Benchmark 12: PACKAGING, STORAGE, & SHIPMENT OF PLANTS

### Competencies

| **#** | **Description** | **Rating** |
| --- | --- | --- |
| 12.1 | Grade for size and quality plants or plant products. |  |
| 12.2 | Place plants or products in proper storage. |  |
| 12.3 | Prepare invoices and shipping labels. |  |
| 12.4 | Package orders for shipment. |  |
| 12.5 | Assemble shipping cartons. |  |
| 12.6 | Inventory plants or plant products. |  |
| 12.7 | Observe federal and state shipping standards. |  |

## Benchmark 13: TURF & LANDSCAPE MANAGEMENT

### Competencies

| **#** | **Description** | **Rating** |
| --- | --- | --- |
| 13.1 | Explain utilization of landscape drafting tools and equipment. |  |
| 13.2 | Explain landscape water use. |  |
| 13.3 | Understand the selection and utilization of turf grasses in the landscape. |  |
| 13.4 | Understand the selection and placement of plant materials in the landscape. |  |
| 13.5 | Perform identification and treatment of plant injuries and diseases. |  |
| 13.6 | Understand practices for turf and landscape maintenance. |  |

I certify that the student has received training in the areas indicated.

Instructor Signature:

For more information, contact:

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