# Horticulture Course No. 18052 Credit: 1.0

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

Pathways and CIP Codes: **Diversified Agricultural Science (01.0000); Food Products and Processing Systems (01.0401); 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.

Special Note: The AFNR College and Career Ready Skills are to be taught throughout the course utilizing FFA and SAE programming found at the Kansas Ag Ed website. Specific activities may be found in the SAE for All Teachers Guide and at National FFA.org. The AFNR College and Career Ready Skills competencies can be found at Kansas Ag Ed.

Opportunities in Agriculture Education & FFA:Classroom and laboratory instruction integrates and/or is supplemented by experiential, project, and leadership and personal development through FFA .Students should be introduced to FFA through leadership activities and College and Career Ready Skills. Specific FFA information and activities may be found in the “National FFA Student Handbook, 16thedition”. Student activities, scoring rubrics, grading examples, and teacher lessons are all found in the “FFA Student Handbook Teachers Guide”. Additional information can be found at [www.ffa.org](http://www.ffa.org/).

Workplace Skills, Supervised Agricultural Experience and Record Keeping: Classroom and laboratory instruction integratesand/or is supplemented by experiential, project, and work based learning through SAE. Specific SAE activities that support the College and Career Ready Skills may be found in the “SAE for All Guide”. Students should be introduced to Foundational SAE’s and the AET student portfolio system. Student activities, scoring rubrics, grading examples, and teacher lessons are all found in the “SAE for All Teachers Guide”. Additional information is found in the SAE Individual Learning Guides and Teacher Editions and in the AFNR College and Career Ready Competency Profile found at *Kansas Ag* *Ed.*

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:

CTE Pathways Help Desk

(785) 296-4908

[pathwayshelpdesk@ksde.org](mailto:pathwayshelpdesk@ksde.org)



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