# Applications in Horticulture Course No. 18071 Credit: 1.0

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

Pathways and CIP Codes:Plant Systems (01.1101)

Course Description:

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: Underlying Science

### Competencies

| **#** | **DESCRIPTION** | **RATING** |
| --- | --- | --- |
| 1.1 | Describe various operational systems of classification of plants based on growth form, fruits, life cycles, use, stem type, leaf characteristics, adaptation, and flower type. |  |
| 1.2 | Describe various plant organs and how they are used as a basis for classifying horticultural plants. |  |
| 1.3 | Explain how environmental factors may be managed for better plant performance. |  |
| 1.4 | Describe specific growth processes-photosynthesis, respiration, transpiration, translocation, and absorption-and their roles in plant growth and development. |  |
| 1.5 | Compare ways in which growers may manipulate physiological processes for increased plant productivity and quality. |  |
| 1.6 | Explain the importance of genetics in horticultural plant improvement. |  |
| 1.7 | Identify at least 60 plants by their common and scientific binomial name |  |

## Benchmark 2: Greenhouse Industry

### Competencies

| **#** | **DESCRIPTION** | **RATING** |
| --- | --- | --- |
| 2.1 | Analyze the greenhouse plant production areas and the top sales state by plant type. |  |
| 2.2 | Categorize the different types of greenhouse structures, the various components of a greenhouse, and the glazing materials used to cover a greenhouse. |  |
| 2.3 | Interpret the economic factors to be considered in constructing a greenhouse. |  |
| 2.4 | Prepare a business plan for a greenhouse operation to submit for financing to a lender. |  |
| 2.5 | Determine when a location is suitable as a greenhouse site. |  |
| 2.6 | Determine the structure that is best suited for the grower’s needs. |  |
| 2.7 | Design and layout a greenhouse facility to obtain maximum production and efficient use. |  |
| 2.8 | Explain the different types of heating units available for greenhouses and calculate the heat requirements for a greenhouse. |  |
| 2.9 | Compare and contrast the methods used to provide artificial long- and short-day conditions |  |
| 2.10 | Summarize how temperature has an effect on photosynthesis, plant respiration, plant transpiration, flower bud initiation and development, and flower color. |  |
| 2.11 | Design greenhouse mediums to fit various plant needs. |  |
| 2.12 | Sterilize (pasteurize) growing media. |  |
| 2.13 | Devise a fertilizer plan for different greenhouse crops. |  |
| 2.14 | Develop a watering schedule for a greenhouse. |  |
| 2.15 | Propagate plants sexually and asexually. |  |
| 2.16 | Design and Implement an Integrated Pest Management Plan for a greenhouse. |  |
| 2.17 | Determine plant growing conditions for greenhouses, hydroponics, and natural settings and set planting and care schedules. |  |
| 2.18 | Set sale prices for greenhouse. |  |
| 2.19 | Market greenhouse |  |
| 2.20 | Assist Customers in greenhouse purchases. |  |
| 2.21 | Market greenhouse product to meet sale goals. |  |
| 2.22 | Determine types and quantities of horticultural plants to be grown, based on budgets, projected sales volumes, or executive directives |  |

## Benchmark 3: Nursery & Landscape Industry

### Competencies

| **#** | **DESCRIPTION** | **RATING** |
| --- | --- | --- |
| 3.1 | Identify the common elements of landscape plans and describe the purpose of each. |  |
| 3.2 | State the purpose of the drawing scale and identify two common methods to indicate the scale. |  |
| 3.3 | Describe what the architect’s, engineer’s and metric measuring scales are used for and describe the differences between the three scales and take measurements using each scale. |  |
| 3.4 | Use various formulas to correctly calculate and estimate quantities of landscape materials. |  |
| 3.5 | Define and give examples of hardscapes used in the landscape. |  |
| 3.6 | Describe factors to consider when planning a water feature in a landscape. |  |
| 3.7 | List and describe environmental conditions that should be considered when selecting plants for a site. |  |
| 3.8 | Identify 50 plants used in a residential landscape in your immediate area. |  |
| 3.9 | List and describe several factors concerning maintenance, intended use, site conditions and appearance, to be considered when selecting a grass species. |  |
| 3.10 | Properly and safely demonstrate the use of four types of equipment used in landscape construction. |  |
| 3.11 | Create a landscape drawing to scale for a landscape project. |  |
| 3.12 | Create an estimate for a landscape project including mark-up, labor, and product. |  |

## Benchmark 4: Floriculture Industry

### Competencies

| **#** | **DESCRIPTION** | **RATING** |
| --- | --- | --- |
| 4.1 | Summarize the importance of imports and exports to the floriculture industry. |  |
| 4.2 | Prepare an employability portfolio with pictures of student’s floral designs. |  |
| 4.3 | Identify the origins of floral designs. |  |
| 4.4 | Identify the characteristics of mass, line-mass, and line designs. |  |
| 4.5 | List and define the principles and elements of design. |  |
| 4.6 | Identify designs used in flower arranging. |  |
| 4.7 | Identify color schemes used in floral design. |  |
| 4.8 | Critique an arrangement using a rating scale based on the principles of design. |  |
| 4.9 | Select cut flowers and greens for an arrangement. |  |
| 4.10 | Receive a shipment of flowers and treats them in a manner that extends the keeping quality of the flowers. |  |
| 4.11 | Identify the basic mechanics and supplies used in floral design. |  |
| 4.12 | Wire flowers for corsages, arrangements, and wreaths. |  |
| 4.13 | Tie attractive bows for corsages, wreaths, and flower arrangements. |  |
| 4.14 | Design boutonnieres, corsages, bud vases, circular arrangements, triangular arrangements, and line arrangements. |  |
| 4.15 | Price arrangements for retail sale |  |

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)



900 S.W. Jackson Street, Suite 102

Topeka, Kansas 66612-1212

[https://www.ksde.org](https://www.ksde.org/)

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