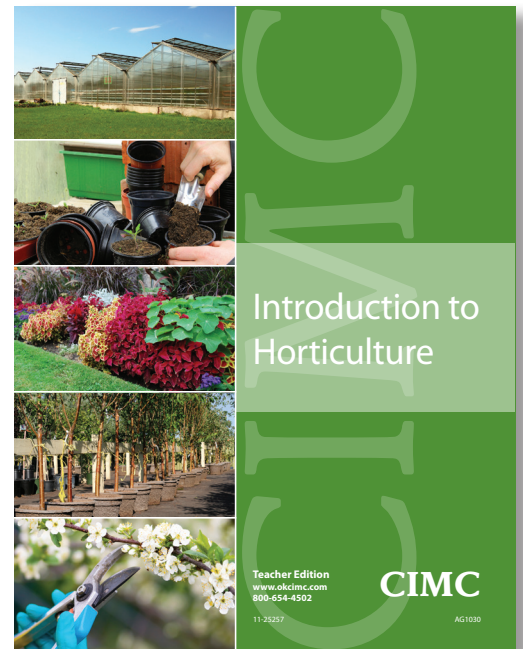


# Introduction to Horticulture

## Curriculum Crosswalk

- National  
Agriculture, Food  
and Natural  
Resources (AFNR)  
Career Cluster  
Content Standards
- Oklahoma Academic  
Standards



*career*tech

Oklahoma Department of Career and Technology Education  
Curriculum and Instructional Materials Center  
1500 West Seventh Avenue, Stillwater, OK 74074-4364  
www.okcimc.com 800-654-4502

<b>Unit Objectives</b>	<b>Activity Number(s)</b>	<b>Oklahoma Academic Standard(s)</b>	<b>National AFNR Career Cluster Standards(s)</b>
<b>Unit 1 – Introduction to Horticulture</b>			
Trace the history of the horticultural industry.	1.8	-----	-----
Classify plants using nomenclature and taxonomic terms.	1.3, 1.8	Biology Process Standard 2.1 Biology 2.2	PS.01.01.01.a PS.01.01.01.b
Organize the branches of the horticultural tree.	1.4, 1.8	Biology Process Standards 5.3	PS.01.01.01.a PS.01.01.01.b
Describe the values of horticulture.	1.8	-----	-----
Match standard measures to their equivalents.	1.5	Biology Process Standard 1.1, 1.2 Environmental Science Process Standard 1.1, 1.2, 1.3	PST.04.04.03.a
Write the basic formulas for surface area, area of a triangle, and volume.	1.5	Biology Process Standard 1.1.a, 1.3, 3.3; Environmental Science Process Standard 1.1, 1.2, 1.3	PST.04.04.05.a PST.04.04.06.a
Calculate mix ratios.	1.5, 1.6	Biology Process Standard 1.3, 2.2, 3.3 Environmental Science 1.1, 1.2, 1.3	ABS.05.01.04.a PS.02.03.04.b
Calculate slope ratios.	1.7	Biology Process Standards 1.3, 3.3 Environmental Science Process Standard 1.3	ABS.05.01.04.a
<b>Unit 2 – Safety Fundamentals</b>			
Summarize the major causes of accidents.	2.1, 2.4, 2.5	Biology Process 3.5	CS.06 CS.07 CS.08
Discuss general job-safety rules.	2.1, 2.2, 2.5	Biology Process Standard 3.5	CS.07.02.01.a
Determine appropriate use of personal protective equipment.	2.1, 2.5	Environmental Science Process Standard 3.5 Biology Process Standard 3.5	CS.06.02.01.a
Distinguish among federal safety code colors.	2.1, 2.3, 2.5	Biology Process Standard 3.5 Environmental Science Process Standard 3.5	CS.06.02.01.a CS.06.03.01.a
Compare the types of fire extinguishers.	2.1, 2.5	Biology Process Standard 3.5 Environmental Science Process Standard 3.5	CS.06.02.01.a

Unit Objectives	Activity Number(s)	Oklahoma Academic Standard(s)	National AFNR Career Cluster Standards(s)
<b>Unit 3 – Chemical Safety</b>			
Categorize pesticides according to classification and use.	3.3, 3.5	Biology Process Standard 2.1	PS.03.03.04.a PS.03.03.04.b
Analyze common types of chemical controls used in horticulture.	3.6, 3.5	Biology 1.3	PS.03.03.04.a PS.03.03.04.b
Recognize symptoms of pesticide poisoning.	3.4	Biology 3.5 Environmental Science 4.2	CS.07.02.01.b
Discuss chemical safety precautions.	3.2	Biology Process Standard 1.2, 3.5	CS.07.04.02.a.
Identify pesticide information included on pesticide labels.	3.5	Biology 3.5	CS.07.04.01.a
Explain the rules for chemical storage and hazardous waste disposal.	3.2, 3.7	Biology 3.5	CS.07.04.02.b
Compare types of chemical spray equipment.	-----	Biology Process Standard 1.2	CS.07.04.02.a
Examine the information found on a hazardous materials classification card.	3.6	Biology 3.5	CS.07.04.01.a
<b>Unit 4 – Hand and Power Tools</b>			
Discuss safety rules for using hand tools.	4.2, 4.3	Biology Process 3.5	CS.08.01.01.a
Match hand tools to their uses.	4.1, 4.3	Biology Process Standard 1.2, 3.5 Environmental Science Process Standard 2.1	CS.08.01.01.a
Explain how to properly maintain and store hand tools.	4.2	Biology Process 3.5	CS.08.01.01.b CS.08.01.02.b CS.08.03.01.a
Recall the safety rules for operating electric power tools and equipment.	4.2, 4.3	Biology Process 3.5	CS.08.02.01.a
Identify the purpose and safety rules of general power tools.	4.2, 4.3	Biology Process 3.5	CS.08.02.01.a

<b>Unit Objectives</b>	<b>Activity Number(s)</b>	<b>Oklahoma Academic Standard(s)</b>	<b>National AFNR Career Cluster Standards(s)</b>
<b>Unit 5 – Growing Facilities</b>			
Match structural parts of a greenhouse to their descriptions.	5.1, 5.2	Biology Process Standard 7.2 Chemistry Process Standard 7.3	PS.03.05.03.a PS.03.05.03.b
Match types of greenhouses to their descriptions and to their pictures.	5.3	Biology Process Standard 7.3	PS.03.05.03.a PS.03.05.03.b
Compare materials used for greenhouse frames and covering.	5.2	Biology Process Standard 7.3, 7.5 Chemistry Process Standard 7.2	PS.03.05.03.a PS.03.05.03.b
Describe greenhouse heating, cooling, and ventilation systems.	5.1	Biology Process Standard 1.3	PS.03.05.03.a PS.03.05.03.b
Identify characteristics of greenhouse benches and beds.	5.4, 5.5	Biology Process Standard 4.6.c, 4.8.b	PS.03.05.03.a PS.03.05.03.b
<b>Unit 6 – Plant Structures</b>			
Discuss the function of plant cells.	6.1, 6.4, 6.5	Biology Process Standard 1.1, 1.2, 2.1, 2.2 Biology 1.1.a	PS.01.02.01.a
Analyze the role of vegetative structures on a plant.	6.2, 6.3	Biology 1.3, 5.1	PS.01.02.02.a PS.01.02.03.a PS.01.02.03.a
Compare the parts of monocot and dicot vascular systems.	6.1	Biology 5.2	PS.01.02.02.a PS.01.02.03.a PS.01.02.03.a
Differentiate between the reproductive parts of a plant.	6.6, 6.7	Biology 2.2	PS.01.02.05.a PS.01.02.06.a
<b>Unit 7 – Plant Functions</b>			
Outline the major plant processes.	7.1, 7.6	Biology 1.1.a, 1.2, 5.1, 5.2	PS.01.03.01.a PS.01.03.02.a
Distinguish between plant growth regulators.	7.3, 7.5	Biology 1.3, 5.1, 5.2	PS.01.03.04.a
Analyze plant responses to stimuli.	7.2, 7.6	Biology 5.1, 5.2	PS.01.03.04.b
Describe cultural and environmental factors affecting plant growth.	7.3, 7.4, 7.5	Biology 1.3, 5.2	PS.02.01.01.a PS.02.01.02.a

Unit Objectives	Activity Number(s)	Oklahoma Academic Standard(s)	National AFNR Career Cluster Standards(s)
<b>Unit 8 – Plant Growth Media</b>			
Discuss how soil is formed.	8.2	Biology 5.3	ESS.03.02.01.a NRS.01.02.05.a NRS.01.02.05.b
Describe the composition ratios of an average soil.	8.2	Biology 5.3	ESS.03.02.02.a
Distinguish among types of soil particles and textures.	8.2	Biology 5.3	ESS.03.02.03.a
Explain how water moves through soil.	8.3	Biology 5.2, 5.3 Environmental Science 4.2	PS.02.02.02.a PS.02.02.02.b
Relate the importance of soil pH values.	8.4	Biology 5.3 Environmental Science 4.1.c	ESS.03.02.03.b PS.02.03.01.a
Describe requirements for a good plant medium.	8.5, 8.6	Biology 5.3 Environmental Science 2.4	PS.02.02.01.a PS.02.02.01.b
Discuss the variety of soil media materials.	8.5, 8.6	Biology 5.3	PS.02.02.01.a PS.02.02.01.b
Describe the advantages of a soilless mixture.	8.7	Biology 5.3	PS.02.03.02.b
<b>Unit 9 – Fertilizers and Nutrients</b>			
Determine required nutrients and deficiency symptoms related to plant growth and development.	9.3, 9.4	Biology 5.2 Environmental Science 2.4	PS.02.03.01.a
Describe the types of commercial fertilizers.	9.2	Biology 5.2	PS.02.03.04.a
Compare manual indoor and outdoor application methods.	9.2	Biology 5.2	PS.02.03.04.a
Discuss rules for storing and handling fertilizers.	9.5	Biology Process Standard 3.5 Biology 5.2	PS.03.05.03.a
Identify information required on fertilizer bags.	9.5	Biology 5.2 Environmental Science 4.2	PS.02.03.04.a
Label components of a complete fertilizer formula (guaranteed analysis).	9.5	Biology 5.2 Chemistry 4.2	PS.02.03.04.a

<b>Unit Objectives</b>	<b>Activity Number(s)</b>	<b>Oklahoma Academic Standard(s)</b>	<b>National AFNR Career Cluster Standards(s)</b>
<b>Unit 10 – Greenhouse Watering</b>			
Compare types of watering and irrigation fertilizing equipment.	10.1, 10.2, 10.3	Biology 1.1.a, 5.2	PS.02.01.02.a
Identify environmental factors that affect watering.	10.1, 10.4, 10.5	Biology 1.1.a, 5.2	PS.02.01.02.a
Discuss methods for irrigating greenhouse crops.	10.1, 10.6	Biology 1.1.a	PS.02.01.02.a
Identify the proper procedure for using a greenhouse watering system for fertilization.	10.1, 10.6	Biology 1.1.a, 5.2 Environmental Science 2.2	PS.02.01.02.a
<b>Unit 11 – Plant Propagation</b>			
Distinguish between sexual and asexual propagation methods.	11.1	Biology 1.1.a, 1.1.b, 1.1.c, 1.2, 3.3	PS.03.01.01.a PS.03.01.03.a
Describe factors that affect seed germination.	11.2	Biology 1.3 Environmental Science 3.1, 3.2, 3.3	PS.03.01.02.a PS.03.01.02.b
Explain the methods of seeding.	11.1, 11.3, 11.4	Biology 1.3, 3.2	PS.03.01.02.a
List types of seeds available.	11.1	Biology 3.1 Environmental Science 3.2	PS.03.01.02.a
Define methods of promoting rooting.	11.5	Environmental Science 2.4, 3.3	PS.03.01.02.a PS.03.01.02.b
Explore the methods of asexual propagation.	11.6, 11.7, 11.8, 11.9, 11.10	Biology 3.3 Environmental Science 3.3	PS.03.01.03.a
<b>Unit 12 – Deciduous and Evergreen</b>			
Describe features used to identify deciduous and evergreen plants.	12.1	Biology 1.1.b, 3.1 Environmental Science 2.1	PS.01.01.02.a PS.01.01.02.b
Explain deciduous and evergreen plant forms.	12.1, 12.2	Biology 1.1.b, 3.1 Environmental Science 2.1	PS.01.01.02.a PS.01.01.02.b
Discuss landscape uses for deciduous and evergreen trees and shrubs.	12.3, 12.4	Environmental Science 2.1	PS.04.01.01.a PS.04.01.02.a
Determine the qualities to consider when selecting a plant for a landscape.	12.3, 12.5	-----	PS.04.01.01.a PS.04.01.01.b PS.04.01.02.a

<b>Unit Objectives</b>	<b>Activity Number(s)</b>	<b>Oklahoma Academic Standard(s)</b>	<b>National AFNR Career Cluster Standards(s)</b>
<b>Unit 13 – Cultural Practices for Trees/Shrubs</b>			
Discuss the purposes for pruning trees.	13.1, 13.2, 13.6, 13.8	Biology Process Standard 1.1 Enviro Science Process Standard 1.1 Enviro Science 5.3.b	PS.03.02.05.a PS.03.02.05.b
Identify tools used for pruning.	13.1, 13.3, 13.6, 13.8	Biology Process Standard 1.2, 3.5 Biology 2.1 Enviro Science Process Standard 2.1	PS.03.02.05.a PS.03.02.05.b
Explain the rules for the care of pruning tools and equipment.	13.1, 13.3	Biology 3.5	PS.03.02.05.a PS.03.02.05.b
Research the proper pruning times of trees and shrubs.	13.1, 13.2, 13.4, 13.6, 13.8	Biology 3.2, 5.1, 5.2	PS.03.02.05.a PS.03.02.05.b
Identify parts of a tree structure.	13.1, 13.5, 13.6, 13.8	Biology Process Standard 2.1 Environmental Science Process Standard 2.1	PS.01.02.02.a PS.01.02.03.a PS.01.02.03.a
Discuss why specific parts of a tree should be pruned.	13.1, 13.2, 13.4, 13.5, 13.6	Environmental Science Process Standard 2.1	PS.03.02.05.a PS.03.02.05.b
Distinguish among types of transplanted stock.	13.1	Biology Process Standard 2.2	PS.03.02.01.a PS.03.02.01.b
Examine the factors to consider when transplanting trees and shrubs.	13.1, 13.7	Biology 3.2, 4.2	PS.03.02.03.a PS.03.02.04.a
Discuss the types and purposes of mulching.	13.1, 13.7	Biology 5.2	PS.02.01.02.a PS.03.03.03.a
<b>Unit 14 – Plant Pests and Treatment</b>			
Compare the five major categories of plant pests and the damage caused by each.	14.1, 14.3, 14.9	Biology Process Standard 2.2 Biology 5.3; Enviro Science Process Standard 2.2, 2.1	PS.03.03.01.a PS.03.03.01.b PS.03.03.02.a
Identify the methods for controlling pests.	14.1, 14.2, 14.3, 14.4, 14.6, 14.7,	Biology 5.1, 5.2 Environmental Science 2.2	PS.03.03.03.a PS.03.03.03.b
Discuss the safety precautions recommended in working with pesticides.	14.5, 14.9	Biology Process Standard 3.5 Environmental Science 4.2	PS.03.03.04.a PS.03.03.03.b
Explain the concept of Integrated Pest Management.	14.1, 14.2, 14.3, 14.4, 14.6, 14.7,	Biology 2.1, 2.2, 4.1, 4.2, 5.2	PS.03.03.03.a PS.03.03.03.b

<b>Unit Objectives</b>	<b>Activity Number(s)</b>	<b>Oklahoma Academic Standard(s)</b>	<b>National AFNR Career Cluster Standards(s)</b>
<b>Unit 15 – Landscape Design</b>			
Explain the benefits of landscaping and landscape planning.	15.2	Biology 5.2, 5.3 Environmental Science 2.3	PS.04.01.01.a PS.04.01.01.b PS.04.01.02.a
Discuss the elements of design.	15.2, 15.3	High School Visual Art 1.2	PS.04.01.01.a PS.04.01.01.b PS.04.01.02.a
Discuss the principles of design.	15.2	High School Visual Art 1.1	PS.04.01.01.a PS.04.01.01.b PS.04.01.02.a
Determine how plants are selected for a landscape.	15.4, 15.6	High School Visual Art 1.1, 1.2	PS.04.01.01.a PS.04.01.01.b PS.04.01.02.a
Understand the steps to develop a landscape design plan.	15.5, 15.6	High School Visual Art 1.1, 1.2	PS.04.01.01.a PS.04.01.01.b PS.04.01.02.a
<b>Unit 16 – Indoor Plant Care</b>			
Describe plant containers and the factors used in selecting plant containers.	16.2	High School Visual Art 1.1, 1.2	PS.03.05.03.a
Discuss reasons for using hanging baskets.	16.3	High School Visual Art 1.1, 1.2	PS.03.05.03.a
Describe the growing of plants in specialized containers, including terrariums, dish gardens, and bonsai.	16.4	High School Visual Art 1.1, 1.2	PS.03.05.03.a
Examine the effects and needs of lighting on indoor plants.	16.5	Biology 5.3	PS.02.01.02.a
Identify signs that indicate repotting is needed.	16.5	Biology 5.3 Biology Process Standard 1.1	PS.02.01.02.a
Describe common plant disorders of indoor plants.	16.6	Biology 5.3	PS.03.03.01.a



<b>Unit Objectives</b>	<b>Activity Number(s)</b>	<b>Oklahoma Academic Standard(s)</b>	<b>National AFNR Career Cluster Standards(s)</b>
<b>Unit 17 – Floral Design</b>			
Discuss the history of floral design.	17.1	High School Visual Art 2.1, 2.3	PS.04.01.01.a PS.04.01.01.b PS.04.01.02.a
Identify tools and materials used in floral design.	17.2	High School Visual Art 3.4	PS.04.01.01.a PS.04.01.01.b PS.04.01.02.a
Determine the purpose of common wire and ribbon sizes.	17.6	High School Visual Art 3.3	PS.04.01.01.a PS.04.01.01.b PS.04.01.02.a
Describe uses for common types of floral containers.	17.5, 17.6	High School Visual Art 3.4	PS.04.01.01.a PS.04.01.01.b PS.04.01.02.a
Select from a list guidelines for using color in floral design.	17.5, 17.6	High School Visual Art 1.1, 1.2	PS.04.01.01.a PS.04.01.01.b PS.04.01.02.a
Describe the basic principles of floral design.	17.5, 17.6	High School Visual Art 1.1, 1.2	PS.04.01.01.a PS.04.01.01.b PS.04.01.02.a
Discuss the elements of floral design.	17.5, 17.6	High School Visual Art 1.1, 1.2	PS.04.01.01.a PS.04.01.01.b PS.04.01.02.a
Identify the basic floral design shapes.	17.5, 17.6	High School Visual Art 1.1, 1.2	PS.04.01.01.a PS.04.01.01.b PS.04.01.02.a