

Course Title: Horticultural Science

Unit: 1	Career Opportunities
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Content Standard(s) and Depth of Knowledge Level(s):	<p>Students will:</p> <ol style="list-style-type: none"> 1. Explain the importance of horticulture to local, state, national and world economics. 2. Identify careers in horticulture.
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Learning Objective(s) and Depth of Knowledge Level(s):	<p>Students will:</p> <ol style="list-style-type: none"> 1. Research and identify jobs that relate to the turf industry. 2. Discuss educational requirements for different jobs in the industry. 3. Discuss working conditions. 4. Fill out job applications and write resumes. 5. Discuss the history of the horticulture industry. 6. Discuss how knowledge of the horticulture industry can be used to make a living. 7. Identify skills that are used in the turf industry.
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Essential Question(s):	<p>How has the horticulture industry changed in America over the last 10 years? What jobs are available to someone who is interested in the horticulture industry?</p>
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Content Knowledge	Suggested Instructional Activities Rigor & Relevance Framework (Quadrant)	Suggested Materials, Equipment and Technology Resources
<ol style="list-style-type: none"> I. Horticultural knowledge requirements II. Industry education requirements III. Business management skills IV. Applications and resumes V. Industry research 	<p>Lecture Demonstration Student practice Guest speaker Group assignment Individual assignments (research and presentations)</p>	<p>Textbook PowerPoint Presentation Computer/projector Industry magazines Worksheets</p>

Unit Assessment:	Written test and presentation on careers
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Unit/Course CTSO Activity:	Participation in Discussion, Research Report, Group Investigation Report
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Unit/Course Culminating Product:	Students will participate in Career Development Events and Personal S.A.E.
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Course/Program Credential(s): <input checked="" type="checkbox"/> Credential <input type="checkbox"/> Certificate <input type="checkbox"/> Postsecondary Degree <input checked="" type="checkbox"/> University Degree <input type="checkbox"/> Other:

Course Title: Horticultural Science

Unit: 2	Safety
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Content Standard(s) and Depth of Knowledge Level(s):	Students will: 2. Describe safety practices in horticulture.
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Learning Objective(s) and Depth of Knowledge Level(s):	Students will: 1. Explain why accidents occur. 2. Explain the importance of safety in horticulture. 3. Describe ways to prevent accidents. 4. Identify personal protective equipment and how it is used. 5. Identify safety precautions when using hand and power tools. 6. Identify safety precautions necessary when handling, applying, and storing chemicals.
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Essential Question(s):	What are safety considerations and procedures in the horticultural industry?
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Content Knowledge	Suggested Instructional Activities Rigor & Relevance Framework (Quadrant)	Suggested Materials, Equipment and Technology Resources
I. Safety Considerations and Procedures A. Accidents defined B. Accident prevention C. Personal Protective Equipment D. Hand Tool Safety F. Power tool Safety G. Chemical Safety	Guest Speakers Case Studies Inquiry Research Worksheets Field Trips	Computer and Printer CDs Software Handouts Videos Lab Equipment Student Equipment

Unit Assessment:	Participation in Discussion, Homework, Inventories, Posters, Scenarios, Tests
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Unit/Course CTSO Activity:	Horticultural related CDEs
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Unit/Course Culminating Product:	Students will design a safety program for working in the horticultural industry.
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Course/Program Credential(s): <input type="checkbox"/> Credential <input type="checkbox"/> Certificate <input type="checkbox"/> Postsecondary Degree <input checked="" type="checkbox"/> University Degree <input type="checkbox"/> Other:
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Course Title: Horticulture Science

Unit: 3	Plant Physiology
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Content Standard(s) and Depth of Knowledge Level(s):	<p>Students will:</p> <p>4. Describe vegetative structures and functions in annuals, biennials, and perennials. Examples: root for plant anchor and support, stem for plant support, leaf for photosynthesis and respiration</p> <ul style="list-style-type: none"> • Identifying sexual reproductive structures and functions of plants Examples: flower, fruit, seed • Identifying asexual reproductive structures and functions of plants Examples: stem, root, leaf <p>5. Describe the purpose and use of growth regulators.</p>
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Learning Objective(s) and Depth of Knowledge Level(s):	<p>Students will:</p> <ol style="list-style-type: none"> 1. Identify sexual reproductive structures and functions of plants. 2. Identify asexual reproductive structures and functions of plants. 3. Identify plant growth regulators (PGR) and their functions.
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Essential Question(s):	What are plant growth regulators and what are their functions?
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Content Knowledge	Suggested Instructional Activities Rigor & Relevance Framework (Quadrant)	Suggested Materials, Equipment and Technology Resources
I. Identifying sexual reproductive structures and functions of plants A. flower B. fruit C. seeds II. Identifying asexual reproductive structures and functions of plants A. stem B. leaf C. roots	Note Taking 10 + 2 Experiments (dissections) Agreement Circles	Textbook(s), reference materials Annual, biennial, and perennial plants Handouts, Whiteboard/Chalkboard Classroom/Lab and lab supplies

<p>III. Use of plant growth regulators</p> <p>A. growth stimulants</p> <p>B. growth retardants</p>	<p>Experiments and research</p> <p>Application cards</p> <p>Student portfolios</p>	<p>Textbook(s), reference materials, lab and lab equipment, Natural and synthetic regulators (hormones), and worksheets</p>
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<p>Unit Assessment:</p>	<p>Teacher Observation, Exhibition, Portfolios, Performance tasks, Extended task assignments, tests</p>
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	<p>FFA members experiment with plant growth regulators on areas of the school's lawn.</p>
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<p>Unit/Course Culminating Product:</p>	<p>Students will design a schedule for applying plant growth regulators on the athletic field(s).</p>
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<p>Course/Program Credential(s): <input type="checkbox"/> Credential <input type="checkbox"/> Certificate <input type="checkbox"/> Postsecondary Degree <input checked="" type="checkbox"/> University Degree</p> <p><input type="checkbox"/> Other:</p>	

Course Title: Horticulture Science

Unit: 4	Growing Media
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<p>Content Standard(s) and Depth of Knowledge Level(s):</p>	<p>Students will:</p> <ol style="list-style-type: none"> 6. Differentiate soil from soilless media in the horticulture industry. 7. Identify components of soil. Examples: sand, silt, clay 8. List macronutrients and micronutrients needed for plant growth. <ul style="list-style-type: none"> • Identifying the function of macronutrients and micronutrients Examples: major macronutrients—nitrogen, phosphorus, potassium secondary macronutrients—calcium, sulfur, magnesium micronutrients—zinc, iron, boron, copper, manganese, carbon, hydrogen, oxygen, molybdenum, chloride • Recognizing common nutrient deficiency symptoms 9. Design short- and long term fertilization plans based on information provided by a soil test. <ul style="list-style-type: none"> • Comparing organic and inorganic fertilizers • Demonstrating fertilizer application methods • Describing pH modification procedures
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<p>Learning Objective(s) and Depth of Knowledge Level(s):</p>	<p>Students will:</p> <ol style="list-style-type: none"> 1. Identify the types of growing media. 2. Describe the components of soil. 3. Identify macronutrients and micronutrients and list their deficiencies. 4. Explain the use of fertilizers.
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<p>Essential Question(s):</p>	<p>What effect does growing media have on plant growth? How are plant nutrients classified?</p>
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Content Knowledge	Suggested Instructional Activities Rigor & Relevance Framework (Quadrant)	Suggested Materials, Equipment and Technology Resources
<p>I. Growing Media A. Soil media B. Soilless media</p>	<p>Note Taking 10 + 2</p>	<p>Textbook(s) reference materials, handouts Whiteboard/Chalkboard, Classroom supplies</p>

Course Title: Horticultural Science

Unit: 5	Greenhouse Facilities
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Content Standard(s) and Depth of Knowledge Level(s):	<p>Students will:</p> <p>10. Describe various greenhouse designs and types of coverings. Examples: designs—even-span, Gothic arch, uneven-span, Quonset, lean-to, attached or gutter connected coverings—glass, polyethylene, fiberglass, acrylic, polycarbonate</p> <ul style="list-style-type: none"> • Comparing methods used in controlling greenhouse temperatures Examples: misting, heating, ventilating • Describing tables or benches used in greenhouses Examples: wood, welded wire, prefabricated plastic
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Learning Objective(s) and Depth of Knowledge Level(s):	<p>Students will:</p> <ol style="list-style-type: none"> 1. Identify greenhouse designs. 2. Review considerations for greenhouse frameworks. 3. Identify and describe greenhouse glazing materials. 4. Describe the functions of the head house. 5. Discuss the advantages of retractable-roof greenhouses. 6. Describe greenhouse bench options. 7. Discuss the advantages of automated systems. <p>Examples: planting and irrigation systems</p>
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Essential Question(s):	<p>What considerations need to be addressed for greenhouse frameworks? What materials are used for greenhouse glazing? What automated systems are used in watering plants?</p>
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Content Knowledge	Suggested Instructional Activities Rigor & Relevance Framework (Quadrant)	Suggested Materials, Equipment and Technology Resources
<p>I. Greenhouse Designs</p> <ol style="list-style-type: none"> A. Even span B. Gothic Arch C. Uneven-span D. Quonset E. Attached or Gutter connected 	<p>Cooperative learning Guided tour /Field Trip Virtual Field Trip Guest Speaker</p> <p>Guided tour /Field Trip Virtual Field Trip</p>	<p>Textbooks Reference books Videos Computers, Internet</p> <p>Textbooks Reference materials Videos</p>

<p>II. Greenhouse coverings</p> <ul style="list-style-type: none"> A. Glass B. Fiberglass C. Polyethylene D. Polycarbonate E. Acrylic <p>III. Temperature control methods</p> <ul style="list-style-type: none"> A. Heating B. Misting C. Ventilating <p>IV. Tables and Benches</p> <ul style="list-style-type: none"> A. Wood B. Welded wire C. Pre-fabricated plastic 	<p>Guest Speaker</p> <p>Guided tour /Field Trip Virtual Field Trip Guest Speaker</p> <p>Guided tour /Field Trip Virtual Field Trip Guest Speaker</p>	<p>Computers, Internet</p> <p>Greenhouse</p> <p>Greenhouse</p>
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Unit Assessment:	Posters, displays, open-ended questions, case studies
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Unit/Course CTSO Activity:	The student will answer questions from practice CDE tests pertaining to greenhouse designs and coverings.
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Unit/Course Culminating Product:	Students will make scale models of different greenhouse designs.
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<p>Course/Program Credential(s): <input type="checkbox"/> Credential <input type="checkbox"/> Certificate <input type="checkbox"/> Postsecondary Degree <input checked="" type="checkbox"/> University Degree</p> <p><input type="checkbox"/> Other:</p>

III. Techniques for maintaining plants A. Pruning B. Mulching C. Fertilizing D. Irrigating		
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Unit Assessment:	Tests, performance tasks, exhibits, checklists, teacher observation, learning logs and self-assessments
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Unit/Course CTSO Activity:	FFA members will use local nursery for plant identification purposes.
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Unit/Course Culminating Product:	Students prepare a greenhouse and nursery crop production schedule.
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Course/Program Credential(s): <input type="checkbox"/> Credential <input type="checkbox"/> Certificate <input type="checkbox"/> Postsecondary Degree <input checked="" type="checkbox"/> University Degree <input type="checkbox"/> Other:
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Course Title: Horticultural Science

Unit: 7	Plant Identification and Classification
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Content Standard(s) and Depth of Knowledge Level(s):	<p>Students will:</p> <p>14. Identify common names of greenhouse and nursery plants.</p> <ul style="list-style-type: none"> • Explaining the importance of the binomial classification system
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Learning Objective(s) and Depth of Knowledge Level(s):	<p>Students will:</p> <ol style="list-style-type: none"> 1. Explain the importance of the binomial classification system. 2. List, describe and identify the major parts of the plant. 3. Explain the major structural difference between monocot and dicot stems.
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Essential Question(s):	<p>Explain why common names are given to plants?</p> <p>Explain the difference between genus, species, and variety?</p>
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Content Knowledge	Suggested Instructional Activities Rigor & Relevance Framework (Quadrant)	Suggested Materials, Equipment and Technology Resources
<p>I. Common names of greenhouse and nursery plants</p> <ol style="list-style-type: none"> A. Boston Ferns B. Poinsettias C. Chrysanthemums D. Easter lilies E. Begonias F. Geraniums G. Etc. 	<p>Memorization, challenge envelopes, and flash cards</p>	<p>Textbook(s), reference materials, support materials, landscape and nursery plants</p>

Unit Assessment:	Exhibitions, Tests, and checklists
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Unit/Course CTSO Activity:	FFA members can make an arboretum on campus.
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**Unit/Course
Culminating
Product:**

Students can make an arboretum on campus for the school and community.

Course/Program Credential(s): Credential Certificate Postsecondary Degree University Degree
 Other:

<p>III. Practices in the safe use of pesticides</p> <ul style="list-style-type: none"> A. Understanding instruction labels B. Use of protective equipment C. Proper storage and disposal D. Using Material Safety Data Sheets 		
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<p>Unit Assessment:</p>	<p>Performance tasks, Self-assessments and extended response exercises</p>
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<p>Unit/Course CTSO Activity:</p>	<p>Identify insects that are damaging plants of student's SAE.</p>
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<p>Unit/Course Culminating Product:</p>	<p>Students will outline a pest control program, which shall include biological control and include the point of chemical control.</p>
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<p>Course/Program Credential(s): <input type="checkbox"/> Credential <input type="checkbox"/> Certificate <input type="checkbox"/> Postsecondary Degree <input checked="" type="checkbox"/> University Degree</p> <p><input type="checkbox"/> Other:</p>	

Unit Assessment:	Performance tasks, teacher observation, portfolios and exhibitions
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Unit/Course CTSO Activity:	Horticultural related CDEs
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Unit/Course Culminating Product:	Students will develop and draw to scale a vegetable garden plan to include proper plant and site selection.
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Course/Program Credential(s): <input type="checkbox"/> Credential <input type="checkbox"/> Certificate <input type="checkbox"/> Postsecondary Degree <input checked="" type="checkbox"/> University Degree <input type="checkbox"/> Other:
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Unit Assessment:	Online activities, teacher observations, solution to problems and performance tasks
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Unit/Course CTSO Activity:	Horticultural related CDEs
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Unit/Course Culminating Product:	Students will prepare PowerPoint presentations to explain the types of automated systems used in commercial greenhouses.
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Course/Program Credential(s): <input type="checkbox"/> Credential <input type="checkbox"/> Certificate <input type="checkbox"/> Postsecondary Degree <input checked="" type="checkbox"/> University Degree <input type="checkbox"/> Other:
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