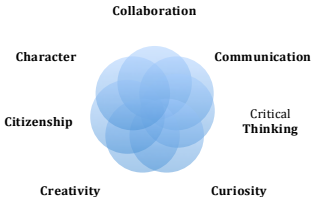




Content Area Agriscience	Greenhouse Plant Production & Processing Year B	Grade Level: 11 & 12
	<p>R14 The Seven Cs of Learning</p>  <p>The diagram shows a central blue circular graphic composed of overlapping circles. Surrounding this graphic are seven labels: "Collaboration" at the top, "Communication" at the top right, "Critical Thinking" at the right, "Curiosity" at the bottom right, "Creativity" at the bottom, "Citizenship" at the bottom left, and "Character" at the left.</p>	
Unit Titles	Length of Unit	
<ul style="list-style-type: none"> • <i>Floral Design</i> 	3-4 weeks	
<ul style="list-style-type: none"> • <i>Specialty Designs</i> 	3-4 weeks	
<ul style="list-style-type: none"> • <i>Plant Anatomy & Physiology</i> 	4-6 weeks	
<ul style="list-style-type: none"> • <i>Holiday Design</i> 	4-6 weeks	
<ul style="list-style-type: none"> • <i>Supervised Agricultural Experiences (SAE) Proficiencies</i> 	2 weeks	
<ul style="list-style-type: none"> • <i>Plant Propagation</i> 	4-6 weeks	
<ul style="list-style-type: none"> • <i>Greenhouse Structures & Technology</i> 	3-5 weeks	
<ul style="list-style-type: none"> • <i>Landscape Garden Design</i> 	3-5 weeks	



Strands	Course Level Expectations
Plant Anatomy & Physiology	<ul style="list-style-type: none"> All plants have specialized systems and each perform a specific function. Each system then works with other systems to maintain the plant's health and survival. Knowing how one system works, helps us observe and determine how other systems work.
Plant Reproduction	<ul style="list-style-type: none"> Plant propagation is the reproduction of plants through either sexual or asexual means. This allows for mass production, filling customer needs, and sharing a variety of plants for multiple purposes.
Greenhouse Engineering	<ul style="list-style-type: none"> The structure and equipment such as lighting, benches, shades, temperature, watering systems and glazing are chosen or adjusted for optimum production.
Garden Design	<ul style="list-style-type: none"> Selecting plants based on purpose, cultural conditions and physical characteristics will lend itself to a more aesthetically pleasing, well designed and a highly functional garden.
Floral Design	<ul style="list-style-type: none"> Knowledge of flower identification and physiology is important to have in order to create an arrangement. Flowers have to chosen based on their physical characteristics, such as longevity, ability to stay upright, and place of origin.

Unit Title	Floral Design	Length of Unit	3-4 weeks
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Inquiry Questions (Engaging & Debatable)	<ul style="list-style-type: none"> • Why is floral arrangement a science? • Why is floral arrangement an art?
Standards*	<p>Plant Systems (AS):</p> <p>PS. 01 Apply knowledge of plant classification, plant anatomy, and plant physiology to the production and management of plants.</p> <p>PS. 01.02 Performance Indicator: Apply knowledge of plant anatomy and the functions of plant structures to activities associated with plant systems.</p> <p>PS. 04 Performance Element: Employ elements of design to enhance the environment.</p> <p>PS. 04.01 Performance Indicator: Create designs using plants.</p>
Unit Strands & Concepts	Design principles and elements and evaluating their use, Classify and select plants based on their anatomy, General floral techniques, supplies and their use, Proper care of fresh material
Key Vocabulary	Balance, Proportion, Focal Point, Rhythm, Principles, Elements, Primary, Secondary, Tertiary, Complimentary, Triadic, Split Complementary, Mass Flower, Form Flower, Filler Flower, Line Flower.

* The agriculture, food and natural resources (AFNR) industry standards

Unit Title	Floral Design	Length of Unit	3-4 weeks
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Critical Content: My students will Know ...	Key Skills: My students will be able to (Do) ...
<ul style="list-style-type: none"> • the principles and elements of design • how color can be used to manipulate all of the principles • basic floral design styles and shapes • what factors affect the vase life of cut flowers and foliage 	<ul style="list-style-type: none"> • identify and classify cut flowers and foliage • manipulate flowers, greens or accessories to specifically enhance a principle of design • process cut flowers and foliage for use in an arrangement • create specific designs; symmetrical triangle, horizontal, multi-flower corsages, vase arrangements, novelty arrangements • decorate potted plants in prepare for sale

Assessments:	<ul style="list-style-type: none"> • Various formative and interim assessments throughout the unit. • Ongoing Performance Assessments - Mock Funeral and Student Portfolios
Teacher Resources:	❖ Primary and Industry Resources are used

Unit Title	Specialty Designs - Sympathy	Length of Unit	3-4 weeks
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Inquiry Questions (Engaging & Debatable)	<ul style="list-style-type: none"> • Why have certain flowers become associated with specific themes? • Why is it important to know your customer?
Standards	<p>Plant Systems (PS):</p> <p>PS. 01: Apply knowledge of plant classification, plant anatomy, and plant physiology to the production and management of plants.</p> <p>PS. 01.02: Apply knowledge of plant anatomy and the functions of plant structures to activities associated with plant systems.</p> <p>PS. 04: Employ elements of design to enhance the environment.</p> <p>PS. 04.01: Create designs using plants.</p>
Unit Strands & Concepts	<p>Use of materials, determining cost and pricing for profit, understanding cultural differences, communicating with customers, design techniques.</p> <p>Advanced floral design techniques, common arrangement styles used for sympathy/celebration, cultural differences and traditions, effective communication,</p>
Key Vocabulary	Casket Blanket, Saddle, Casket Scarf, Cremation Urn, Dish Garden, Eulogy, Funeral Basket, Script, Selection Guide, Set Piece, Mausoleum

Unit Title	Specialty Designs - Sympathy	Length of Unit	3-4 weeks
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Critical Content: My students will Know ...	Key Skills: My students will be able to (Do) ...
<ul style="list-style-type: none"> • how to read a wholesale florist invoice • how to communicate with customers in order to determine needs • how important funerals are to the retail floral industry • cultural differences and traditions 	<ul style="list-style-type: none"> • use supplies properly to create unique novelty arrangements • calculate the retail price of arrangements with the correct profit margin • select or recommend specialty arrangements based on the traditions of specific cultures • design and construct a funeral basket • design and construct a different style of sympathy piece (not basket) • meet with customers to determine their needs and help them place an order

Assessments:	<ul style="list-style-type: none"> • Ongoing Performance Assessments - Mock Funeral and student portfolios
Teacher Resources:	<ul style="list-style-type: none"> ❖ A variety of Primary in Industry Resources are used.

Unit Title	Plant Anatomy & Physiology	Length of Unit	4-6 weeks
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Inquiry Questions (Engaging & Debatable)	<ul style="list-style-type: none"> • Why do we need to know how each system within the plant functions? • How does understanding the inner workings of one species help me understand others? • What are signs of a problem and how can we determine an effective solution?
Standards	<p>Plant Systems (PS):</p> <p>PS.01: Apply knowledge of plant classification, plant anatomy and plant physiology to the production and management of plants.</p> <p>PS.01.01: Classify agricultural plants according to taxonomy systems.</p> <p>PS.01.02: Apply knowledge of plant anatomy and the functions of plant structures to activities associated with plant systems.</p> <p>PS.01.03: Apply knowledge of plant physiology and energy conversion to plant systems.</p>
Unit Strands & Concepts	Important roles played by green plants in our lives and in the earth's ecosystem, plant parts and their function, major plant processes; photosynthesis, respiration, transpiration.
Key Vocabulary	Taxonomy, xylem, phloem, variety, cultivar, hybrid, monoecious, dioecious, protoplast, chloroplasts, nucleus, vacuole, plasma membrane, vascular bundles, cambium, xanthophyll, carotene, anthocyanins, apical meristem, embryo, hydathodes, guttation, macronutrients, micronutrients, tropism, auxin, photoperiodism

Unit Title	Plant Anatomy & Physiology	Length of Unit	4-6 weeks
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Critical Content: My students will Know ...	Key Skills: My students will be able to (Do) ...
<ul style="list-style-type: none"> • the relationship between the plant kingdom and the animal kingdom • roles of plants in our world • various plant parts • photosynthesis • respiration in plants • transpiration. 	<ul style="list-style-type: none"> • explain the importance of plants in the ecosystem • explain various plant parts and purpose • explain photosynthesis • draw connections between plant processes and the significance to other species • persuade others about the importance of plants

Assessments:	<ul style="list-style-type: none"> • Various formative and interim assessments throughout the unit.
Teacher Resources:	<ul style="list-style-type: none"> ❖ A variety of Primary Industry Resources are used.

Unit Title	Holiday Design	Length of Unit	4-6 weeks
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Inquiry Questions (Engaging & Debatable)	<ul style="list-style-type: none"> • How do organizational skills affect efficiency and customer satisfaction? • How does specific holidays require knowledge of current trends? • Why does marketing influence sales?
Standards	<p>Plant Systems (PS):</p> <p>PS.04: Employ elements of design to enhance the environment. PS.04.01 Performance Indicator: Create designs using plants.</p> <p>CTE- Marketing Education Standards (C):</p> <p>C. Market Planning: Understand concepts and strategies utilized to determine and target marketing strategies to a select audience.</p>
Unit Strands & Concepts	Seasonal arrangement styles, marketing, holiday preparation, customer service techniques, Religious and cultural holidays,
Key Vocabulary	Chenille stems, floral holiday, seasonal flowers, regional holiday, cornucopia

Unit Title	Holiday Designs	Length of Unit	4-6 weeks
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Critical Content: My students will Know ...	Key Skills: My students will be able to (Do) ...
<ul style="list-style-type: none"> popular flowers, foliage, accessories, containers, and color schemes that coincide with the seasons what are major floral holidays what are some regional holidays different methods of wreath construction 	<ul style="list-style-type: none"> make Yule Logs, hand crimped wreaths, machine wrapped wreaths, seasonal centerpieces, swags, sprays, cemetery pots and other seasonal items decorate holiday items using the principles and elements of design operate the cash register, make change, close a sale help customers; answer questions and provide assistance create a visually appealing sales display make a #40 velvet wreath bow

Assessments:	<ul style="list-style-type: none"> Ongoing Performance Assessments - and student portfolios Create a holiday design and explain its significance
Teacher Resources:	❖ A variety of Primary in Industry Resources are used.

Unit Title	Plant Propagation	Length of Unit	4-6 weeks
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Inquiry Questions (Engaging & Debatable)	<ul style="list-style-type: none"> • What is plant propagation? • What factors determines the most efficient method of propagation? • How does a plants classification change the method of propagation?
Standards	<p>Plant Systems (PS):</p> <p>PS.01: Applying knowledge of plant classification, plant anatomy, and plant physiology to the production and management of plants. PS.01.02: Apply knowledge of plant anatomy and the functions of plant structures to activities associated with plant systems. PS.01.03: Apply knowledge of plant physiology and energy conversion to plant systems.</p> <p>PS.02: Prepare and Implement a plant management plan that addresses the influence of environmental factors, nutrients and soil on plant growth. PS.02.01: Determine the influence of environmental factors on plant growth.</p> <p>PS.03 Performance Element: Propagate culture and harvest plants. PS.03.01 Performance Indicator: Demonstrate plant propagation techniques. PS.03.02 Performance Indicator: Develop and implement a plant management plan for crop production.</p>
Unit Strands & Concepts	Plant reproduction, mitosis and meiosis, natural and purposeful plant improvement, GMO's
Key Vocabulary	Reproduction, propagation, haploid, diploid, zygote, cytokinesis, scarification, stratification, clone, runners, stolons, suckers, bulb, layering, cuttings, grafting, budding, tissue culture, gene, gametes, phenotype

Unit Title	Plant Propagation	Length of Unit	4-6 weeks
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Critical Content: My students will Know ...	Key Skills: My students will be able to (Do) ...
<ul style="list-style-type: none"> • how to determine the correct technique based on the plants anatomy • what conditions are needed during the different phases of propagation • what effect natural and synthetic growth regulators have on plants and cell functions 	<ul style="list-style-type: none"> • reproduce plants using a variety of techniques; grafting, budding, cuttings, layering, division • adjust the environment based on the technique used for optimum survival • select proper media based on the plant reproduction method used • create a commercial production schedule from cutting stock to growing in the final container

Assessments:	<ul style="list-style-type: none"> • Various formative and interim assessments throughout the unit.
Teacher Resources:	<ul style="list-style-type: none"> ❖ Plant Production - Principles and Practices by Hudson T. Hartmann, ale E. Kester, Fred T. Davies Jr.

Unit Title	SAE - Proficiencies	Length of Unit	2 weeks
Inquiry Questions (Engaging & Debatable)	<ul style="list-style-type: none"> • How does record keeping relate to evaluation of goals? • How does a student quantify growth? • How does a student describe and document success? 		
Standards	<p>Career Ready Practices (CRP):</p> <p>CRP.01. Act as a responsible and contributing citizen and employee. CRP.01.01. Model personal responsibility in the workplace and community CRP.01.02 Evaluate and consider the near-term and long-term impacts of personal and professional decisions on employers and community before taking action. CRP.01.03. Identify and act upon opportunities for professional and civic service at work and in the community. CRP.02. Apply appropriate academic and technical skills. CRP.02.01. Use strategic thinking to connect and apply academic learning, knowledge and skills to solve problems in the workplace. CRP.02.02. Use strategic thinking to connect and apply technical concepts to solve problems in the workplace and community.</p>		
Unit Strands & Concepts	Record keeping, descriptive writing, evaluation of goals and success,		
Vocabulary	Proficiency, financial report, income, expenses, career success, placement, scope, expenditures, gross earnings, net earnings, liabilities, net worth, Employer Statement, Resume, Personal Page		

Unit Title	SAE Proficiency	Length of Unit	1-2 weeks
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Critical Content: My students will Know...	Key Skills: My students will be able to (Do)...
<ul style="list-style-type: none"> • utilize AET • describe and explain the student's' SAE • calculate hours worked and money earned • list skills and identify growth • calculate gross and net income • evaluate goals 	<ul style="list-style-type: none"> • create a comprehensive PowerPoint presentation • create a expense report and earning report • write descriptive paragraphs • assemble a collage • create a resume • describe and quantify success

Assessments:	<ul style="list-style-type: none"> • Summative: Final Submission of Proficiency Application. Grades with the National FFA rubric • Performance Assessment: SAE PowerPoint Presentation
Teacher Resources:	<ul style="list-style-type: none"> ❖ Various Primary and Industry Resources ❖ National FFA ❖ AET

Unit Title	Greenhouse Structures and Technology	Length of Unit	3-5 weeks
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Inquiry Questions (Engaging & Debatable)	<ul style="list-style-type: none"> • How does the structure and its included equipment of a greenhouse change due to the products being grown? • Why is technology important?
Standards	<p>Plant Systems (PS) & Power Structural and Technical Systems (PST):</p> <p>PST.04. Plan, build and maintain AFNR structures. PST.04.01. Create sketches and plans for AFNR structures. PST.04.01.01.b. Apply scale measurement and dimension to develop sketches of agricultural structures. PST.04.02. Determine structural requirements, specifications and estimate costs for AFNR Structures PST.04.02.02.b. Assess and analyze local building code requirements for agriculture structures. PS.03.05. Harvest, handle and store crops according to current industry standards. PS.03.02.06.a. Identify and categorize structures and technologies used for controlled atmosphere production of plants.</p>
Unit Strands & Concepts	Structures, energy use and conservation, technology, measuring heat, read, interpret, and construct charts, graphs and tables
Key Vocabulary	Greenhouse, shade house, high tunnels, cold frame, hotbed, acrylic, polycarbonate, quonset, lathhouse, truss, purlin, sash bar, rafter, ridge vent, side vent, ridge cap, sill, headhouse, live load, dead load

Unit Title	Greenhouse Structures and Technology	Length of Unit	3-5 weeks
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Critical Content: My students will Know ...	Key Skills: My students will be able to (Do) ...
<ul style="list-style-type: none"> • what types of growing structures are used when producing specific crops • how to identify different greenhouse glazing, their use, advantages and disadvantages • the latest methods employed to conserve energy • what zoning laws limit greenhouse location and use 	<ul style="list-style-type: none"> • design plans for a production greenhouse structure • measure light through a variety of greenhouse glazing materials • sketch and label the bench arrangement in the production greenhouse designed above. Must be able to defend the arrangement selected • replace the polyethylene cover on a quonset style greenhouse • calculate the heat loss from one of our greenhouses • set the heating and cooling stages in the greenhouse using the Link4 control system

Assessments:	<ul style="list-style-type: none"> • Various formative and interim assessments throughout the unit. • Design a production greenhouse for a specific crop. - Lab
Teacher Resources:	<ul style="list-style-type: none"> ❖ Primary in Industry Resources are used.

Unit Title	Landscape Garden Design	Length of Unit	3-5 weeks
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Inquiry Questions (Engaging & Debatable)	<ul style="list-style-type: none"> • Why is a site analysis important? • How does plant selection directly correlate to the success of the garden?
Standards	<p>Plant Systems (PS):</p> <p>PS. 02: Prepare and implement a plant management plan that addresses the influence of environmental factors, nutrients, and soil on plant growth.</p> <p>PS. 02. 02: Evaluate soil/media and prepare soil/growing media for use in plant systems.</p> <p>PS. 04: Employ elements of design to enhance the environment.</p> <p>PS. 04.01: Create designs using plants.</p> <p>PS 04.02: Determine supplies needed to create landscape designs and develop a marketing plan.</p>
Unit Strands & Concepts	Pricing and budgeting, designing for the customers needs and wants, selecting plants, principles and elements of design, forest and landscape
Key Vocabulary	Annual, perennial, biennial, raised beds, loam, plan view, elevation view, soil texture, viewpoints, balance, focal point, rhythm, proportion, scale

Unit Title	Landscape Garden Design	Length of Unit	3-5 weeks
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Critical Content: My students will Know ...	Key Skills: My students will be able to (Do) ...
<ul style="list-style-type: none"> • how to perform a simple soil test • where samples can be sent for a more comprehensive test • what needs to be evaluated at the garden site and why. • what resources can be used to help select plants for the design • how to use technology to prepare a sales presentation 	<ul style="list-style-type: none"> • prepare a soil sample for testing • perform a basic soil test • perform a site analysis • interact with customers to determine their garden needs and wants • design/draw an ornamental landscape garden • develop a sales presentation as if the student was selling their design to a client • plant selected annuals and perennials according to a planting plan

Assessments:	<ul style="list-style-type: none"> • Various formative and interim assessments throughout the unit. • Design a garden using specific parameters - Lab/summative
Teacher Resources:	<ul style="list-style-type: none"> ❖ A variety of Primary in Industry Resources are used. ❖ Easy Garden Design, Janet Macunovich