SUBJECT: PLANT SCIENCE & LANDSCAPING	**GRADE: 10-12**
Unit Title: Introduction & Identification	
UNIT OVERVIEW	
This unit will give students a foundational understanding of the different branches of horticulture as well as how plants are named and grouped.	
LRG SKILLS AND DISPOSITIONS	PA STANDARDS
	3.3.10A Structural differences and organization Ag General 201 Classify plants 204 Identify products and uses of plant species in the industry Ag Production 703 Identify plant structures and functions
COMPETENCIES	LEARNING TARGETS
I can explain what horticulture is and how it impacts the environment and economy.	● I can define horticulture ● I can identify the 4 main branches of horticulture and provide examples of each ● I can explain how horticulture affects the environment and economy
I can use appropriate terminology to describe and identify an unknown plant.	● I can identify vegetables as either roots, shoots, leaves, or flowers ● I can differentiate between annuals, perennials, and biennials ● I can explain the difference between a perfect and imperfect flower ● I can develop and use a dichotomous key
I can identify common herbaceous perennials.	● I can identify at least 15 different herbaceous perennial flowers ● I can explain the difference between corms, bulbs, and rhizomes.

I can explain the importance of using more native plants in the landscape.	• I can compare and contrast invasive or non-native plants to native plants • I can identify at least 10 species of native plants • I can explain why non-natives are so prevalent in the landscape • I can defend why homeowners should plant more native species

SUBJECT: PLANT SCIENCE & LANDSCAPING	GRADE: 10-12
Unit Title: Plant Reproduction	
UNIT OVERVIEW	
This unit will explore how to reproduce plants both sexually and asexually. Students will get hands on experience propagating plants from seed as well as through cuttings and division.	
LRG SKILLS AND DISPOSITIONS	PA STANDARDS
	3.1.B.A3.Life Cycles Ag General 208 Demonstrate sexual and asexual plant production Ag Production 707 Distinguish between sexual and asexual plant reproduction 211 Connect the role of plant pollinators to food production
COMPETENCIES	LEARNING TARGETS
I can explain how plants reproduce sexually and reproduce plants from seed	• I can identify the parts of a flower • I can explain how flowers produce seed • I can grow plants from seed • I can explain the importance of pollinators to our food supply

I can explain how plants can be reproduced asexually	• I can explain the advantages and disadvantages of asexual reproduction in plants • I can perform cuttings and division to create new plants • I can explain specialized production techniques used to produce cut flowers, hydroponic lettuce, orchids, and poinsettias

SUBJECT: PLANT SCIENCE & LANDSCAPING	GRADE: 10-12
Unit Title: Plant Structure	
UNIT OVERVIEW	
This unit will explore the vascular system of plants. Students will be able to view plant cells under the microscope and will also learn how plants transport nutrients and water throughout their tissues.	
LRG SKILLS AND DISPOSITIONS	PA STANDARDS
	Ag General 203 Connect plant structure to plant function Ag Production 703 Identify plant structures and functions
COMPETENCIES	LEARNING TARGETS
I can explain how plant structure relates to function	• I can use a microscope to view plant cells (stomata) • I can compare and contrast xylem and phloem • Explain the process of translocation • I can explain the difference between monocots and dicots
I can explain how plants grow	• I can compare and contrast primary and secondary growth • I can explain how plant growth differs from human growth

	• I can identify what cells are responsible for plant growth • I can determine how much a tree branch grew the previous growing season

SUBJECT: PLANT SCIENCE & LANDSCAPING	GRADE: 10-12
Unit Title: Greenhouse Management	
UNIT OVERVIEW	
This unit will give students experience growing plants in a greenhouse environment. Students will learn how to operate a watering system, plant and transplant different types of plants, recognize common annual plants, and monitor for common pests and diseases.	
LRG SKILLS AND DISPOSITIONS	PA STANDARDS
	Agriculture General 207 Assess the environmental factors that affect the development and maintenance of a plant 214 Demonstrate the use of common horticultural tools 404 Demonstrate safety rules and regulations Agriculture Production 209 Design an IPM plan 210 Examine the impact of pests and diseases in plant production
COMPETENCIES	LEARNING TARGETS
I can care for common annual crops in a greenhouse	• I can identify 20 common herbaceous annual crops • I can operate the greenhouse watering and fertigation systems • I can explain how the environment (water, temp) affect plant growth • I can pinch stems and flowers to promote growth

I can plant and transplant annuals	• I can mix media with appropriate proportions of promix, vermiculite, and perlite for specific crops • I can fill trays and pots to the appropriate level with mixed media • I can grow plants from seed • I can transplant plugs/seedlings at the appropriate depth in media • I can repot rootbound plants into larger pots to promote health
I can monitor plants for pest problems	• I can understand my rights under the Worker Protection Standards for greenhouse workers • I can identify the 5 most common greenhouse pests • I can identify and provide examples of the 5 types of integrated pest management • I can explain the benefits of IPM to the environment and worker safety • I can monitor greenhouse crops for pests

SUBJECT: PLANT SCIENCE & LANDSCAPING	GRADE: 10-12
Unit Title: Landscaping	
UNIT OVERVIEW	
This unit will allow students to practice common landscape maintenance tasks including pruning, mulching, and mowing/trimming.	
LRG SKILLS AND DISPOSITIONS	PA STANDARDS
	Ag General 206 Analyze the functions of the essential nutrients for plant development 214 Demonstrate the use of common horticultural tools 303 Perform soil sampling techniques 304 Analyze and interpret the results of a soil test 305 Calculate fertilizer rates to maintain proper plant nutrition

	Ag Production 705 Idnetify plant nutrient requirements 709 Test soil for pH, texture, and macronutrients 710 Interpret soil test reports 711 Describe criteria for selecting fertilizers (NPK) 712 Calculate area (square feet, square yards, acerage)
COMPETENCIES	LEARNING TARGETS
I can properly prune trees and shrubs in the landscape	● I can identify 15 common woody shrubs found in the landscape ● I can determine when trees and shrubs should be pruned ● I can identify which branches need to be removed when pruning ● I can use loppers and hand pruners to safely remove desired branches ● I can use hand saws and the 3 cut method to safely remove large branches
I can determine what type of fertilizer is needed for a specific area in the landscape	● I can take a soil sample ● I can interpret soil test reports ● I can explain the functions of plant nutrients nitrogen, phosphorus, and potassium ● I can interpret the label on a fertilizer bag ● I can calculate how much of each plant nutrient is in a specific bag of fertilizer
I can prevent weeds from taking over a garden or lawn	● I can determine the area of a garden ● I can calculate the amount of much needed to cover a specific area ● I can explain the benefits of mulching a garden/flower bed ● I can differentiate between selective vs non-selective, contact vs systemic, and pre-emergent vs post-emergent herbicides ● I can discuss environmental concerns associated with herbicide & fertilizer use
I can operate common landscaping equipment	● I can safely operate a lawn mower ● I can safely operate a string trimmer

SUBJECT: PLANT SCIENCE AND LANDSCAPING	GRADE: 10-12
Unit Title: Marketing & Sales	

UNIT OVERVIEW
This unit will put students in charge of running a plant sale. The class will be responsible for selecting, pricing, and marketing plant products using the EHS greenhouse. Students will start vegetable crops from seed and purchase plugs and pre-finished annuals to created potted planters to sell to teachers and the community.

LRG SKILLS AND DISPOSITIONS	PA STANDARDS
	Ag General 506 Demonstrate oral, written, and verbal skills necessary for employment 510 Use social media as a professional business tool 603 Maintain accurate business and financial records

COMPETENCIES	LEARNING TARGETS
I can help determine what plants and pots we need to purchase for our sale	• I can help determine what veggies and herbs we'd like to offer for our sale • I can help determine what type of flower arrangements we'd like to offer for sale (hanging baskets, square potted planters, round potted planters, etc) • I can explain the importance of a pre-order system to maximize sale profits • I can determine what full sun annuals we'd like to use in our potted planters and hanging baskets using provided vendors • I can determine what part sun annuals we'd like to use in our potted planters and hanging baskets using provided vendors
I can collect and analyze financial records	• I can work with the class to create a reasonable budget for the plant sale • I can calculate the break even price for several of our planned combos

	• I can work with the class to finalize/set prices for our sales items • I can tally customer orders to determine whether the sale made or lost money
I can help advertise our plant sale	• I can work with the class to set a sale date for the plant sale • I can work with the class to determine a target audience for the sale • I can share out our pre-order form to potential customers • I can share out flyers and other promotional items to make the school and community aware of our sale using social media and other outlets
I can help assist customers in selecting and purchasing plants	• I can display plant and product knowledge when interacting with customers • I can take initiative in assisting customers • I can dress appropriately and interact professionally with customers • I can show up for my plant sale shift on time • I can correctly fill out a sales sheet indicating what a customer ordered and calculating their total cost
SUBJECT: PLANT SCIENCE & LANDSCAPING	GRADE: 10-12
Unit Title: Design (AS TIME ALLOWS)	
UNIT OVERVIEW	
This unit will allow students to explore principles of design in either landscaping or floriculture.	
LRG SKILLS AND DISPOSITIONS	PA STANDARDS
	Ag General 213 Evaluate and critique designs in the horticultural industry using the principles of design
COMPETENCIES	LEARNING TARGETS

I can identify the main elements of landscape design	• I can explain what I feel is an attractive landscape • I can identify where the focal point should be in a home landscape • I can name the 6 principles of landscape design • I can identify the 5 cardinal sins of home landscaping • I can analyze and critique a landscape design
I can create a boutonnière	• I can use floral wire to stabilize flower heads • I can use floral tape to cover floral wire • I can use the principles of design to select appropriate flower sizes, colors, and arrangement to create an attractive boutonniere