

**Agriculture Standards**

**Horticulture**

**Course Overview:** This course will cover a wide range of topics in the world of Horticulture. We will be covering all aspects related to growing/managing plants in a greenhouse setting. Throughout the course, students will examine propagation and management in a greenhouse, evaluate pest and growth problems, and explore the many career opportunities in the Horticulture Industry. Students will have the chance to work hands on with plants in the greenhouse and in the classroom. It is recommended you take both semesters of Horticulture for the full experience but is not required.

**Unit 1: Introduction to Horticulture Industry (5 days)**

**Description:** In this unit students will be introduced to the term horticulture and explore the many careers in the horticulture field.

**Standards**

1. Students will describe their horticulture background (AE:D12-1)
2. Students will discuss the Importance of the Horticulture Industry (EHS1.b.5.h)
3. Students will research the environmental Impacts of Horticulture (ESS3.a.5.h)
4. Students will explore the many career opportunities in Horticulture (CD1.a.3.h)
5. Students will practice and discuss the importance of Horticulture safety (EHS1.d.7.h, EHS1.d.8.h)

**Unit 2: Plant Anatomy/Physiology (12 days)**

**Description:** In this unit students will dive into classifying plants and identifying the various parts of a plant and its functions. They will also be exploring the effect of the environment on plant growth.

**Standards**

1. Students will classify ornamental plants and identify at least 30 common household plants (PS1.a.7.h, PS1.a.9.h)
2. Students will identify the various parts of roots and describe their purpose. (PS1.b.10.h)
3. Students will identify the various parts of a stem and describe their purpose. (PS1.a.8.h, PS1.b.11.h)
4. Students will describe the anatomy and morphology of a leaf. (PS1.a.8.h)
5. Students will distinguish whether or not a flower is complete/incomplete, perfect or imperfect and describe the purpose of the various parts of a flower.( PS1.a.8.h, PS1.b.14.h)
6. Students will compare and contrast a plants physiology to other living organism. (PS1.b.13.h, PS1.c.6.h)
7. Students will create an experiment that explores the effects of light, temperature, air, and water on plant growth. (PS2.a.6.h, PS2.a.7.h, PS2.a.8.h)
8. Students will conduct an experiment using plant growth regulators to determine their effect on plants.( PS1.d.8.h, PS1.d.9.h, PS1.d.10.h)

**Unit 3: Plant Propagation/Tools (10 days)**

**Description:** In this unit students will be propagating plants through various methods such as cuttings, division, layering, etc. They will also discuss what ways work best for various plants.

**Standards**

1. Students will be able to explain the basic process of plant reproduction (PS1.b.15.h)
2. Students will describe the process of propagating plants sexually (PS1.b.15.h )
3. Students will demonstrate that they can propagate plants through the cuttings (PS3.a.10.h, PS3.b.10.h )
4. Students will demonstrate they can propagate plants by division, separation, and layering (PS3.a.10.h, PS3.a.11.h, PS3.b.10.h)
5. Students will describe the process of propagating Plants by grafting and budding (PS3.a.10.h, PS3.b.10.h)
6. Students will explain how breeders propagate plants through Tissue Culture (PS3.a.10.h, PS3.a.11.h, PS3.a.12.h, PS3.b.10.h)

**Unit 4: Growing Media, Nutrients, Fertilizers (8 days)**

**Description:** In this unit students will explore the various media that plants are grown in and discuss the quality of soil and how to best maintain topsoil and prevent erosion.

**Standards**

1. Students will discuss the properties of Growing Media (PS2.b.5.h )
2. Students will identify the various components of growing media and describe why they are essential.(PS2.b.5.h, PS2.b.6.h, PS2.b.8.h, PS2.c.9.h)
3. Students will explain the importance of supplying nutrients to floriculture crops and identify which nutrients are essential. (PS2.c.7.h, PS2.c.8.h, PS2.c.12.h )
4. Students will determine what the nature of soil is and discuss the various components that make up soil. (PS2.b.5.h )
5. Students will be able to identify soil through its texture and structures by demonstrating a soil test. (PS2.b.5.h, PS2.b.8.h)
6. 6. Students will be able to explain what a soil profile is and what its purpose is. (PS2.b.5.h)
7. Students will compare and contrast the moisture holding capacity of various soil types. (PS2.b.7.h )
8. Students will discover how widespread soil erosion is and research what management practices are being used to help conserve our topsoil. (PS3.d.3.h)

**Unit 5: Integrated Pest Management (9 Days)**

**Description:** In this unit students will create an integrated pest management plan and discuss how and when to use pesticide safely. They will also discuss the environmental impacts and other hazards of using pesticides in the greenhouse, landscape, or in the home.

**Standards**

1. Students will design their own Integrated Pest Management plan (PS3.c.9.h, PS3.c.10.h)
2. Students will determine the best kinds of pesticides to use in various pest situations(PS3.c.10.h )
3. Students will develop a pesticide safety pamphlet that demonstrates proper way to use/store pesticides. (PS3.c.12.h, PS3.c.13.h)
4. Students will be able to read and interpret the instructions and symbols on pesticide labels (PS3.c.10.h)
5. Students will discuss the proper way to apply pesticides and when to do it. (PS3.c.11.h)
6. Students will discover what environmental impacts pesticides may have and how to prevent negative impacts.(PS3.c.14.h )
7. 7.Students will be able to identify and create management plant for plant pests in the Greenhouse (PS3.c.8.h )
8. Students will be able to identify and create management plant for plant pests in the Landscape (PS3.c.8.h )
9. Students will be able to identify and create management plant for plant pests in Fruits and Vegetables (PS3.c.8.h )

 **Unit 6: Hydroponics (8 Days)**

**Description:** Students in this unit will be building their own hydroponics unit and growing plants of their choice. They will be responsible for all the plant’s needs. Before they create their system students will be able to determine what a hydroponic system looks like and how it functions.

 **Standards**

1. Students will be able to define Hydroponics and compare/contrast it to conventional means of plant production. (PS5.a.3.h )
2. Students will look at the basics for growing crops through Hydroponics and create their own hydroponics system. (PS5.a.3.h)

**Unit 7: Greenhouse Crop Production (10 days)**

**Description:** Students in this unit will begin to create their greenhouse management plan that they will implement in the spring that will include care instructions, IPM plan, and description of the plants they plan to plant. Students will have a chance to compare and contrast greenhouse structures and the different systems they use.

 **Standards**

1. Greenhouse Structures (PS5.a.3.h )
2. Controlling the Greenhouse Climate (PS3.e.13.h)
3. Automated Systems in the Greenhouse (PS5.a.3.h )
4. Foliage Plants (PS3.b.16.h)
5. Bedding Plants (PS3.b.13.h, PS3.b.16.h )
6. Growing Potted Perennials (PS3.b.13.h, PS3.b.16.h )
7. Managing the Greenhouse Business (ABS2.c.5.h, ABS2.c.7.h)

**Unit 8: Floral Design (12 days)**

**Description:** Students will design and implement their own floral design arrangement. They will determine what the arrangement will be used for and either digitally design the arrangement or create a hand drawing of what it will look like. They will have to describe the proper care for the arrangement and what tools would be needed to create it. Finally they will need to price out what their work would be worth.

**Standards**

1. Exploring the International Flower Market (ABS6.a.7.h

2. Caring for Fresh Flowers and Foliage (PS3.e.12.h, PS3.e.13.h)

3. Identifying Floral Design Tools and Supplies (PST1.c.3.h)

4. Principles of Floral Design (PS4.a.7.h)

5. Design Elements (PS4.a.5.h)

6. Corsages and Boutonnieres (PS4.a.8.h)

7. Basic Floral Work (PS4.a.8.h)

8. Centerpieces and Holiday Arrangements (PS4.a.8.h)

9. Pricing Floral Design Work (ABS6.c.3.h)

10. Managing the Floral Shop (ABS2.c.5.h, ABS2.c.7.h, ABS3.a.3.h, ABS6.c.3.h)

**Unit 9: Nursery Production (5 Days)**

**Description:** Students will be able to describe what a Nursery Production Facility looks like and what role they play in the horticulture industry. Students will compare and contrast managing a nursery business to that of a floral shop or a greenhouse.

 **Standards**

1. Nursery Production Facilities (PS3.e.13.h)

2. Producing Nursery Crops (PS3.b.16.h)

3. Packaging Nursery Crops (PS3.e.12.h, PS3.e.13.h)

4. Managing the Nursery Business (ABS2.c.5.h, ABS2.c.7.h, ABS3.a.3.h)

**Unit 10 Interior Plantscaping (4 days)**

**Description:** Students will design their own interior plantscape of a place of their choosing. Once they have completed the design they will need to create a list of instructions on how they might maintain that interior plantscape and describe why they choose the design that they did.

 **Standards**

1. Students will be able to describe the process of interior plantscaping installation and create their own interior plantscape design. (PS3.b.16.h)

2. Students will Interior Plantscaping Maintenance (PS3.b.16.h)

**Unit 11: Horticultural Issues (4 days)**

**Description:** Students will be researching current horticulture issues that are affecting the horticulture industry. Once they pick a topic the class will have a debate where students will pick a side and need to form a fact based argument to support their position.

 **Standards**

1. Students will be discussing current Horticulture issues. (4C2.a.11.h, 4C2.a.15.h, 4C2.a.12.h, 4C2.a.13.h, 4C2.a.14.h, 4C2.a.16.h, 4C2.b.5.h, 4C2.b.6.h)
2. Students will demonstrate a proper debate surrounding a current Horticulture issue. (4C2.a.11.h, 4C2.a.15.h, 4C2.a.12.h, 4C2.a.13.h, 4C2.a.14.h, 4C2.a.16.h, 4C2.b.5.h, 4C2.b.6.h)