

Implementation Date
Fall 2008

PROGRAM CONCENTRATION: Agriculture
CAREER PATHWAY: Horticulture/Plant Science
COURSE TITLE: General Horticulture and Plant Science

This course is designed as an introduction for the Horticulture/Plant Science Pathway Program of Study. The course introduces the major concepts of plant and horticulture science. Classroom and laboratory activities are supplemented through supervised agricultural experiences and leadership programs and activities.

AG-GH/PS-1. Students will become oriented to the comprehensive program of agricultural education, learn to work safely in the agriculture lab and work sites, demonstrate selected competencies in leadership through the FFA and agricultural industry organizations, and develop plans for a supervised agricultural experience (SAE) program.

- a. Explain the role of the Agricultural Education program and the FFA in personal development.
- b. Demonstrate knowledge learned through a Supervised Agricultural Experience (SAE) program.
- c. Develop leadership and personal development skills through participation in the FFA.
- d. Explore career opportunities in horticulture/plant science through the FFA and Agricultural Education Program.
- e. Explore the professional agricultural organizations associated with the course content.

Academic Standards:

SSEM12. The student will explain how the Law of Demand, the Law of Supply, prices, and profits work to determine production and distribution in a market economy.

MM1P4. Students will make connections among mathematical ideas and to other disciplines.

MM1P5. Students will represent mathematics in multiple ways.

SCSh8. Students will understand important features of the process of scientific inquiry.

ELA9RC2. The student participates in discussions related to curricular learning in all subject areas.

SCSh2. Students will use standard safety practices for all classroom laboratory and

Implementation Date
Fall 2008

field investigations.

AG-GH/PS-2. Students will identify plant parts, growth, and reproduction processes.

- a. Explain the three phases of plant life (dormancy, vegetative, reproductive).
- b. Describe the difference between annuals, biennials, and perennials.
- c. Identify vegetative structures and functions of plant parts (i.e....leaves, stems, roots).
- d. Identify sexual reproductive structures and functions of plant parts (i.e....flower, fruit, seeds).
- e. Identify asexual reproductive structures and functions of plant parts (i.e....stems, roots).
- f. Explain the growth processes of plants (i.e....germination, photosynthesis, transpiration, respiration, osmosis, etc.).

Academic Standards:

SB1. Students will analyze the nature of the relationships between structures and functions in living cells.

ELA9RC3. The student acquires new vocabulary in each content area and uses it correctly.

AG-GH/PS-3. Students will discuss the importance of sexual reproduction in plants.

- a. Discuss the importance of plant propagation.
- b. Explain the difference between sexual and asexual propagation.
- c. Describe the factors involved in planting seeds.

Academic Standards:

SB2. Students will analyze how biological traits are passed on to successive generations.

SB3. Students will derive the relationship between single-celled and multi-celled organisms and the increasing complexity of systems.

SB4. Students will assess the dependence of all organisms on one another and the flow of energy and matter within their ecosystems.

MM1D2. Students will use the basic laws of probability.

AG-GH/PS-4. Students will demonstrate an understanding of the importance of asexual reproduction.

Implementation Date
Fall 2008

- a. Discuss the various methods of vegetative propagation and identify each method.
- b. Explain the difference between separation and division in plant propagation.

Academic Standards:

SB2. Students will analyze how biological traits are passed on to successive generations.

SB3. Students will derive the relationship between single-celled and multi-celled organisms and the increasing complexity of systems.

ELA9RC3. The student acquires new vocabulary in each content area and uses it correctly.

ELA9RC4. The student establishes a context for information acquired by reading across subject areas.

AG-GH/PS-5. Students will explore the basic principles and uses of soil and plant growth media.

- a. Describe soil materials and structure.
- b. Describe the components and functions of a good growing media.

Academic Standards:

SSWG1. The student will explain the physical aspects of geography.

SSWG2. The student will explain the cultural aspects of geography.

MM1A3. Students will solve simple equations.

AG-GH/PS-6. Students will identify important plant nutrients.

- a. Name the nutrients needed for plant growth.
- b. Identify common nutrient deficiency symptoms.
- c. Describe pH modification.

Academic Standards:

MM2P1. Students will solve problems (using appropriate technology).

MM2P4. Students will make connections among mathematical ideas and to other disciplines.

Implementation Date
Fall 2008

ELA9RC2. The student participates in discussions related to curricular learning in all subject areas.

ELA9RC3. The student acquires new vocabulary in each content area and uses it correctly.

ELA9LSV1. The student participates in student-to-teacher, student-to-student, and group verbal interactions.

AG-GH/PS-7. Students will explore the use of fertilization materials and methods.

- a. Explain fertilizers and fertilization.
- b. Analyze the difference between organic and inorganic fertilizers.
- c. Demonstrate fertilizer application methods.

Academic Standards:

SC7. Students will characterize the properties that describe solutions and the nature of acids and bases.

MM2P3. Students will communicate mathematically.

MM2P4. Students will make connections among mathematical ideas and to other disciplines.

ELA9RC3. The student acquires new vocabulary in each content area and uses it correctly.

SCSh2. Students will use standard safety practices for all classroom laboratory and field investigations.

AG-GH/PS-8. Students will define the damage caused to plants by insects, weeds, diseases, and physiological disorders.

- a. Identify common insects, weeds, diseases, and physiological disorders.
- b. Diagram the external structure of an insect.
- c. Trace the life cycles of insects.
- d. Describe the type of damage inflicted by weeds.
- e. Describe the types of plant diseases.
- f. Identify the proper methods of controlling pests.

Academic Standards:

SB4. Students will assess the dependence of all organisms on one another and the flow of energy and matter within their ecosystems.

Implementation Date
Fall 2008

ELA9RC3. The student acquires new vocabulary in each content area and uses it correctly.

SCSh2. Students will use standard safety practices for all classroom laboratory and field investigations.

AG-GH/PS-9. Students will compare and contrast the use of various plant growing containers.

- a. Describe the containers used in plant production.
- b. Analyze the advantages and disadvantages of each type of plant growing container.

Academic Standards:

SCSh3. Students will identify and investigate problems scientifically.

MM2P4. Students will make connections among mathematical ideas and to other disciplines.

ELA9RC3. The student acquires new vocabulary in each content area and uses it correctly.

AG-GH/PS-10. Students will describe the use of various plant irrigation methods.

- a. Describe the different types of watering methods.
- b. List the advantages and disadvantages of each type of watering system.

Academic Standards:

SCSh3. Students will identify and investigate problems scientifically.

SCSh4. Students will use tools and instruments for observing, measuring, and manipulating scientific equipment and materials.

MM2P4. Students will make connections among mathematical ideas and to other disciplines.

ELA9RC2. The student participates in discussions related to curricular learning in all subject areas.

AG-GH/PS-11. Students will identify plant growth processes and factors that affect plant development and growth.

- a. Describe the processes of photosynthesis and factors that affect

Implementation Date
Fall 2008

- photosynthesis in plants.
- b. Describe the processes of respiration and factors that affect respiration in plants.

Academic Standards:

SB3. Students will derive the relationship between single-celled and multi-celled organisms and the increasing complexity of systems.

SB4. Students will assess the dependence of all organisms on one another and the flow of energy and matter within their ecosystems.

AG-GH/PS-12. Students will explore plant science and horticulture careers and opportunities.

- a. Demonstrate a basic understanding of the educational requirements and skills needed for workers in various plant science careers.
- b. Give a basic understanding of olericulture, arboriculture, pomology, agronomy, floriculture, nursery-landscape, landscape design, floral design, and greenhouse and turf production and management.

Academic Standards:

SSEM12. The student will explain how the Law of Demand, the Law of Supply, prices, and profits work to determine production and distribution in a market economy.

ELA9RC2. The student participates in discussions related to curricular learning in all subject areas.

ELA9RC3. The student acquires new vocabulary in each content area and uses it correctly.

CTAE Foundation Skills

The Foundation Skills for Career, Technical and Agricultural Education (CTAE) are critical competencies that students pursuing any career pathway should exhibit to be successful. As core standards for all career pathways in all program concentrations, these skills link career, technical and agricultural education to the state's academic performance standards.

The CTAE Foundation Skills are aligned to the foundation of the U. S. Department of Education's 16 Career Clusters. Endorsed by the National Career Technical Education Foundation (NCTEF) and the National Association of State Directors of Career Technical Education Consortium (NASDCTEc), the foundation skills were developed from an analysis of all pathways in the sixteen occupational areas. These

Implementation Date
Fall 2008

standards were identified and validated by a national advisory group of employers, secondary and postsecondary educators, labor associations, and other stakeholders. The Knowledge and Skills provide learners a broad foundation for managing lifelong learning and career transitions in a rapidly changing economy.

CTAE-FS-1 Technical Skills: Learners achieve technical content skills necessary to pursue the full range of careers for all pathways in the program concentration.

CTAE-FS-2 Academic Foundations: Learners achieve state academic standards at or above grade level.

CTAE-FS-3 Communications: Learners use various communication skills in expressing and interpreting information.

CTAE-FS-4 Problem Solving and Critical Thinking: Learners define and solve problems, and use problem-solving and improvement methods and tools.

CTAE-FS-5 Information Technology Applications: Learners use multiple information technology devices to access, organize, process, transmit, and communicate information.

CTAE-FS-6 Systems: Learners understand a variety of organizational structures and functions.

CTAE-FS-7 Safety, Health and Environment: Learners employ safety, health and environmental management systems in corporations and comprehend their importance to organizational performance and regulatory compliance.

CTAE-FS-8 Leadership and Teamwork: Learners apply leadership and teamwork skills in collaborating with others to accomplish organizational goals and objectives.

CTAE-FS-9 Ethics and Legal Responsibilities: Learners commit to work ethics, behavior, and legal responsibilities in the workplace.

CTAE-FS-10 Career Development: Learners plan and manage academic-career plans and employment relations.

CTAE-FS-11 Entrepreneurship: Learners demonstrate understanding of concepts, processes, and behaviors associated with successful entrepreneurial performance.