

III. **SPECIAL NOTE:** FFA (secondary) and the National Postsecondary Agricultural Student Organization (postsecondary) are the appropriate Career Technical Student Organizations for providing leadership training and for reinforcing specific vocational skills. Career Technical Student Organizations, when provided, shall be an integral part of the vocational instructional program, and the activities of such organizations are defined as part of the curriculum in accordance with Rule 6A-6.065, FAC.

Planned and supervised occupational activities must be provided through one or more of the following: (1) directed laboratory experience, (2) student projects, (3) placement for experience, (4) cooperative experience.

Because of the production and marketing cycle of the crop and plant production industry, this program requires individual instruction and supervision of students for the entire period beyond the 180-day school year.

Cooperative training - OJT is appropriate for this program. Whenever cooperative training - OJT is offered, the following are required for each student: a training plan, signed by the student, teacher, and employer, which includes instructional objectives and a list of on-the-job and in-school learning experiences; a workstation that reflects equipment, skills, and tasks that are relevant to the occupation which the student has chosen as a career goal. The student must receive compensation for work performed.

In accordance with Rule 6A-10.040, FAC., the minimum basic skills grade level required for this postsecondary adult vocational program is: Mathematics 9.0, Language 9.0, Reading 9.0. This grade level number corresponds to grade-equivalent scores obtained on one of the state-designated basic-skills examinations. If a student does not meet the basic-skills level required for completion of the program, remediation should be provided concurrently in Vocational Instructional Preparation (VIP). Please refer to the Rule for exemptions.

The standard length of this program is 900 hours.

When a secondary student with a disability is enrolled in a vocational class with modifications to the curriculum framework, the particular outcomes and student performance standards which the student must master to earn credit must be specified on an individual basis. The job or jobs for which the student is being trained should be reflected in the student's desired post school outcome statement on the Transition Individual Educational Plan (Transition IEP).

This program may be offered in courses. Vocational credit shall be awarded to the student on a transcript in accordance with Section 200.643 F.S.

IV. **INTENDED OUTCOMES:** After successfully completing this program, the student will be able to:

Occupational Completion Point - Data Code A
Supervisors, diversified crops (407.131-010)

- 01.0 Describe the socioeconomic role of the agricultural industry.
- 02.0 Apply scientific and technological principles to the agricultural industry.
- 03.0 Practice agricultural safety.
- 04.0 Demonstrate the use of tools, equipment and instruments in the agricultural industry.
- 05.0 Describe the principles of integrated pest management (IPM).
- 06.0 Describe the principles of plant and/or animal growth and reproduction.
- 07.0 Apply business skills and economic principles to the agricultural industry.
- 08.0 Explain the basic marketing processes in the agricultural industry.
- 09.0 Demonstrate human relations, communications, and leadership skills.
- 10.0 Explore the scope of the crop and plant production industry.
- 11.0 Compare, select, and use plant production systems.
- 12.0 Fertilize plants and crops.
- 13.0 Irrigate plants and crops.
- 14.0 Control weeds, insects, diseases and other pathogens of crop and specialty plants.
- 15.0 Operate, maintain, and service facilities, tools, and equipment.
- 16.0 Describe procedures for harvesting and marketing plant materials.
- 17.0 Apply principles of agribusiness finance.
- 18.0 Prepare soil for planting crops.
- 19.0 Select seed.
- 20.0 Plant crops.
- 21.0 Identify and select varieties of rootstocks and scions for selected specialty plants.
- 22.0 Propagate specialty plants.
- 23.0 Explain the marketing processes in crop production.
- 24.0 Prune and hedge specialty plants.
- 25.0 Construct and repair farm facilities.
- 26.0 Manage farm records.
- 27.0 Observe laws and regulations regarding the plant industry.
- 28.0 Organize jobs and supervise workers.
- 29.0 Demonstrate leadership, employability, communication, and human-relations skills.

**Florida Department of Education
STUDENT PERFORMANCE STANDARDS**

Program Title: Crop And Plant Technology
Secondary Number: 8106400
Postsecondary Number: A010304

Occupational Completion Point - Data Code A
 Supervisors, diversified crops (407.131-010)

01.0 DESCRIBE THE SOCIOECONOMIC ROLE OF THE AGRICULTURAL INDUSTRY--The student will be able to:

- 01.01 Prepare a report on the history of the agricultural industry.
- 01.02 Discuss the impact of agricultural products and services on the local, state, national, and global economy.
- 01.03 Investigate career opportunities in the agricultural industry and identify educational experiences necessary to prepare for those careers.
- 01.04 Discuss the role of the agricultural industry in the interaction of population, food, energy, and the environment.

02.0 APPLY SCIENTIFIC AND TECHNOLOGICAL PRINCIPLES TO THE AGRICULTURAL INDUSTRY--The student will be able to:

- 02.01 Discuss the importance of scientific classification in agriculture.
- 02.02 Use the scientific method to solve problems in agriculture.
- 02.03 Explain the use of genetics in agriculture, including probability applications.
- 02.04 Analyze the impact of recent technology on the agricultural industry.
- 02.05 Identify and describe the components of an ecosystem both biotic and abiotic.
- 02.06 Construct and analyze a diagram of a biological food web and subsequent food chains.
- 02.07 Describe and diagram the water, carbon, nitrogen, oxygen, sulfur, and phosphorus cycles.
- 02.08 Evaluate soil profiles, land-capability classes, and soil conservation practices.
- 02.09 List the components of Florida's fresh water systems (lakes, ground water, aquifer, sink holes, rivers, and swamps) and explain the importance of managing these resources.
- 02.10 Explain the interaction of one natural resource with another.
- 02.11 Describe the causes and effects of air, water, and land pollution and identify ways to prevent pollution.
- 02.12 Explain the flow of energy from the sun through agricultural systems.
- 02.13 Describe the environmental requirements necessary for a productive natural or man-made aquaculture system.
- 02.14 Apply principles of waste management to environmental problems common to agricultural systems.

- 02.15 Understand the concept of best management practices (BMP) as applied to agriculture.
 - 02.16 Identify advances in biotechnology impacting agriculture such as transgenic crops and biological controls.
 - 02.17 Identify computer technology advances such as Geographic Information Systems (GIS) and Global Positioning Systems (GPS).
- 03.0 PRACTICE AGRICULTURAL SAFETY--The student will be able to:
- 03.01 List the most common causes of agricultural accidents.
 - 03.02 Discuss the importance of following proper safety precautions in the agricultural industry.
 - 03.03 Demonstrate safety procedures in the classroom, laboratory, and workplace.
 - 03.04 Describe symptoms of pesticide poisoning.
 - 03.05 Extract pertinent information from a pesticide label and Material Safety Data Sheet (MSDS).
 - 03.06 Select, mix, and apply a nonrestricted chemical, according to the label and according to Environmental Protection Agency (EPA), MSDS, and Worker Protection Standard regulations.
 - 03.07 Clean and store pesticide application equipment, safety clothing, and safety equipment.
 - 03.08 Identify the proper disposal of containers and residual pesticides.
 - 03.09 Discuss the proper procedures of basic first aid and cardiopulmonary resuscitation (CPR).
- 04.0 DEMONSTRATE THE USE OF TOOLS, EQUIPMENT AND INSTRUMENTS IN THE AGRICULTURAL INDUSTRY--The student will be able to:
- 04.01 Choose the proper tools, equipment, and instruments for a specific job.
 - 04.02 Describe the principles of selected mechanical applications (e.g. levers, pulleys, hydraulics, internal combustion).
 - 04.03 Calibrate spray equipment; solve time, distance, area, volume ratio, proportion, and percentage problems in agriscience.
 - 04.04 Demonstrate the ability to use an equipment manual.
 - 04.05 Demonstrate the use of selected tools, equipment, and instruments.
 - 04.06 Service, maintain, and store tools, equipment, instruments, and supplies.
- 05.0 DESCRIBE THE PRINCIPLES OF PEST MANAGEMENT --The student will be able to:
- 05.01 Identify types of pests and beneficials.
 - 05.02 Identify and select an appropriate control for each type of pest and/or weed.
 - 05.03 Describe the principles and benefits of integrated pest management.
- 06.0 DESCRIBE THE PRINCIPLES OF PLANT AND/OR ANIMAL NUTRIENT GROWTH AND REPRODUCTION--The student will be able to:

For plant:

- 06.01 Describe the structure functions of plant parts including roots, stems, leaves, and flowers.
- 06.02 Describe the processes of plant growth including photosynthesis, respiration and nutrient uptake.
- 06.03 Propagate plants through sexual and asexual means.
- 06.04 Identify the nutrients required for plant growth and development and the role of each.
- 06.05 Extract pertinent information from a fertilizer label.

For animal:

- 06.07 Identify the nutrients required for animal growth and development and the role of each.
- 06.08 Identify and describe the anatomical systems of animals and the functions of each, including major components.
- 06.09 Describe the process of animal reproduction.

07.0 APPLY BUSINESS SKILLS AND ECONOMIC PRINCIPLES TO THE AGRICULTURAL INDUSTRY--The student will be able to:

- 07.01 Explain the basic economic principles in the agricultural industry.
- 07.02 Explain the importance and impacts of local, state, and federal regulations and required documentation affecting the agricultural industry.
- 07.03 Describe the types of agribusiness by organizational structure (i.e. sole proprietorship, partnership, corporation, cooperatives).
- 07.04 Select and use computer applications.
- 07.05 Analyze and interpret agribusiness data.
- 07.06 Keep and maintain supervised agricultural experience (SAE) records.
- 07.07 Interpret legal descriptions of land.

08.0 EXPLAIN THE BASIC MARKETING PROCESSES IN THE AGRICULTURAL INDUSTRY--The student will be able to:

- 08.01 Describe key factors in marketing agricultural products.
- 08.02 Select agricultural products according to grades and standards.

09.0 DEMONSTRATE HUMAN-RELATIONS, COMMUNICATIONS, AND LEADERSHIP SKILLS--The student will be able to:

- 09.01 Demonstrate acceptable work habits and attitudes.
- 09.02 Correctly follow oral and written directions and ask questions that clarify directions, as needed.
- 09.03 Communicate effectively in verbal, written, and nonverbal modes.
- 09.04 Recognize and demonstrate good listening skills.
- 09.05 Conduct small informal and formal group meetings.

- 09.06 Identify the opportunities for leadership development available through an appropriate student and/or professional organization.
 - 09.07 Recognize and demonstrate communications skills in the workplace.
 - 09.08 Demonstrate effective telephone skills.
- 10.0 EXPLORE THE SCOPE OF THE CROP AND PLANT PRODUCTION INDUSTRY--The student will be able to:
- 10.01 Investigate career opportunities in the crop and plant production industry.
 - 10.02 Describe training requirements for entry and advancement in crop and plant production careers.
 - 10.03 Identify professional organizations and trade journals in the crop and plant production industry.
- 11.0 COMPARE, SELECT, AND USE PLANT PRODUCTION SYSTEMS--The student will be able to:
- 11.01 Compare different plant production systems.
 - 11.02 Propagate, transplant and grow plants.
 - 11.03 Identify varieties of local commercial plants and field crops.
 - 11.04 Select and prepare a site and/or a seed bed for planting.
 - 11.05 Identify methods of pruning plants to achieve desired growth and to maintain health.
 - 11.06 Calculate planting rate and spacing.
 - 11.07 Operate and adjust planting equipment.
- 12.0 FERTILIZE PLANTS AND CROPS--The student will be able to:
- 12.01 Develop fertilization schedules and calculate fertilizer rates for plants; solve time, distance, area, and volume problems in agriscience.
 - 12.02 Identify common nutrient-deficiency symptoms in plants.
 - 12.03 Calibrate fertilization equipment and fertilize plants.
 - 12.04 Interpret information on a fertilizer label.
 - 12.05 Compare sources and forms of nutrients.
 - 12.06 Determine methods of applying fertilizer materials.
 - 12.07 Determine nutrient requirements for individual crops.
 - 12.08 Collect soil and/or plant tissue samples for analysis and interpret results.
 - 12.09 Select appropriate additives for pH adjustment.
- 13.0 IRRIGATE PLANTS AND CROPS--The student will be able to:
- 13.01 Recognize soil and plant conditions indicating irrigation needs and develop an irrigation schedule.
 - 13.02 Compare and select irrigation equipment and methods.
 - 13.03 Install, operate, maintain, and repair irrigation equipment.
 - 13.04 Determine irrigation requirements for a variety of crops.
 - 13.05 Interpret water quality analysis reports.
 - 13.06 List agencies responsible for surface and ground water use rules and regulations.

- 13.07 Operate and maintain micro-irrigation systems.
 - 13.08 Operate, adjust and maintain volume, gun and other portable irrigation equipment.
 - 13.09 Maintain and repair permanent overhead irrigation systems.
 - 13.10 Operate and service electric and engine driven pumps.
 - 13.11 Keep irrigation records.
- 14.0 CONTROL WEEDS, INSECTS, DISEASES AND OTHER PATHOGENS OF CROP AND SPECIALTY PLANTS--The student will be able to:
- 14.01 Identify common plant pests and their damages.
 - 14.02 Describe life cycles of insects, pests, and diseases.
 - 14.03 Identify the procedures and requirements for obtaining a restricted-use-pesticide operator's license.
 - 14.04 Select, mix, and apply a nonrestricted chemical according to the label and local, state, federal and EPA regulations.
 - 14.05 Identify noxious weeds and vines of crops and specialty plants.
 - 14.06 Identify insects, diseases and other pathogens of crops and specialty plants.
 - 14.07 Demonstrate the safe use of pesticides, protective clothing and respiration equipment.
 - 14.08 Safely dispose of pesticide containers.
 - 14.09 Clean and maintain pesticide applicators.
 - 14.10 Observe and maintain grove and nursery sanitation practices.
 - 14.11 Control weeds with cultivation equipment.
 - 14.12 Evaluate weed control practices for effectiveness.
- 15.0 OPERATE, MAINTAIN, AND SERVICE FACILITIES, TOOLS, AND EQUIPMENT--The student will be able to:
- 15.01 Demonstrate basic facility maintenance, installation, or repair.
 - 15.02 Safely operate, maintain, service, and repair equipment.
 - 15.03 Use and maintain hand tools and power equipment (e.g., power saws, welders).
 - 15.04 Maintain and service small gasoline engines.
 - 15.05 Maintain equipment maintenance and service records.
 - 15.06 Cut and weld with oxyacetylene and arc welding equipment.
- 16.0 DESCRIBE PROCEDURES FOR HARVESTING AND MARKETING PLANT MATERIALS--The student will be able to:
- 16.01 Determine maturity, condition, quality, and volume of crops to be harvested.
 - 16.02 Describe procedures for harvesting crops.
 - 16.03 Determine kinds and types of storage facilities for crops.
 - 16.04 Grade, treat, pack, and/or store harvested crop.
 - 16.05 Interpret and analyze market information.
 - 16.06 Compare, select, and locate marketing channels and develop a marketing program.
 - 16.07 Measure moisture content of harvested crops.
 - 16.08 Plan harvest according to conditions and labor requirements.

- 16.09 Adjust harvesting equipment for specific crops.
 - 16.10 Harvest a crop using harvesting equipment.
 - 16.11 Protect stored crops from pests.
 - 16.12 Maintain harvest records.
- 17.0 APPLY PRINCIPLES OF AGRIBUSINESS FINANCE--The student will be able to:
- 17.01 Identify major sources of credit for agribusiness.
 - 17.02 Complete a business loan application.
 - 17.03 Explain the purposes and structures of contracts, leases, deeds, and insurance policies.
 - 17.04 Maintain and interpret agribusiness financial records including depreciation, inventory, and budgets (supervised agricultural experience - SAE - records).
- 18.0 PREPARE SOIL FOR PLANTING CROPS--The student will be able to:
- 18.01 Identify soil texture.
 - 18.02 Describe types of soil erosion.
 - 18.03 Adjust tillage equipment to field conditions.
 - 18.04 Till soil.
 - 18.05 Evaluate and perform vegetative and mechanical conservation practices.
- 19.0 SELECT SEED--The student will be able to:
- 19.01 Classify plants as annuals, biennials or perennials.
 - 19.02 Interpret and evaluate a seed tag.
 - 19.03 Evaluate and select seed and transplants.
 - 19.04 Identify the requirements for seed certification.
 - 19.05 Test seed for germination.
- 20.0 PLANT CROPS--The student will be able to:
- 20.01 Plant and grow a seedbed in a climate-controlled structure.
 - 20.02 Prepare seed pieces for planting (asexual propagation).
 - 20.03 Determine method for planting and select appropriate equipment.
 - 20.04 Prepare seed and plant crops.
 - 20.05 Grow and maintain seedlings.
- 21.0 IDENTIFY AND SELECT VARIETIES OF ROOTSTOCKS AND SCIONS FOR SELECTED SPECIALTY PLANTS--The student will be able to:
- 21.01 Identify specialty plant varieties by color, shape, texture and seeds.
 - 21.02 Identify rootstock varieties for selected specialty plants.
 - 21.03 Select rootstock varieties for selected specialty plants best suited for specific soil types, disease resistance and scion compatibility.
 - 21.04 Select scion varieties for selected specialty plants best suited for specific soil types, rootstock compatibility, disease resistance, insect resistance, cold resistance and for specific marketing purposes.

- 22.0 PROPAGATE SPECIALTY PLANTS--The student will be able to:
- 22.01 Select and cut certified budwood.
 - 22.02 Bud and wrap seedlings.
 - 22.03 Grow and maintain young budded nursery stock.
 - 22.04 Dig nursery stock for potting or prepare for bareroot shipment.
 - 22.05 Maintain nursery sanitation.
- 23.0 EXPLAIN THE MARKETING PROCESSES IN CROP PRODUCTION--The student will be able to:
- 23.01 Determine and explain market grade requirements for various crops.
 - 23.02 Determine how local market prices are set.
 - 23.03 Develop a marketing program for a specific harvested crop.
- 24.0 PRUNE AND HEDGE SPECIALTY PLANTS--The student will be able to:
- 24.01 Hand prune selected specialty plants.
 - 24.02 Prune nursery trees.
 - 24.03 Prune freeze damaged plants.
 - 24.04 Determine appropriate time and method for hedging and topping mature citrus trees or other selected specialty plants.
- 25.0 CONSTRUCT AND REPAIR FARM FACILITIES--The student will be able to:
- 25.01 Build and repair fences.
 - 25.02 Form and pour concrete.
 - 25.03 Square and build a simple farm building.
 - 25.04 Develop a bill of materials for a construction project.
- 26.0 MANAGE FARM RECORDS--The student will be able to:
- 26.01 Maintain farm financial records (expense, receipts, inventories, depreciation).
 - 26.02 Summarize farm financial records (determine gross income, net income, enterprise income).
 - 26.03 Distinguish between assets and liabilities.
 - 26.04 Maintain fertilization and pesticide application use records.
 - 26.05 Record cultural and production information.
 - 26.06 Determine cost and effectiveness of cultural and management practices.
 - 26.07 Make grove plats.
 - 26.08 Maintain labor and personnel records.
 - 26.09 Prepare an annual budget.
 - 26.10 Identify sources and kinds of farm insurance.
 - 26.11 Maintain equipment, machinery, and facilities inventory records.
 - 26.12 Determine credit needs, cash flow needs, and return on investments.
 - 26.13 Secure professional services and information.

- 26.14 Develop equitable rental and leasing agreements for land and equipment.
- 26.15 Prepare a justification using accepted forms for obtaining credit at a lending institution.

- 27.0 OBSERVE LAWS AND REGULATIONS REGARDING THE PLANT INDUSTRY--The student will be able to:
 - 27.01 Observe nursery site regulations.
 - 27.02 Know and observe quality control regulations.
 - 27.03 Be familiar with state and federal agencies regulating the plant industry (including citrus).
 - 27.04 Be familiar with laws regulating the movement of citrus trees, fruit, and other plant commodities.

- 28.0 ORGANIZE JOBS AND SUPERVISE WORKERS--The student will be able to:
 - 28.01 Demonstrate and instruct employees in their tasks.
 - 28.02 Enforce safety regulations.
 - 28.03 Prepare daily work plans.
 - 28.04 Evaluate performance of workers.
 - 28.05 Acquire equipment and materials.

- 29.0 DEMONSTRATE LEADERSHIP, EMPLOYABILITY, COMMUNICATION, AND HUMAN RELATIONS SKILLS--The student will be able to:
 - 29.01 Conduct group meetings using parliamentary procedure and public-speaking skills.
 - 29.02 Identify appropriate work and personal habits.
 - 29.03 Complete a job application.
 - 29.04 Conduct a job search
 - 29.05 Secure information about a job.
 - 29.06 Identify documents that may be required when applying for a job.
 - 29.07 Demonstrate competence in job interview techniques.
 - 29.08 Identify or demonstrate appropriate responses to criticism from employer, supervisor, or other persons.
 - 29.09 Demonstrate knowledge of how to make job changes appropriately.

Florida Department of Education
STUDENT PERFORMANCE STANDARDS

Course Number: 8106810
Course Title: Agriscience Foundations I
Course Credit: 1

COURSE DESCRIPTION:

This course was developed as a core and is designed to develop competencies in the areas of agricultural history; global importance of agriculture; career opportunities; applied scientific and technological concepts; ecosystems; agricultural safety; principles of integrated pest management; principles of plant and animal growth; economic principles; agricultural marketing; and human relations skills.

01.0 DESCRIBE THE SOCIOECONOMIC ROLE OF THE AGRICULTURAL INDUSTRY--The student will be able to:

- 01.01 Prepare a report on the history of the agricultural industry.
- 01.02 Discuss the impact of agricultural products and services on the local, state, national, and global economy.
- 01.03 Investigate career opportunities in the agricultural industry and identify educational experiences necessary to prepare for those careers.
- 01.04 Discuss the role of the agricultural industry in the interaction of population, food, energy, and the environment.

02.0 APPLY SCIENTIFIC AND TECHNOLOGICAL PRINCIPLES TO THE AGRICULTURAL INDUSTRY--The student will be able to:

- 02.01 Discuss the importance of scientific classification in agriculture.
- 02.02 Use the scientific method to solve problems in agriculture.
- 02.03 Explain the use of genetics in agriculture, including probability applications.
- 02.04 Analyze the impact of recent technology on the agricultural industry.
- 02.05 Identify and describe the components of an ecosystem both biotic and abiotic.
- 02.06 Construct and analyze a diagram of a biological food web and subsequent food chains.
- 02.07 Describe and diagram the water, carbon, nitrogen, oxygen, sulfur, and phosphorus cycles.
- 02.08 Evaluate soil profiles, land-capability classes, and soil conservation practices.
- 02.09 List the components of Florida's fresh water systems (lakes, ground water, aquifer, sink holes, rivers, and swamps) and explain the importance of managing these resources.
- 02.10 Explain the interaction of one natural resource with another.

- 02.11 Describe the causes and effects of air, water, and land pollution and identify ways to prevent pollution.
 - 02.12 Explain the flow of energy from the sun through agricultural systems.
 - 02.13 Describe the environmental requirements necessary for a productive natural or man-made aquaculture system.
 - 02.14 Apply principles of waste management to environmental problems common to agricultural systems.
 - 02.15 Understand the concept of best management practices (BMP) as applied to agriculture.
 - 02.16 Identify advances in biotechnology impacting agriculture such as transgenic crops and biological controls.
 - 02.17 Identify computer technology advances such as Geographic Information Systems (GIS) and Global Positioning Systems (GPS).
- 03.0 PRACTICE AGRICULTURAL SAFETY--The student will be able to:
- 03.01 List the most common causes of agricultural accidents.
 - 03.02 Discuss the importance of following proper safety precautions in the agricultural industry.
 - 03.03 Demonstrate safety procedures in the classroom, laboratory, and workplace.
 - 03.04 Describe symptoms of pesticide poisoning.
 - 03.05 Extract pertinent information from a pesticide label and Material Safety Data Sheet (MSDS).
 - 03.06 Select, mix, and apply a nonrestricted chemical, according to the label and according to Environmental Protection Agency (EPA), MSDS, and Worker Protection Standard regulations.
 - 03.07 Clean and store pesticide application equipment, safety clothing, and safety equipment.
 - 03.08 Identify the proper disposal of containers and residual pesticides.
 - 03.09 Discuss the proper procedures of basic first aid and cardiopulmonary resuscitation (CPR).
- 04.0 DEMONSTRATE THE USE OF TOOLS, EQUIPMENT AND INSTRUMENTS IN THE AGRICULTURAL INDUSTRY--The student will be able to:
- 04.01 Choose the proper tools, equipment, and instruments for a specific job.
 - 04.02 Describe the principles of selected mechanical applications (e.g. levers, pulleys, hydraulics, internal combustion).
 - 04.03 Calibrate spray equipment; solve time, distance, area, volume ratio, proportion, and percentage problems in agriscience.
 - 04.04 Demonstrate the ability to use an equipment manual.
 - 04.05 Demonstrate the use of selected tools, equipment, and instruments.
 - 04.06 Service, maintain, and store tools, equipment, instruments, and supplies.
- 05.0 DESCRIBE THE PRINCIPLES OF PEST MANAGEMENT --The student will be able to:
- 05.01 Identify types of pests and beneficials.

- 05.02 Identify and select an appropriate control for each type of pest and/or weed.
 - 05.03 Describe the principles and benefits of integrated pest management.
- 06.0 DESCRIBE THE PRINCIPLES OF PLANT AND/OR ANIMAL NUTRIENT GROWTH AND REPRODUCTION--The student will be able to:
- For plant:
- 06.01 Describe the structure functions of plant parts including roots, stems, leaves, and flowers.
 - 06.02 Describe the processes of plant growth including photosynthesis, respiration and nutrient uptake.
 - 06.03 Propagate plants through sexual and asexual means.
 - 06.04 Identify the nutrients required for plant growth and development and the role of each.
 - 06.05 Extract pertinent information from a fertilizer label.
- For animal:
- 06.07 Identify the nutrients required for animal growth and development and the role of each.
 - 06.08 Identify and describe the anatomical systems of animals and the functions of each including major components.
 - 06.09 Describe the process of animal reproduction.
- 07.0 APPLY BUSINESS SKILLS AND ECONOMIC PRINCIPLES TO THE AGRICULTURAL INDUSTRY--The student will be able to:
- 07.01 Explain the basic economic principles in the agricultural industry.
 - 07.02 Explain the importance and impacts of local, state, and federal regulations and required documentation affecting the agricultural industry.
 - 07.03 Describe the types of agribusiness by organizational structure (i.e. sole proprietorship, partnership, corporation, cooperatives).
 - 07.04 Select and use computer applications.
 - 07.05 Analyze and interpret agribusiness data.
 - 07.06 Keep and maintain supervised agricultural experience (SAE) records.
 - 07.07 Interpret legal descriptions of land.
- 08.0 EXPLAIN THE BASIC MARKETING PROCESSES IN THE AGRICULTURAL INDUSTRY--The student will be able to:
- 08.01 Describe key factors in marketing agricultural products.
 - 08.02 Select agricultural products according to grades and standards.
- 09.0 DEMONSTRATE HUMAN-RELATIONS, COMMUNICATIONS, AND LEADERSHIP SKILLS--The student will be able to:
- 09.01 Demonstrate acceptable work habits and attitudes.

- 09.02 Correctly follow oral and written directions and ask questions that clarify directions, as needed.
- 09.03 Communicate effectively in verbal, written, and nonverbal modes.
- 09.04 Recognize and demonstrate good listening skills.
- 09.05 Conduct small informal and formal group meetings.
- 09.06 Identify the opportunities for leadership development available through an appropriate student and/or professional organization.
- 09.07 Recognize and demonstrate communications skills in the workplace.
- 09.08 Demonstrate effective telephone skills.

Florida Department of Education
STUDENT PERFORMANCE STANDARDS

Course Number: 8106420
Course Title: Crop and Plant Technology 2
Course Credit: 1

COURSE DESCRIPTION:

This course is designed to develop competencies in the area of the crop and plant industry careers; plant growth; plant fertilization; safe use of pesticides; maintenance of tools and equipment; record keeping; and employability skills.

10.0 EXPLORE THE SCOPE OF THE CROP AND PLANT PRODUCTION INDUSTRY--The student will be able to:

- 10.01 Investigate career opportunities in the crop and plant production industry.
- 10.02 Describe training requirements for entry and advancement in crop and plant production careers.

11.0 COMPARE, SELECT, AND USE PLANT PRODUCTION SYSTEMS--The student will be able to:

- 11.01 Compare different plant production systems.
- 11.02 Propagate, transplant, and grow plants.
- 11.04 Select and prepare a site and/or seed bed for planting.
- 11.05 Identify methods of pruning plants to achieve desired growth and to maintain health.

12.0 FERTILIZE PLANTS AND CROPS--The student will be able to:

- 12.04 Interpret information on a fertilizer label.
- 12.05 Compare sources and forms of nutrients.
- 12.06 Determine methods of applying fertilizer materials.

15.0 OPERATE, MAINTAIN, AND SERVICE FACILITIES, TOOLS, AND EQUIPMENT--The student will be able to:

- 15.03 Use and maintain hand tools and power equipment (e.g., power saws, welders).
- 15.04 Maintain and service small gasoline engines.

17.0 APPLY PRINCIPLES OF AGRIBUSINESS FINANCE--The student will be able to:

- 17.04 Maintain and interpret agribusiness financial records including depreciation, inventory, and budgets (supervised agricultural experience - SAE - records).

29.0 DEMONSTRATE LEADERSHIP, EMPLOYABILITY, COMMUNICATION, AND HUMAN RELATIONS SKILLS--The student will be able to:

- 29.01 Conduct group meetings using parliamentary procedure and public-speaking skills.
- 29.02 Identify appropriate work and personal habits.

Florida Department of Education
STUDENT PERFORMANCE STANDARDS

Course Number: 8106430
Course Title: Crop and Plant Technology 3
Course Credit: 1

COURSE DESCRIPTION:

This course is designed to develop competencies in the areas of job and training requirements; professional organizations; crop identification; planting crops; fertilizer calculations and application; irrigation; pest control; harvesting, packing, and grading crops, safe equipment operation; finance; and employability skills.

10.0 EXPLORE THE SCOPE OF THE CROP AND PLANT PRODUCTION INDUSTRY--The student will be able to:

- 10.01 Investigate career opportunities in the crop and plant production industry.
- 10.02 Describe training requirements for entry and advancement in crop and plant production careers.
- 10.03 Identify professional organizations and trade journals in the crop and plant production industry.

11.0 COMPARE, SELECT, AND USE PLANT PRODUCTION SYSTEMS--The student will be able to:

- 11.03 Identify varieties of local commercial plants and field crops.
- 11.06 Calculate planting rate and spacing.
- 11.07 Operate and adjust planting equipment.

12.0 FERTILIZE PLANTS AND CROPS--The student will be able to:

- 12.01 Develop fertilization schedules and calculate fertilizer rates for plants; solve time, distance, area, and volume problems in agriscience.
- 12.02 Identify common nutrient-deficiency symptoms in plants.
- 12.03 Calibrate fertilization equipment and fertilize plants.

13.0 IRRIGATE PLANTS AND CROPS--The student will be able to:

- 13.01 Recognize soil and plant conditions indicating irrigation needs and develop an irrigation schedule.
- 13.02 Compare and select irrigation equipment and methods.
- 13.03 Install, operate, maintain, and repair irrigation equipment.

14.0 CONTROL PLANT PESTS--The student will be able to:

- 14.01 Identify common plant pests and their damages.
- 14.02 Describe life cycles of insects, pests, and diseases.

- 14.03 Identify the procedures and requirements for obtaining a restricted-use-pesticide operator's license.
- 14.04 Select, mix, and apply a nonrestricted chemical according to the label and local, state, federal, and EPA regulations.
- 15.0 OPERATE, MAINTAIN, AND SERVICE FACILITIES, TOOLS, AND EQUIPMENT--The student will be able to:
 - 15.01 Demonstrate basic facility maintenance, installation, or repair.
 - 15.02 Safely operate, maintain, service, and repair equipment.
- 16.0 DESCRIBE PROCEDURES FOR HARVESTING AND MARKETING PLANT MATERIALS--The student will be able to:
 - 16.01 Determine maturity, condition, and volume of crops to be harvested.
 - 16.02 Describe procedures for harvesting crops.
 - 16.03 Determine kinds and types of storage facilities for crops.
 - 16.04 Grade, treat, pack, and/or store harvested crop.
 - 16.05 Interpret and analyze market information.
 - 16.06 Compare, select, and locate marketing channels and develop a marketing program.
- 17.0 APPLY PRINCIPLES OF AGRIBUSINESS FINANCE--The student will be able to:
 - 17.01 Identify major sources of credit for agribusiness.
 - 17.02 Complete a business loan application.
 - 17.03 Explain the purposes and structures of contracts, leases, deeds, and insurance policies.
- 29.0 DEMONSTRATE LEADERSHIP, EMPLOYABILITY, COMMUNICATIONS, AND HUMAN-RELATIONS SKILLS--The student will be able to:
 - 29.03 Complete a job application.

Florida Department of Education
STUDENT PERFORMANCE STANDARDS

Course Number: 8106440
Course Title: Crop and Plant Technology 4
Course Credit: 1

COURSE DESCRIPTION:

This course is designed to develop competency in safety, fertilization, irrigation, soil preparation, seed selection, planting, farm records and problem solving.

12.0 FERTILIZE CROPS--The student will be able to:

- 12.07 Determine nutrient requirements for individual crops.
- 12.08 Collect soil and samples for analysis and interpret results.
- 12.09 Select appropriate additives for pH adjustment.

13.0 IRRIGATE CROPS--The student will be able to:

- 13.04 Determine irrigation requirements for a variety of crops.
- 13.05 Interpret water quality analysis reports.
- 13.06 List agencies responsible for surface ground water policies use rules and regulations.
- 13.07 Operate and maintain micro-irrigation systems.
- 13.08 Operate, adjust and maintain volume, gun and other portable irrigation equipment.
- 13.09 Maintain and repair permanent overhead irrigation systems.
- 13.10 Operate and service electric and engine driven pumps.
- 13.11 Keep irrigation records.

18.0 PREPARE SOIL FOR PLANTING CROPS--The student will be able to:

- 18.01 Identify soil texture.
- 18.02 Describe types of soil erosion.
- 18.03 Adjust tillage equipment to field conditions.
- 18.04 Till soil.
- 18.05 Evaluate and perform vegetative and mechanical conservation practices.

19.0 SELECT SEED--The student will be able to:

- 19.01 Classify plants and annuals, biennials or perennials.
- 19.02 Interpret and evaluate a seed tag.
- 19.03 Evaluate and select seed and transplants.
- 19.04 Identify the requirements for seed certification.
- 19.05 Test seed for germination.

20.0 PLANT CROPS--The student will be able to:

- 20.01 Plant and grow a seedbed in a climate-controlled structure.

- 20.02 Prepare seed pieces for planting (asexual propagation).
- 20.03 Determine method for planting and select appropriate equipment.
- 20.04 Prepare seeds and plant crops.

26.0 MANAGE FARM RECORDS--The student will be able to:

- 26.03 Distinguish between assets and liabilities.

Florida Department of Education
STUDENT PERFORMANCE STANDARDS

Course Number: 8106450
Course Title: Crop and Plant Technology 5
Course Credit: 1

COURSE DESCRIPTION:

This course is designed to develop competency in the area of pest management harvesting and handling plant materials, securing job information, managing farm records, and basic concepts of physics, chemistry and biology as they relate to crop production.

14.0 CONTROL WEEDS, INSECTS, DISEASES AND OTHER PATHOGENS OF CROP AND SPECIALTY PLANTS--The student will be able to:

- 14.05 Identify noxious weeds and vines of crops and specialty plants.
- 14.06 Identify insects, diseases and other pathogens of crop and specialty plants.
- 14.07 Demonstrate the safe use of pesticides, protective clothing and respiration equipment.
- 14.08 Safely dispose of pesticides applicators.
- 14.09 Clean and maintain pesticide applicators.
- 14.10 Observe and maintain grove and nursery sanitation practices.
- 14.11 Control weeds with cultivation equipment
- 14.12 Evaluate weed control practices for effectiveness.

16.0 DESCRIBE PROCEDURES FOR HARVESTING AND MARKETING PLANT MATERIALS--The student will be able to:

- 16.07 Measure moisture content of harvested crops.
- 16.08 Plan harvest according to conditions and labor requirements.
- 16.09 Adjust harvesting equipment for specific crops.
- 16.10 Harvest a crop using harvesting equipment.
- 16.11 Protect stored crops from pests.
- 16.12 Maintain harvest records.

21.0 IDENTIFY AND SELECT VARIETIES OF ROOTSTOCK AND SCIONS FOR SELECTED SPECIALTY PLANTS--The student will be able to:

- 21.01 Identify specialty plant varieties by color, shape texture and seeds.
- 21.02 Identify rootstock varieties for selected specialty plants.
- 21.03 Select rootstock varieties for selected specialty plants best suited for specific soil types, disease resistance and scion compatibility.
- 21.04 Select scion varieties for selected specialty plants best suited for specific soil types, rootstock compatibility, disease resistance, insect resistance, cold resistance and for specific marketing purposes.

- 22.0 PROPAGATE SPECIALTY PLANTS--The student will be able to:
- 22.01 Select and cut certified budwood.
 - 22.02 Bud and wrap seedlings.
 - 22.03 Grow and maintain young budded nursery stock.
 - 22.04 Dig nursery stock for potting or prepare for bareroot shipment.
 - 22.05 Maintain nursery sanitation.
- 23.0 EXPLAIN THE MARKETING PROCESS IN CROP PRODUCTION--The student will be able to:
- 23.01 Determine and explain market grade requirements for various crops.
 - 23.02 Determine how local market prices are set.
 - 23.03 Develop a marketing program for a specific harvested crop.
- 29.0 DEMONSTRATE LEADERSHIP, EMPLOYABILITY, COMMUNICATION, AND HUMAN RELATIONS SKILLS--The student will be able to:
- 29.05 Secure information about a job.

Florida Department of Education
STUDENT PERFORMANCE STANDARDS

Course Number: 8106460
Course Title: Crop and Plant Technology 6
Course Credit: 1

COURSE DESCRIPTION:

This course is designed to develop competency in the areas of tool and equipment operation and service, agribusiness finance, employability skills, management of farm records, organizing and supervising employees, the use of correct English in oral and written presentations and the construction and repair of farm facilities.

15.0 OPERATE, MAINTAIN, AND SERVICE FACILITIES, TOOLS, AND EQUIPMENT--The student will be able to:

- 15.01 Maintain equipment maintenance and service records.
- 15.02 Cut and weld with oxyacetylene and arc welding equipment.

24.0 PRUNE AND HEDGE SPECIALTY PLANTS--The student will be able to:

- 24.01 Hand prune selected specialty plants
- 24.02 Prune nursery trees.
- 24.03 Prune freeze damaged plants.
- 24.04 Determine appropriate time and method for hedging and topping mature citrus trees or other selected specialty plants.

25.0 CONSTRUCT AND REPAIR FARM FACILITIES--The student will be able to:

- 25.01 Build and repair fences.
- 25.02 Form and pour concrete.
- 25.03 Square and build a simple farm building.
- 25.04 Develop a bill of materials for a construction project.

26.0 MANAGE FARM RECORDS--The student will be able to:

- 26.01 Maintain farm financial records (expense, receipts, inventories, depreciation).
- 26.02 Summarize farm financial records (determine gross income, net income, enterprise income).
- 26.04 Maintain fertilization and pesticide application use records.
- 26.05 Record cultural and production information.
- 26.06 Determine cost and effectiveness of cultural and management practices.
- 26.07 Make grove plats.
- 26.08 Maintain labor and personnel records.
- 26.09 Prepare an annual budget.
- 26.10 Identify sources and kinds of farm insurance.

- 26.11 Maintain equipment, machinery, and facilities inventory records.
 - 26.12 Determine credit needs, cash flow needs, and return on investments.
 - 26.13 Secure professional services and information.
 - 26.14 Develop equitable rental and leasing agreements for land and equipment.
 - 26.15 Prepare a case using accepted forms for obtaining credit at a lending institution.
- 27.0 OBSERVE LAWS AND REGULATIONS REGARDING THE PLANT INDUSTRY--The student will be able to:
- 27.01 Observe nursery site regulations.
 - 27.02 Know and observe quality control regulations.
 - 27.03 Be familiar with state and federal agencies regulation the plant industry(including citrus).
 - 27.04 Be familiar with laws regulating the movement of citrus trees, fruit, and other plant commodities.
- 28.0 ORGANIZE JOBS AND SUPERVISE WORKERS--The student will be able to:
- 28.01 Demonstrate and instruct employees in their tasks.
 - 28.02 Enforce safety regulations.
 - 28.03 Prepare daily work plans.
 - 28.04 Evaluate performance of workers.
 - 28.05 Acquire equipment and materials.
- 29.0 DEMONSTRATE LEADERSHIP, EMPLOYABILITY, COMMUNICATION, AND HUMAN RELATIONS SKILLS--The student will be able to:
- 29.01 Conduct a job search.
 - 29.02 Identify documents that may be required when applying for a job.
 - 29.03 Demonstrate competence in job interview techniques.
 - 29.04 Identify or demonstrate appropriate responses to criticism from employer, supervisor, or other persons.
 - 29.05 Demonstrate knowledge of how to make job changes appropriately.