

**Florida Department of Education
CLUSTER CURRICULUM FRAMEWORK**

Cluster Title: Environmental Horticulture Science and Services
Postsecondary
Cluster Type: Job Preparatory
Occupational Area: Agriscience and Natural Resources
Components: Core, Three Programs, Six Completion Points

PSAV

Grade Level 30, 31
Facility Code 203
CTSO PAS
Coop Method Yes
Apprenticeship Yes

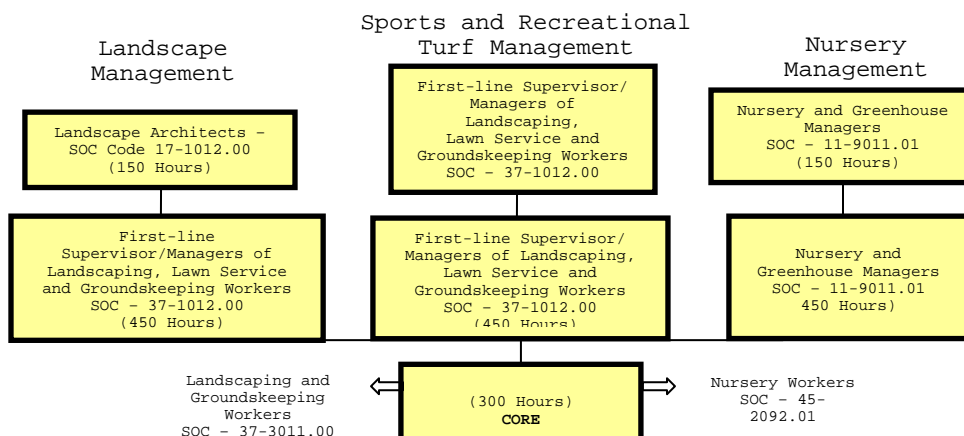
- I. **PURPOSE:** The Environmental Horticulture Science and Services cluster is designed to prepare students for employment or advanced training in the horticulture and landscape industries. This cluster focuses on broad, transferable skills and stresses understanding and demonstration of the following elements of the horticulture industry; planning, management, finance, technical and production skills, underlying principles of technology, labor issues, community issues, and health, safety and environmental issues.
- II. **CLUSTER STRUCTURE:** This cluster is a planned sequence of instruction consisting of a core, three programs and six completion points. When the recommended sequence is followed, the structure will allow students to complete at specified points for employment or remain for advanced training. A student who completes the applicable competencies at any occupational completion point may either continue with the training program or exit as an occupational completer.

The core of this program includes the competencies of the Certified Horticultural Professional examination. Students completing the core should be prepared to sit for the certification exam.

Students must complete the core, or demonstrate mastery of skill standards contained in the core, before advancing in either of the programs.

The following diagram illustrates the **CLUSTER STRUCTURE:**

Environmental Horticulture Science and Services Cluster - Postsecondary



III. **SPECIAL NOTE:** The National Postsecondary Agricultural Student Organization (for postsecondary) is the appropriate Career Student Organization for providing leadership training and for reinforcing specific vocational skills. Career 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(8), FAC. Florida Nursery, Growers and Landscape Association is the appropriate industry related organization and participation should be encouraged.

Classroom, shop, and plant nursery/land laboratory activities are an integral part of this cluster including the general maintenance and safe use of all instructional resources.

The programs in this cluster may be offered in PSAV courses. Vocational credit shall be awarded to the student on a transcript in accordance with Section 1001.44, F.S.

Planned and supervised instructional 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.

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 levels required for postsecondary adult vocational students to exit the programs in this cluster are listed at the program level or at the occupational completion points within the program. These grade level numbers correspond to a grade equivalent score obtained on one of the state designated basic skills examinations. If a student does not meet the basic skills level required for completion from the program, remediation should be provided concurrently in Vocational Instructional Preparation (VIP). Please reference the Rule for exemptions.

Federal and state legislation requires the provision of accommodations for students with disabilities to meet individual needs and ensure equal access. Adult students with disabilities must self-identify and request such services. Students with disabilities may need accommodations in such areas as instructional methods and materials, assignments and assessments, time demands and schedules, learning environment, assistive technology and special communication systems. Documentation of the accommodations requested and provided should be maintained in a confidential file.

SCANS Competencies: Instructional strategies for this program must include methods that require students to identify, organize, and use resources appropriately; to work with each other cooperatively and productively; to acquire and use information; to understand social, organizational, and technological systems; and to work with a variety of tools and equipment. Instructional strategies must also incorporate the

methods to improve students' personal qualities and high-order thinking skills.

Equipment List: A generic equipment list is available for this program and is printed in a supplement to this document.

Florida Department of Education
INTENDED OUTCOMES

Program Title: Landscape Management

PSAV

Program Number **A010615**
CIP Number 0101060502
Grade Level 30, 31
Standard Length 900 hours
Certification VOC AGRI @4
 AGRICULTUR 1 @2
 AGRI @2 @4
 HORTICULT @7 G

Program SOC Code 17-1012.00 - Landscape Architects

Basic Skills
 Math 9
 Language 9
 Reading 9

INTENDED OUTCOMES: After successfully completing appropriate outcomes for each occupational completion point of this program, the student will be able to perform the following:

OCCUPATIONAL COMPLETION POINT - DATA CODE A

Landscaping and Groundskeeping Workers - SOC Code 37-3011.00

- 01.0 Describe the horticulture industry.
- 02.0 Identify and classify plants.
- 03.0 Propagate plants.
- 04.0 Identify growing media and apply fertilizers.
- 05.0 Irrigate plants and turf.
- 06.0 Describe pest control approaches.
- 07.0 Control plant growth.
- 08.0 Harvest, transport, and install plant materials.
- 09.0 Operate, repair, and maintain tools and equipment.
- 10.0 Demonstrate leadership, employability, communications, and human relations skills.

OCCUPATIONAL COMPLETION POINT - DATA CODE B

First-line Supervisor/Managers of Landscaping, Lawn Service and Groundskeeping Workers - SOC Code 37-1012.00

- 11.0 Maintain tools and equipment.
- 12.0 Apply chemical and calibrate spray equipment.
- 13.0 Classify plants and turfgrass.
- 14.0 Demonstrate fertilization skills.
- 15.0 Irrigate plants and turf.
- 16.0 Layout and/or install landscape and interiorscape.
- 17.0 Maintain landscape.
- 18.0 Maintain customer relations and observe follow-up procedures.

OCCUPATIONAL COMPLETION POINT - DATA CODE C

Landscape Architects - SOC Code 17-1012.00

- 19.0 Analyze and design landscape and turf.
- 20.0 Prepare estimates, contracts, and presentation.
- 21.0 Lay out and install landscape and turf.
- 22.0 Conduct final walk-through of landscape project.

Florida Department of Education
STUDENT PERFORMANCE STANDARDS

Program Title: Landscape Management
Secondary Number:
Postsecondary Number: A010615

OCCUPATIONAL COMPLETION POINT - DATA CODE A

Landscaping and Groundskeeping Workers - SOC Code 37-3011.00

- 01.0 DESCRIBE THE HORTICULTURE INDUSTRY--The student will be able to:
- 01.01 Describe the importance of horticulture to the American and global economies.
 - 01.02 Identify career opportunities in horticulture and educational requirements and continuing education opportunities for horticulture careers.
 - 01.03 Describe the importance of horticulture to the environment.
 - 01.04 Identify professional organizations and certifications for the horticultural industry.
- 02.0 IDENTIFY AND CLASSIFY PLANTS--The student will be able to:
- 02.01 Identify plants by scientific and common names.
 - 02.02 Classify plants botanically.
 - 02.03 Describe principles of plant biology and growth.
 - 02.04 Explain the functional use of plants.
- 03.0 PROPAGATE PLANTS--The student will be able to:
- 03.01 Identify propagating and growing facilities and structures.
 - 03.02 Prepare propagation media.
 - 03.03 Select and collect propagation materials.
 - 03.04 Demonstrate propagation by sexual and asexual methods.
 - 03.05 Demonstrate environmental controls for propagation materials.
- 04.0 IDENTIFY GROWING MEDIA AND APPLY FERTILIZERS--The student will be able to:
- 04.01 Identify soil and media materials.
 - 04.02 Identify nutritional needs of plants.
 - 04.03 Identify symptoms of nutritional deficiencies and toxicities of plants.
 - 04.04 Identify types and kinds of fertilizers.
 - 04.05 Identify methods of distributing fertilizers.
 - 04.06 Interpret information on fertilizer label.
 - 04.07 Apply fertilizer and soil amendments.
- 05.0 IRRIGATE PLANTS AND TURF--The student will be able to:
- 05.01 Identify water needs of plants.
 - 05.02 Irrigate plants at recommended rates.
- 06.0 DESCRIBE PEST CONTROL APPROACHES--The student will be able to:
- 06.01 Identify common pests of plants.
 - 06.02 Describe life cycles of common pests of plants.
 - 06.03 Classify insects according to feeding habits.

- 06.04 Describe biological, chemical, and cultural methods of controlling plant pests.
- 07.0 CONTROL PLANT GROWTH--The student will be able to:
 - 07.01 Identify methods of pruning plants.
 - 07.02 Identify appropriate time to prune plants.
 - 07.03 Identify and select pruning tools.
- 08.0 HARVEST, TRANSPORT, AND INSTALL PLANT MATERIALS--The student will be able to:
 - 08.01 Determine requirements for preserving plant viability.
 - 08.02 Install containerized plant materials.
 - 08.03 Select and prepare plants for transporting and transplanting.
- 09.0 OPERATE, REPAIR, AND MAINTAIN TOOLS AND EQUIPMENT--The student will be able to:
 - 09.01 Perform equipment pre-operational check.
 - 09.02 Identify, maintain, and operate hand tools and power tools.
- 10.0 DEMONSTRATE LEADERSHIP, EMPLOYABILITY, COMMUNICATIONS AND HUMAN RELATIONS SKILLS--The student will be able to:
 - 10.01 Conduct group meetings using parliamentary procedure and public speaking skills.
 - 10.02 Identify acceptable work habits and personal characteristics.
 - 10.03 Identify acceptable employee hygiene habits.
 - 10.04 Identify or demonstrate appropriate responses to criticism from employer, supervisor, or other persons.
 - 10.05 Describe the importance of industry certifications.

OCCUPATIONAL COMPLETION POINT - DATA CODE B

First-line Supervisor/Managers of Landscaping, Lawn Service and Groundskeeping Workers - SOC Code 37-1012.00

- 11.0 MAINTAIN TOOLS AND EQUIPMENT--The student will be able to:
 - 11.01 Maintain oil level in engines of power equipment.
 - 11.02 Check and maintain tire air pressure on equipment.
 - 11.03 Maintain fuel levels using proper fuel or fuel mixtures.
 - 11.04 Operate manual transmissions.
 - 11.05 Identify, operate, and maintain tractor and power equipment.
 - 11.06 Service and maintain battery and electrical systems.
 - 11.07 Perform minor tune-up on engines.
 - 11.08 Load, secure, and transport equipment.
 - 11.09 Demonstrate safety precautions while working with tools and equipment.
- 12.0 APPLY CHEMICAL AND CALIBRATE SPRAY EQUIPMENT--The student will be able to:
 - 12.01 Select, mix, and apply a nonrestricted chemical according to the label and local, state, federal, and EPA regulations.
 - 12.02 Calibrate spray and spread equipment.
 - 12.03 Identify and report insect and disease damage.
 - 12.04 Determine chemical compatibility.
 - 12.05 Determine appropriate time frequency and method of chemical application.

- 13.0 CLASSIFY PLANTS AND TURFGRASS--The student will be able to:
- 13.01 Classify plants as monocots or dicots.
 - 13.02 Classify plants and turfgrass as annuals, biennials, and perennials.
 - 13.03 Identify plants and turfgrass that are specific to a region.
 - 13.04 Classify plants and turfgrass according to growth habit.
 - 13.05 Identify poisonous plants.
- 14.0 DEMONSTRATE FERTILIZATION SKILLS--The students will be able to:
- 14.01 Develop a fertilization schedule.
 - 14.02 Determine rate of fertilizer application and calibration equipment.
 - 14.03 Calibrate fertilizer equipment.
- 15.0 IRRIGATE PLANTS AND TURF--The student will be able to:
- 15.01 Identify various types of irrigation systems.
 - 15.02 Install and maintain piping and water distribution components.
 - 15.03 Install valves, timers, rain shut-offs, moisture sensors, and back flow prevention devices.
 - 15.04 Check and evaluate irrigation system performance.
 - 15.05 Maintain irrigation system.
- 16.0 LAYOUT AND INSTALL LANDSCAPE AND/OR INTERIORSCAPE--The student will be able to:
- 16.01 Prepare final grade.
 - 16.02 Layout plants based on a landscape plan.
 - 16.03 Plant site using sound cultural practices.
 - 16.04 Install mulch and perform final cleanup.
- 17.0 MAINTAIN LANDSCAPE--The student will be able to:
- 17.01 Perform maintenance inspection of the project.
 - 17.02 Determine water requirements and apply at proper rates.
 - 17.03 Identify weeds and apply herbicides safely.
 - 17.04 Determine fertilization requirements and apply at proper rates.
 - 17.05 Identify plant pest and disease problems and apply corrective measures.
 - 17.06 Trim and prune landscape plants.
 - 17.07 Maintain turf viability; mow at proper height and frequency, blade edge, line trim, and remove trash.
 - 17.08 Explain cause and effect of soil compaction and thatch buildups, and determine appropriate methods of correction.
 - 17.09 Cultivate and mulch plants.
 - 17.10 Prune trees based on ANSI (American National Standard Institute) standards.
 - 17.11 Provide protection for plants from adverse weather conditions.
 - 17.12 Comply with local, state, and federal regulations regarding landscape maintenance and pesticide applications.
 - 17.13 Demonstrate sanitation and safety practices when maintaining landscape.
- 19.0 MAINTAIN CUSTOMER RELATIONS AND OBSERVE FOLLOW-UP PROCEDURES--The student will be able to:

- 19.01 Conduct walk-through of project with client to assure satisfaction.
- 19.02 Identify current and future maintenance requirements.
- 19.03 Analyze project records for profitability and employee performance.

OCCUPATIONAL COMPLETION POINT - DATA CODE C

Landscape Architects - SOC Code 17-1012.00

20.0 ANALYZE AND DESIGN LANDSCAPE--The student will be able to:

- 20.01 Analyze and interpret plans, specifications, and environmental conditions of the project.
- 20.02 Design the project.
- 20.03 Identify and locate project materials.
- 20.04 Determine personnel and equipment needs and safety requirements for the project.
- 20.05 Establish project schedule.

21.0 PREPARE ESTIMATES, CONTRACTS, AND PRESENTATION--The student will be able to:

- 21.01 Determine costs of materials, equipment, and labor.
- 21.02 Prepare a price for the project and terms of contract.
- 21.03 Prepare written contract, using standard rules of English, including punctuation, spelling, sentence structure and references.
- 21.04 Prepare and give oral presentation of the project design using standard rules of English, including punctuation and sentence structure.
- 21.05 Maintain job records, daily log sheets, and inventory.

22.0 LAY OUT AND INSTALL LANDSCAPE AND/OR INTERIORSCAPE--The student will be able to:

- 22.01 Locate existing utilities and secure a permit.
- 22.02 Prepare and rough grade the site.
- 22.03 Determine procedures for installation of large materials.
- 22.04 Install and test irrigation system.
- 22.05 Describe procedures for constructing hardscape (walls, walks, patios, drives, etc.).

22.0 CONDUCT FINAL WALK-THROUGH OF LANDSCAPE INSTALLATION--The student will be able to:

- 22.01 Conduct walk-through of installation project with client to assure customer satisfaction.
- 22.02 Analyze project records for profitability and employee performance.

Florida Department of Education
INTENDED OUTCOMES

Program Title: Nursery Management

PSAV

Program Number **A010616**
 CIP Number 0101060602
 Grade Level 30, 31
 Standard Length 900 hours
 Certification VOC AGRI @4
 AGRICULTUR 1 @2
 AGRI @2 @4
 HORTICULT @7 G

Program SOC Code 11-9011.01 - Nursery and Greenhouse Managers

Basic Skills
 Math 9
 Language 9
 Reading 9

INTENDED OUTCOMES: After successfully completing appropriate outcomes for each occupational completion point of this program, the student will be able to perform the following:

OCCUPATIONAL COMPLETION POINT - DATA CODE A

Nursery Workers - SOC - 45-2092.01

- 01.0 Describe the horticulture industry.
- 02.0 Identify and classify plants.
- 03.0 Propagate plants.
- 04.0 Identify growing media and apply fertilizers.
- 05.0 Irrigate plants and turf.
- 06.0 Describe pest control approaches.
- 07.0 Control plant growth.
- 08.0 Harvest, transport, and install plant materials.
- 09.0 Operate, repair, and maintain tools and equipment.
- 10.0 Demonstrate leadership, employability, communications, and human relations skills.

OCCUPATIONAL COMPLETION POINT - DATA CODE B

Nursery and Greenhouse Managers - SOC - 11-9011.01

- 11.0 Identify and classify plants.
- 12.0 Control pests.
- 13.0 Operate, repair, and maintain tools and equipment.
- 14.0 Prepare growing media.
- 15.0 Irrigate plants.
- 16.0 Fertilize plant materials.
- 17.0 Maintain and analyze records.

OCCUPATIONAL COMPLETION POINT - DATA CODE C

Nursery and Greenhouse Managers - SOC - 11-9011.01

- 18.0 Develop irrigation and drainage plan.
- 19.0 Raise crop too point of sale.

- 20.0 Prune and shape nursery stock.
- 21.0 Harvest, process, and ship nursery stock.
- 22.0 Market nursery stock.
- 23.0 Operate, repair, and maintain nursery equipment and facilities.
- 24.0 Identify business principles.

Florida Department of Education
STUDENT PERFORMANCE STANDARDS

Program Title: Nursery Management
Secondary Number:
Postsecondary Number: A010616

OCCUPATIONAL COMPLETION POINT - DATA CODE A

Nursery Workers - SOC - 45-2092.01

- 01.0 DESCRIBE THE HORTICULTURE INDUSTRY--The student will be able to:
 - 01.01 Describe the importance of horticulture to the American and global economies.
 - 01.02 Identify career opportunities in horticulture and educational requirements and continuing education opportunities for horticulture careers.
 - 01.03 Describe the importance of horticulture to the environment.
 - 01.04 Identify professional organizations and certifications for the horticultural industry.

- 02.0 IDENTIFY AND CLASSIFY PLANTS--The student will be able to:
 - 02.01 Identify plants by scientific and common names.
 - 02.02 Classify plants botanically.
 - 02.03 Describe principles of plant biology and growth.
 - 02.04 Explain the functional use of plants.

- 03.0 PROPAGATE PLANTS--The student will be able to:
 - 03.01 Identify propagating and growing facilities and structures.
 - 03.02 Prepare propagation media.
 - 03.03 Select and collect propagation materials.
 - 03.04 Demonstrate propagation by sexual and asexual methods.
 - 03.05 Demonstrate environmental controls for propagation materials.

- 04.0 IDENTIFY GROWING MEDIA AND APPLY FERTILIZERS--The student will be able to:
 - 04.01 Identify soil and media materials.
 - 04.02 Identify nutritional needs of plants.
 - 04.03 Identify symptoms of nutritional deficiencies and toxicities of plants.
 - 04.04 Identify types and kinds of fertilizers.
 - 04.05 Identify methods of distributing fertilizers.
 - 04.06 Interpret information on fertilizer label.
 - 04.07 Apply fertilizer and soil amendments.

- 05.0 IRRIGATE PLANTS AND TURF--The student will be able to:
 - 05.01 Identify water needs of plants.
 - 05.02 Irrigate plants at recommended rates.

- 06.0 DESCRIBE PEST CONTROL APPROACHES--The student will be able to:
 - 06.01 Identify common pests of plants.
 - 06.02 Describe life cycles of common pests of plants.
 - 06.03 Classify insects according to feeding habits.

- 06.04 Describe biological, chemical, and cultural methods of controlling plant pests.
- 07.0 CONTROL PLANT GROWTH--The student will be able to:
 - 07.01 Identify methods of pruning plants.
 - 07.02 Identify appropriate time to prune plants.
 - 07.03 Identify and select pruning tools.
- 08.0 HARVEST, TRANSPORT, AND INSTALL PLANT MATERIALS--The student will be able to:
 - 08.01 Determine requirements for preserving plant viability.
 - 08.02 Install containerized plant materials.
 - 08.03 Select and prepare plants for transporting and transplanting.
- 09.0 OPERATE, REPAIR, AND MAINTAIN TOOLS AND EQUIPMENT--The student will be able to:
 - 09.01 Perform equipment pre-operational check.
 - 09.02 Identify, maintain, and operate hand tools and power tools.
- 10.0 DEMONSTRATE LEADERSHIP, EMPLOYABILITY, COMMUNICATIONS AND HUMAN RELATIONS SKILLS--The student will be able to:
 - 10.01 Conduct group meetings using parliamentary procedure and public speaking skills.
 - 10.02 Identify acceptable work habits and personal characteristics.
 - 10.03 Identify acceptable employee hygiene habits.
 - 10.04 Identify or demonstrate appropriate responses to criticism from employer, supervisor, or other persons.
 - 10.05 Describe the importance of industry certifications.

OCCUPATIONAL COMPLETION POINT - DATA CODE B

Nursery and Greenhouse Managers - SOC - 11-9011.01

- 11.0 IDENTIFY AND CLASSIFY PLANTS--The student will be able to:
 - 11.01 Classify plants as monocots or dicots.
 - 11.02 Classify plants as annuals, biennials, and perennials.
 - 11.03 Identify plants appropriate to a region.
 - 11.04 Classify plants according to growth habit.
 - 11.05 Prepare propagation materials (seeds, cuttings, etc.) for planting.
 - 11.06 Apply growth stimulants to propagation materials.
 - 11.07 Demonstrate sanitation and safety practices when propagating.
 - 11.08 Prepare flats and seedbeds and plant seeds.
- 12.0 CONTROL PESTS--The student will be able to:
 - 12.01 Report insect and disease damage.
 - 12.02 Identify chemical spray damage.
 - 12.03 Select proper IPM practices (biological, chemical and physical) for control of insects, diseases, vertebrates and weeds.
 - 12.04 Evaluate the efficacy and phytotoxicity of a chemical prior to inclusion in a growing program.
- 13.0 OPERATE, REPAIR, AND MAINTAIN TOOLS AND EQUIPMENT--The student will be able to:

- 13.01 Identify, operate, and maintain tractor and power equipment.
- 13.02 Load, secure, and transport equipment.
- 14.0 PREPARE GROWING MEDIA--The student will be able to:
 - 14.01 Sterilize rooting, potting, and growing media.
 - 14.02 Adjust pH and nutritional levels of media.
 - 14.03 Fill and level benches and pots with media.
 - 14.04 Demonstrate sanitation practices when handling and storing plant media materials.
- 15.0 IRRIGATE PLANTS--The student will be able to:
 - 15.01 Set up an irrigation system for a propagation area.
 - 15.02 Set up an irrigation system for a growing structure.
 - 15.03 Set up an irrigation system for a retail display.
 - 15.04 Maintain and repair an irrigation system.
 - 15.05 Identify and use various types of irrigation systems (low volume, ebb and flow, drip, mat, recirculating, etc.).
- 16.0 FERTILIZE PLANT MATERIALS--The student will be able to:
 - 16.01 Collect soil and leaf tissue samples for analysis.
 - 16.02 Interpret and evaluate the results of soil and leaf tissue analysis and determine corrective actions.
 - 16.03 Demonstrate proper handling and storage of fertilizers, observing safety precautions.
 - 16.04 Evaluate, operate, and maintain fertilizer distribution equipment.
 - 16.05 Develop a fertilization schedule for various plant species.
 - 16.06 Determine rate of fertilizer application.
- 17.0 MAINTAIN AND ANALYZE RECORDS--The student will be able to:
 - 17.01 Analyze and maintain production and sales records.
 - 17.02 Determine plant production costs.
 - 17.03 Prepare a budget.
 - 17.04 Prepare and maintain financial records using computer software.
 - 17.05 Maintain current plant inventory.
 - 17.06 Maintain job records, daily log sheets, and inventory.

OCCUPATIONAL COMPLETION POINT - DATA CODE C

Nursery and Greenhouse Managers - SOC - 11-9011.01

- 18.0 DEVELOP IRRIGATION AND DRAINAGE PLAN--The student will be able to:
 - 18.01 Identify drainage components for different types of drainage systems.
 - 18.02 Install irrigation systems with control valves and clocks.
 - 18.03 Set up an irrigation system for a growing area.
 - 18.04 Comply with local, state and federal conservation guidelines.
- 19.0 RAISE CROP TO POINT OF SALE--The student will be able to:
 - 19.01 Choose plant, container, media, and growing structure.
 - 19.02 Apply sound cultural practices.
 - 19.03 Use chemicals to raise crop (i.e. fertilizer, growth retardants, pesticides).
 - 19.04 Schedule crop for sale.
 - 19.05 Maintain production records

- 20.0 PRUNE AND SHAPE NURSERY STOCK--The student will be able to:
- 20.01 Prune plants to achieve desired growth and shape.
 - 20.02 Select and use chemical growth regulators.
 - 20.03 Identify techniques for pruning specialty items (topiary, bonsai).
 - 20.04 Set up an irrigation system for a growing area.
- 21.0 HARVEST, PROCESS, AND SHIP NURSERY STOCK--The student will be able to:
- 21.01 Determine customer needs per landscape plan.
 - 21.02 Grade and harvest field-grown plants (ball, burlap, bare-root, "grow bags").
 - 21.03 Identify mechanical techniques for harvesting field-grown plants (tree spade and mechanical digger).
 - 21.04 Select and assemble container-grown plants using industry-accepted grades and standards.
 - 21.05 Prepare for shipment, loading, and transporting harvested plant materials.
 - 21.06 Comply with regulations regarding the inspection and movement of plant materials.
 - 21.07 Demonstrate safety practices when harvesting, processing, and shipping nursery stock.
 - 21.08 Determine proper shipping environment.
- 22.0 MARKET NURSERY STOCK--The student will be able to:
- 22.01 Label and merchandise plants including plant care tags, bar codes, and shipping instructions.
 - 22.02 Maintain clean and attractive merchandising and display areas safely.
 - 22.03 Use various advertising methods to promote sales.
 - 22.04 Take telephone orders.
 - 22.05 Use sales catalog.
 - 22.06 Greet customers and close sales.
 - 22.07 Describe care and use of plants and related products to customers.
 - 22.08 Handle customer complaints and problems.
- 23.0 OPERATE, REPAIR, AND MAINTAIN NURSERY EQUIPMENT AND FACILITIES--The student will be able to:
- 23.01 Determine equipment needs for the job.
 - 23.02 Order parts and supplies.
 - 23.03 Perform simple electrical repairs.
 - 23.04 Build or repair frames, benches, and other greenhouse or nursery facilities.
 - 23.05 Demonstrate safety practices when working with equipment and facilities.
- 24.0 IDENTIFY BUSINESS PRINCIPLES--The student will be able to:
- 24.01 Describe principles of business management.
 - 24.02 Describe business organizational structures.
 - 24.03 Cite financial management methods.
 - 24.04 Interpret laws, regulations, and codes pertinent to the nursery industry.

Florida Department of Education
INTENDED OUTCOMES

Program Title: Sports and Recreational Turf Management

PSAV

Program Number **A020607**
 CIP Number 0101060702
 Grade Level 30, 31
 Standard Length 900 hours
 Certification VOC AGRI @4
 AGRICULTUR 1 @2
 AGRI @2 @4
 HORTICULT @7 G

Program SOC Code - 37-1012.00 - First-Line Supervisors/Managers of
 Landscaping, Lawn Service, and Groundskeeping
 Workers

Basic Skills
 Math 9
 Language 9
 Reading 9

INTENDED OUTCOMES: After successfully completing appropriate outcomes for each occupational completion point of this program, the student will be able to perform the following:

OCCUPATIONAL COMPLETION POINT - DATA CODE A

Landscaping and Groundskeeping Workers - SOC - 37-3011.00

- 01.0 Describe the horticulture industry.
- 02.0 Identify and classify plants.
- 03.0 Propagate plants.
- 04.0 Identify growing media and apply fertilizers.
- 05.0 Irrigate plants and turf.
- 06.0 Describe pest control approaches.
- 07.0 Control plant growth.
- 08.0 Harvest, transport, and install plant materials.
- 09.0 Operate, repair, and maintain tools and equipment.
- 10.0 Demonstrate leadership, employability, communications, and human relations skills.

OCCUPATIONAL COMPLETION POINT - DATA CODE B

First-line Supervisor/Managers of Landscaping, lawn Service and
 Groundskeeping Workers - SOC - 37-1012.00

- 11.0 Maintain tools and equipment.
- 12.0 Maintain greens and tees.
- 13.0 Maintain fairways, roughs, and traps.
- 14.0 Fertilize turf.
- 15.0 Establish turfgrass.

OCCUPATIONAL COMPLETION POINT - DATA CODE C

First-line Supervisor/Managers of Landscaping, lawn Service and
 Groundskeeping Workers - SOC - 37-1012.00

- 16.0 Apply chemical and calibrate spray equipment.
- 17.0 Develop recreational areas.
- 17.0 Demonstrate fertilization skills.
- 18.0 Irrigate plants and turf.

Florida Department of Education
STUDENT PERFORMANCE STANDARDS

Program Title: Sports and Recreational Turf Management
Secondary Number:
Postsecondary Number: A020607

OCCUPATIONAL COMPLETION POINT - DATA CODE A

Landscaping and Groundskeeping Workers - SOC - 37-3011.00

- 01.0 DESCRIBE THE HORTICULTURE INDUSTRY--The student will be able to:
- 01.01 Describe the importance of horticulture to the American and global economies.
 - 01.02 Identify career opportunities in horticulture and educational requirements and continuing education opportunities for horticulture careers.
 - 01.03 Describe the importance of horticulture to the environment.
 - 01.04 Identify professional organizations and certifications for the horticultural industry.
- 02.0 IDENTIFY AND CLASSIFY PLANTS--The student will be able to:
- 02.01 Identify plants by scientific and common names.
 - 02.02 Classify plants botanically.
 - 02.03 Describe principles of plant biology and growth.
 - 02.04 Explain the functional use of plants.
- 03.0 PROPAGATE PLANTS--The student will be able to:
- 03.01 Identify propagating and growing facilities and structures.
 - 03.02 Prepare propagation media.
 - 03.03 Select and collect propagation materials.
 - 03.04 Demonstrate propagation by sexual and asexual methods.
 - 03.05 Demonstrate environmental controls for propagation materials.
- 04.0 IDENTIFY GROWING MEDIA AND APPLY FERTILIZERS--The student will be able to:
- 04.01 Identify soil and media materials.
 - 04.02 Identify nutritional needs of plants.
 - 04.03 Identify symptoms of nutritional deficiencies and toxicities of plants.
 - 04.04 Identify types and kinds of fertilizers.
 - 04.05 Identify methods of distributing fertilizers.
 - 04.06 Interpret information on fertilizer label.
 - 04.07 Apply fertilizer and soil amendments.
- 05.0 IRRIGATE PLANTS AND TURF--The student will be able to:
- 05.01 Identify water needs of plants.
 - 05.02 Irrigate plants at recommended rates.
- 06.0 DESCRIBE PEST CONTROL APPROACHES--The student will be able to:
- 06.01 Identify common pests of plants.
 - 06.02 Describe life cycles of common pests of plants.

- 06.03 Classify insects according to feeding habits.
- 06.04 Describe biological, chemical, and cultural methods of controlling plant pests.
- 07.0 CONTROL PLANT GROWTH--The student will be able to:
 - 07.01 Identify methods of pruning plants.
 - 07.02 Identify appropriate time to prune plants.
 - 07.03 Identify and select pruning tools.
- 08.0 HARVEST, TRANSPORT, AND INSTALL PLANT MATERIALS--The student will be able to:
 - 08.01 Determine requirements for preserving plant viability.
 - 08.02 Install containerized plant materials.
 - 08.03 Select and prepare plants for transporting and transplanting.
- 09.0 OPERATE, REPAIR, AND MAINTAIN TOOLS AND EQUIPMENT--The student will be able to:
 - 09.01 Perform equipment pre-operational check.
 - 09.02 Identify, maintain, and operate hand tools and power tools.
- 10.0 DEMONSTRATE LEADERSHIP, EMPLOYABILITY, COMMUNICATIONS AND HUMAN RELATIONS SKILLS--The student will be able to:
 - 10.01 Conduct group meetings using parliamentary procedure and public speaking skills.
 - 10.02 Identify acceptable work habits and personal characteristics.
 - 10.03 Identify acceptable employee hygiene habits.
 - 10.04 Identify or demonstrate appropriate responses to criticism from employer, supervisor, or other persons.
 - 10.05 Describe the importance of industry certifications.

OCCUPATIONAL COMPLETION POINT - DATA CODE B

First-line Supervisor/Managers of Landscaping, lawn Service and Groundskeeping Workers - SOC - 37-1012.00

- 11.0 MAINTAIN TOOLS AND EQUIPMENT--The student will be able to:
 - 11.01 Maintain oil level in engines of power equipment.
 - 11.02 Check and maintain tire air pressure on equipment.
 - 11.03 Maintain fuel levels using proper fuel or fuel mixtures.
 - 11.04 Operate manual transmissions.
 - 11.05 Identify, operate, and maintain tractor and power equipment.
 - 11.06 Service and maintain battery and electrical systems.
 - 11.07 Perform minor tune-up on engines.
 - 11.08 Load, secure, and transport equipment.
 - 11.09 Demonstrate safety precautions while working with tools and equipment.
- 12.0 MAINTAIN AND ANALYZE RECORDS--The student will be able to:
 - 12.01 Prepare and maintain records using computer software.
 - 12.02 Locate and interpret MSDS information.
 - 12.03 Maintain chemical logs.
 - 12.04 Record information on repair and maintenance logs.
- 13.0 MAINTAIN GREENS AND TREES--The student will be able to:

- 13.01 Mow greens.
- 13.02 Mow collars.
- 13.03 Mow aprons.
- 13.04 Relocate cups.
- 13.05 Replace and relocate markers.
- 13.06 Irrigate greens.
- 13.07 Verticut turf.
- 13.08 Aerate turf.
- 13.09 Repair ball marks on greens.

14.0 MAINTAIN FAIRWAYS, ROUGHS, AND TRAPS--The student will be able to:

- 14.01 Mow roughs.
- 14.02 Irrigate fairways.
- 14.03 Repair divots.
- 14.04 Add sand to traps.
- 14.05 Rake and trim sand traps.
- 14.06 Mow fairways.
- 14.07 Edge sand traps.
- 14.08 Operate blower, sweeper, verticutter, and aerifier.

15.0 FERTILIZE TURF--The student will be able to:

- 15.01 Apply top dressing.
- 15.02 Apply grass seed.
- 15.03 Apply fertilizer to fairways.

16.0 ESTABLISH TURFGRASS--The student will be able to:

- 16.01 Level seedbed.
- 16.02 Plant grass seed.
- 16.03 Establish sod by plugging.
- 16.04 Establish sod by sodding.
- 16.05 Cut sod.

OCCUPATIONAL COMPLETION POINT - DATA CODE C

First-line Supervisor/Managers of Landscaping, Lawn Service and Groundskeeping Workers - SOC - 37-1012.00

17.0 APPLY CHEMICAL AND CALIBRATE SPRAY EQUIPMENT--The student will be able to:

- 17.01 Select, mix, and apply a nonrestricted chemical according to the label and local, state, federal, and EPA regulations.
- 17.02 Calibrate spray and spread equipment.
- 17.03 Identify and report insect and disease damage.
- 17.04 Determine chemical compatibility.
- 17.05 Determine appropriate time frequency and method of chemical application.

18.0 DEVELOP RECREATIONAL AREAS--The student will be able to:

- 18.01 Establish plant beds with annuals, biennials, and perennials.
- 18.02 Plant accent trees and shrubs in a recreational area.
- 18.03 Establish sports turf.
- 18.04 Identify poisonous plants.

19.0 DEMONSTRATE FERTILIZATION SKILLS--The students will be able to:

- 19.01 Develop a fertilization schedule.

- 19.02 Determine rate of fertilizer application and calibration equipment.
- 19.03 Calibrate fertilizer equipment.
- 20.0 IRRIGATE PLANTS AND TURF--The student will be able to:
 - 20.01 Identify various types of irrigation systems.
 - 20.02 Install and maintain piping and water distribution components.
 - 20.03 Install valves, timers, rain shut-offs, moisture sensors, and back flow prevention devices.
 - 20.04 Check and evaluate irrigation system performance.