

**Florida Department of Education  
CURRICULUM FRAMEWORK**

**Program Title:** Turf Equipment Technology  
**Occupational Area:** Agriscience and Natural Resources

Community College CIP: 0101029902 - 38 College Credit Hours  
School District CIP: 0101029903 - 1140 Clock Hours

Program Number: A020608  
Grade Level: Applied Technology Diploma (ATD)  
Standard Length: 38 College Credit Hours  
Faculty Credentials: See Special Notes

Basic Skills:  
English 10  
Math 10  
Reading 10

Program SOC Code: 49-3053.00 - Outdoor Power Equipment and Other Small Engine Mechanics

- I. **MAJOR CONCEPTS/CONTENT:** The purpose of this program is to prepare students for employment in the turf equipment industry (turf equipment service managers) or outdoor power equipment and other small engine mechanics (49-3053.00).

The content includes, but is not limited to, instruction that prepares individuals to manage and maintain turf care equipment and to manage a shop facility. Instruction includes: hand tools, gasoline and diesel mechanics, paints and painting, sharpening and grinding, welding, hydraulics, electrical systems, training on specialized turf care equipment, record keeping, inventory control, safety, laws and regulations, public relations, human relations, shop management, professionalism, employability skills, communications skills, and management skills.

- II. **LABORATORY ACTIVITIES:** Indoor and field laboratory activities are an integral part of this program and provide instruction in the use of hand tools and special tools, the proper operation and maintenance procedures on turf care equipment, oxy-acetylene and electric arc welding, painting, sharpening and grinding reel and rotary mower blades, engine repair, electrical, hydraulic, mechanical, and structural repair of turf care equipment, and the assembly of new turfcare equipment.

- III. **SPECIAL NOTE:** Either a community college or school district may offer the Applied Technology Diploma program as college credit or vocational credit (vocational technical Center may offer only as vocational credit). Students completing an ATD at a vocational technical center will be awarded the guarantee college credit upon enrollment to the community college.

Minimum entrance requirements for this program include a high school diploma or GED. Students must meet the minimum basic skills levels to complete the program.

Faculty teaching this program must have a minimum of an AS degree in the discipline area or meet the "exceptional cases" criteria as established by the Southern Association for Colleges and Schools.

No fees will be charged for the transfer of credit from a

vocational technical center to a community college. The established statewide fee structure will be adhered to by both delivery systems.

The National Postsecondary Agricultural Student Organization and the Professional Turf Equipment Service Technology Association (T.E.S.T.A.) are the appropriate organizations for providing leadership training and for reinforcing specific vocational skills. Career Student Organizations, when provided, shall be an integral part of the instructional program, and the activities of such organizations are defined as part of the curriculum in accordance with Rule 6A-6.065(8), FAC.

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

- 01.0 Disassemble, reassemble, adjust, repair, and diagnose the problems related to two and four-cycle engines.
- 02.0 Service electrical systems, fuels and lubricating systems, cooling systems, power train/hydraulic drives, and controls on turf equipment.
- 03.0 Adjust, sharpen, grind, and rebuild reel and rotary mowing units.
- 04.0 Demonstrate understanding of governmental regulations and compliances pertaining to golf courses.
- 05.0 Use shop tools and equipment, and organize a shop following appropriate safety, management, and inventory techniques.
- 06.0 Order and stock parts and keep shop records.
- 07.0 Perform basic welding tasks using both gas and arc welding techniques.
- 08.0 Identify and safely operate turf care equipment.
- 09.0 Demonstrate employability skills.
- 10.0 Identify the various professional organizations and publications that pertain to the turf management industry.
- 11.0 Design a functional golf course maintenance facility and select appropriate maintenance equipment.
- 12.0 Develop a preventive maintenance program for turf care equipment.
- 13.0 Develop human relations skills.
- 14.0 Perform decision making activities.

July 2007

Florida Department of Education  
STUDENT PERFORMANCE STANDARDS

**Program Title:** Turf Equipment Technology  
**Program Number:** A020608  
**Community College CIP:** 0101029902  
**School District CIP:** 0101029903

01.0 DISASSEMBLE, REASSEMBLE, ADJUST, REPAIR, AND DIAGNOSE THE PROBLEMS RELATED TO TWO-CYCLE AND FOUR-CYCLE ENGINES--The student will be able to:

- 01.01 Evaluate horsepower and torque.
- 01.02 Disassemble and reassemble a two-cycle and four-cycle engine.
- 01.03 Identify crankcase and cylinder assembly.
- 01.04 Identify and be able to assemble valves, piston assembly, crankshaft, cooling system, and air filters.
- 01.05 Identify and assemble parts of the carburetor assembly.
- 01.06 Identify and assemble the ignition system, governor, alternator, and starter system.
- 01.07 Identify types of batteries.
- 01.08 Follow safety rules and precautions when dealing with engines.

02.0 SERVICE ELECTRICAL SYSTEMS, FUEL AND LUBRICATING SYSTEMS, POWER TRAIN/HYDRAULIC DRIVES, AND CONTROLS ON TURF EQUIPMENT--The student will be able to:

- 02.01 Identify turf equipment electrical systems.
- 02.02 Service hydraulic systems on a variety of turf equipment.
- 02.03 Service turf equipment power train systems.
- 02.04 Identify and service various lubricating systems and understand types of fuels and lubricants.
- 02.05 Operate and repair the various mechanical and hydraulic controls on turf equipment.
- 02.06 Repair the governor, ignition, alternator, and starter system on various pieces of turf equipment.

03.0 ADJUST, SHARPEN, GRIND, AND REBUILD REEL AND ROTARY MOWING UNITS--The student will be able to:

- 03.01 Repair and sharpen various types of reel mowers.
- 03.02 Grind reel bedknives with various bedknife grinders.
- 03.03 Lap reel mower blades.
- 03.04 Follow safety procedures when using reel and bedknife grinders.
- 03.05 Adjust reel mowers to produce proper cutting heights.
- 03.06 Sharpen and balance rotary mower blades.
- 03.07 Remove and replace rotary mower blades.

04.0 DEMONSTRATE UNDERSTANDING OF GOVERNMENTAL REGULATIONS AND COMPLIANCES PERTAINING TO GOLF COURSES--The student will be able to:

- 04.01 Control pollution
- 04.02 Protect water quality
- 04.03 Demonstrate fire prevention methods
- 04.04 Identify and prevent health hazards and demonstrate proper first aid

- 04.05 Identify and manage hazardous waste on the golf course
- 04.06 Manage fertilizer storage demonstrating proper handling techniques
- 04.07 Demonstrate pesticide safety
- 05.0 USE SHOP TOOLS AND EQUIPMENT AND ORGANIZE A SHOP FOLLOWING APPROPRIATE SAFETY, MANAGEMENT AND INVENTORY TECHNIQUES--The student will be able to:
  - 05.01 Follow basic OSHA safety regulations and shop fire prevention techniques.
  - 05.02 Perform basic first aid procedures.
  - 05.03 Establish a file system for shop records.
  - 05.04 Identify and use shop hand tools and equipment that relate to turf equipment maintenance.
  - 05.05 Select the appropriate fasteners, bearings, seals, belts, chains, fuels, and lubricants for various turf equipment.
  - 05.06 Establish and maintain appropriate shop space for specific shop tasks.
  - 05.07 Establish an appropriate equipment inventory system.
- 06.0 ORDER AND STOCK PARTS AND KEEP SHOP RECORDS--The student will be able to:
  - 06.01 Use the various equipment manuals to identify parts and service procedures.
  - 06.02 Order parts properly.
  - 06.03 Establish a system for stocking appropriate turf equipment parts.
  - 06.04 Gather the appropriate forms for establishing a recordkeeping system.
  - 06.05 Maintain computer-based inventory and record-keeping system.
- 07.0 PERFORM BASIC WELDING TASKS USING BOTH GAS AND ARC WELDING TECHNIQUES--The student will be able to:
  - 07.01 Follow welding symbols, and safety practices.
  - 07.02 Connect and operate oxy-acetylene welding equipment.
  - 07.03 Run beads and weld various types of joints.
  - 07.04 Braze and solder metal.
  - 07.05 Cut metal with and oxy-acetylene torch.
  - 07.06 Select appropriate welding rods.
  - 07.07 Set up an electrical arc welding machine.
  - 07.08 Arc weld various types of joints.
- 08.0 IDENTIFY AND SAFELY OPERATE TURF CARE EQUIPMENT--The student will be able to:
  - 08.01 Identify the appropriate use for commonly used turf care equipment.
  - 08.02 Identify the operation safety procedures for commonly used turf equipment.
  - 08.03 Operate properly all commonly used turf care equipment.
- 09.0 DEMONSTRATE EMPLOYABILITY SKILLS--The student will be able to:
  - 09.01 Conduct a job search.
  - 09.02 Secure information about a job.
  - 09.03 Identify documents which may be required when applying for a job interview.
  - 09.04 Complete a job application correctly.
  - 09.05 Demonstrate competence in a job interview.
  - 09.06 Identify or demonstrate appropriate responses to criticism from employer, supervisor or other employees.

- 09.07 Identify acceptable work habits.
  - 09.08 Demonstrate knowledge or how to make job changes appropriately.
  - 09.09 Demonstrate acceptable employee health habits.
  - 09.10 Identify appropriate attire and grooming to maintain a functional and professional atmosphere in the equipment maintenance facility.
- 10.0 IDENTIFY THE VARIOUS PROFESSIONAL ORGANIZATIONS AND PUBLICATIONS THAT PERTAIN TO THE TURF MANAGEMENT INDUSTRY--The student will be able to:
- 10.01 Identify major points in the history of the golf course/turf industry.
  - 10.02 Identify and understand various professional turf publications.
  - 10.03 Identify and understand the basic role of professional turf organizations.
  - 10.04 Identify the basics of the seed production and sod production industries.
  - 10.05 Identify the various classes of golf courses and turf maintenance organizations.
- 11.0 DESIGN A FUNCTIONAL GOLF COURSE MAINTENANCE FACILITY AND SELECT APPROPRIATE MAINTENANCE EQUIPMENT--The student will be able to:
- 11.01 Evaluate the organization and management styles utilized by various golf courses.
  - 11.02 Classify, by use, the various equipment used on a typical 18-hole golf course.
  - 11.03 List the equipment needed to properly maintain an 18-hole golf course.
  - 11.04 Design and organize a golf course maintenance complex.
  - 11.05 Develop an equipment budget for an 18-hole golf course.
- 12.0 DEVELOP PREVENTIVE MAINTENANCE PROGRAMS FOR TURF CARE EQUIPMENT--The student will be able to:
- 12.01 Use equipment manufacturers' manuals to implement proper service procedures.
  - 12.02 Develop a recordkeeping system to record equipment use.
  - 12.03 Develop a recordkeeping system to record service work performed on equipment.
- 13.0 DEVELOP HUMAN RELATIONS SKILLS--The student will be able to:
- 13.01 Demonstrate appropriate work habits.
  - 13.02 Identify traits that promote good human relations and increase job performance.
  - 13.03 Develop an understanding of the role of the golf course superintendent and turf equipment service manager in the overall successful operations of the golf course.
- 14.0 PERFORM DECISION-MAKING ACTIVITIES--The student will be able to:
- 14.01 Develop the ability to solve problems in a logical sequence.
  - 14.02 Demonstrate the ability to determine proper work priorities.
  - 14.03 Prepare a day's work schedule for the superintendent.
  - 14.04 Choose appropriate action in situations requiring following a chain of command.
  - 14.05 Choose appropriate action in situations requiring effective time management.

- 14.06 Choose appropriate action in situations requiring application of business ethics.
- 14.07 Identify ways to assign work to others.