

Florida Department of Education
CURRICULUM FRAMEWORK

Program Title: Building Maintenance Technology
Program Type: Job Preparatory
Occupational Area: Industrial Education
Components: Two Occupational Completion Points

	<u>Secondary</u>	<u>PSAV</u>
Program Numbers	8720300	I460401
CIP Number	0646.040102	0646.040102
Grade Level	9-12, 30, 31	30, 31
Facility Code	203	203
CTSO	SkillsUSA-VICA	SkillsUSA-VICA
Co-op Method	Yes	Yes
Apprenticeship	Yes	Yes

- I. **PURPOSE:** The purpose of this program is to prepare students for employment or advanced training in the building maintenance and repair industry.

This program focuses on broad, transferable skills, stresses the understanding of all aspects of the building maintenance and repair industry, and demonstrates such elements of the industry as planning, management, finance, technical and production skills, underlying principles of technology, labor issues, community issues, and health, safety, and environmental issues.

- II. **PROGRAM STRUCTURE:** This program is a planned sequence of instruction consisting of two occupational completion points. The recommended sequence allows students to complete specified portions of the program for employment or to remain for advanced training. A student who completes the applicable competencies at the first occupational completion point may either continue with the training program or terminate as an occupational completer.

The following diagram illustrates the program structure:

BUILDING MAINTENANCE TECHNOLOGY

OCP B
MAINTENANCE REPAIRER, BUILDING--
DOT 899.381-010

BUILDING MAINTENANCE TECHNOLOGY 4-7
(4 Credits/600 Hours)

OCP A
BUILDING MAINTENANCE HELPER
INDUSTRY TITLE

BUILDING MAINTENANCE AND REPAIR 1-3
(3 Credits/450 Hours)

At the secondary level, the Building Maintenance Technology program consists of the following courses:

BUILDING MAINTENANCE AND REPAIR COURSES - 3 secondary credits

8720310 - Building Maintenance and Repair 1 (150)
8720320 - Building Maintenance and Repair 2 (150)
8720330 - Building Maintenance and Repair 3 (150) [450] OCP A

BUILDING MAINTENANCE TECHNOLOGY COURSES - 4 secondary credits

8720340 - Building Maintenance Technology 4 (150)
8720350 - Building Maintenance Technology 5 (150)
8720360 - Building Maintenance Technology 6 (150)
8720370 - Building Maintenance Technology 7 (150) [600] OCP B

III. **LABORATORY ACTIVITIES**: Classroom, shop, and laboratory activities are an integral part of this program. These activities include instruction in the use of the safety procedures, tools, equipment, materials, and processes found in the industry. Equipment and supplies should be provided to enhance hands-on experiences for students in the chosen occupation.

IV. **SPECIAL NOTE**: SkillsUSA-VICA, Inc. is the appropriate Career and Technical Student Organization (CTSO) for providing leadership training and for reinforcing specific career and technical skills. Career and Technical Student Organizations, when provided, shall be an integral part of the career and technical instructional program, and the activities of such organizations are defined as part of the curriculum in accordance with Rule 6A-6.065, FAC.

This program may be offered in postsecondary adult vocational (PSAV) courses. Vocational credit shall be awarded to the student on a transcript in accordance with Section 230.643, F.S.

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 adult vocational students to complete this program are: Mathematics 9.0, Language 9.0, Reading 9.0. These grade-level numbers correspond 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 through Vocational Preparatory Instruction (VPI). Please refer to the Rule for exemptions.

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.

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 postschool outcome statement on the Transition Individual Educational Plan (Transition IEP).

To be transferable statewide between institutions, this program/course must have been reviewed, and a "transfer value" assigned the curriculum content by the appropriate Statewide Course Numbering System discipline committee. This does not preclude institutions from developing specific program or course articulation agreements with each other.

The standard length of this program is 1050 hours.

Florida Department of Education
INTENDED OUTCOMES

Program Title: Building Maintenance Technology

	<u>Secondary</u>	<u>PSAV</u>
Program Numbers	8720300	I460401
CIP Number	0646.040102	0646.040102
Grade Level	9-12, 30, 31	30, 31
Length	7 Credits	1,050 Hours
Certification	BLDG MAINT @7 G	BLDG MAINT @7 G
	BLDG CONST @7 G	BLDG CONST @7 G
	TROWEL TR @7 G	TROWEL TR @7 G
	PLUMBING @7 G	PLUMBING @7 G
	ELECTRICAL @7 G	ELECTRICAL @7 G
	AC HEAT MC @7 G	AC HEAT MC @7 G
	TEC CONSTR @7 G	TEC CONSTR @7 G
	CARPENTRY @7 G	CARPENTRY @7 G
	DRAFTING @7 G	DRAFTING @7 G
	SHEETMETAL @7 G	SHEETMETAL @7 G
	TEC DRAFT @7 G	TEC DRAFT @7 G
Basic Skills		
Math		9
Language		9
Reading		9

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

OCCUPATIONAL COMPLETION POINT - DATA CODE - A (450 HOURS)
 BUILDING MAINTENANCE HELPER - INDUSTRY TITLE

- 01.0 Follow safety practices and disaster plans.
- 02.0 Compute basic maintenance-related math.
- 03.0 Identify and use basic hand tools.
- 04.0 Identify power tools and describe their proper operation.
- 05.0 Identify construction components.
- 06.0 Describe repair procedures for exterior masonry, stucco, and concrete surfaces.
- 07.0 Apply appropriate communication and computer skills.
- 08.0 Demonstrate an understanding of the appropriate basic science.
- 09.0 Demonstrate employability skills.
- 10.0 Demonstrate positive public-relations skills.

OCCUPATIONAL COMPLETION POINT - DATA CODE - B (600 HOURS)
 MAINTENANCE REPAIRER, BUILDING - DOT Code 899.381-010

- 11.0 Identify local, state, and federal codes and regulations.
- 12.0 Apply appropriate math skills.
- 13.0 Read contract documents and specifications.
- 14.0 Describe the operations of heavy equipment and demonstrate the use of power tools.
- 15.0 Repair and replace interior floors, walls, and ceilings.
- 16.0 Repair and replace doors, windows, and screens.
- 17.0 Repair and replace cabinets.
- 18.0 Prepare and apply finishes to surfaces.
- 19.0 Repair roofs.
- 20.0 Troubleshoot, repair, and replace plumbing systems.

- 21.0 Troubleshoot, repair, and replace electrical systems.
- 22.0 Maintain, repair, and replace heating, ventilation, and air-cooling (HVAC) systems.
- 23.0 Perform ground maintenance.
- 24.0 Demonstrate an understanding of entrepreneurship.

**Florida Department of Education
STUDENT PERFORMANCE STANDARDS**

Program Title: Building Maintenance Technology
 Secondary Number: 8720300
 Postsecondary Number: I460401

OCCUPATIONAL COMPLETION POINT - DATA CODE - A

BUILDING MAINTENANCE HELPER - INDUSTRY TITLE

- 01.0 FOLLOW SAFETY PRACTICES AND DISASTER PLANS--The student will be able to:
- 01.01 Comply with all applicable Occupational Safety and Health Administration (OSHA) rules and regulations.
 - 01.02 Identify and locate the Material Safety Data Sheets (MSDS) and follow the procedures as necessary.
 - 01.03 Describe "Florida's Right-to-Know" Law as recorded in the Florida Statutes, Chapter 442.
 - 01.04 Identify and use safety equipment.
 - 01.05 Identify and follow disaster plans.
- 02.0 COMPUTE BASIC MAINTENANCE-RELATED MATH--The student will be able to:
- 02.01 Solve job-related problems by adding, subtracting, multiplying, and dividing numbers, using fractions, decimals, and whole numbers.
 - 02.02 Change numbers to percents.
 - 02.03 Solve job-related problems, using a calculator.
 - 02.04 Read a ruler and a tape measure.
 - 02.05 Compute feet, inches, and yards.
 - 02.06 Change hours and minutes to decimals, fractions, and mixed numbers.
 - 02.07 Solve job-related problems, using handbooks, charts, and tables.
 - 02.08 Determine ratios and proportions.
 - 02.09 Convert measurements from the English to the metric system and from the metric to the English system.
- 03.0 IDENTIFY AND USE BASIC HAND TOOLS--The student will be able to:
- 03.01 Use a claw hammer to drive and pull out nails.
 - 03.02 Use handsaws to cut boards.
 - 03.03 Use screwdrivers to drive in screws.
 - 03.04 Drill holes with hand-powered drills.
 - 03.05 Identify and use various types of:
 - a. Wrenches
 - b. Pipe wrenches and plumbing tools
 - c. Chisels
 - d. Staple guns
 - e. Wood planes
 - f. Woodworking files
 - g. Spirit levels
 - h. Socket wrench sets
 - i. Hand or block sanders
 - j. Carpenters' squares

- 04.0 IDENTIFY POWER TOOLS AND DESCRIBE THEIR PROPER OPERATION--The student will be able to:
- 04.01 Identify power tools, including:
 - a. Sanders
 - b. Drills
 - c. Screwdrivers
 - d. Hand-held saws
 - e. Reciprocating saws
 - f. Radial-arm saws
 - g. Table saws
 - h. Drill presses
 - i. Band saws
 - j. Miter saws
 - k. Planes
 - l. Electric routers
 - 04.02 Describe the proper operation of power tools and equipment.
- 05.0 IDENTIFY CONSTRUCTION COMPONENTS--The student will be able to:
- 05.01 Identify the components of various kinds of structures, including:
 - a. Interior walls
 - b. Exterior walls
 - c. Roofs
 - d. Flooring systems
 - 05.02 Identify the types of wall intersections.
 - 05.03 Identify the types and installation procedures of:
 - a. Roof sheathing
 - b. Wall sheathing
 - c. Floor sheathing
 - 05.04 Identify various roof supports.
- 06.0 DESCRIBE REPAIR PROCEDURES FOR EXTERIOR MASONRY, STUCCO, AND CONCRETE SURFACES--The student will be able to:
- 06.01 Identify the tools and equipment used for mixing mortar.
 - 06.02 Identify the factors that affect the consistency of mortar.
 - 06.03 Identify the common ratios (M, N, S, and O) of mortar mixtures.
 - 06.04 Identify pointing tools and strike mortar joints.
 - 06.05 Repoint old work.
 - 06.06 Prepare a work area, protecting adjacent areas.
 - 06.07 Apply mortar.
 - 06.08 Identify the methods of putting up the line.
 - 06.09 Identify the types of trowels.
 - 06.10 Identify various types of caulking and application.
 - 06.11 Describe procedures for stucco repair.
 - 06.12 Mix various types of stucco.
 - 06.13 Mix various types of concrete, considering application and pounds per square inch (PSI) strength.
 - 06.14 Identify and select concrete tools.
 - 06.15 Describe the procedures for concrete repair and installation.
 - 06.16 Identify and select cleaning materials and equipment.
 - 06.17 Demonstrate safe and proper procedures for cleaning equipment, materials, work area, and worker.

- 07.0 APPLY APPROPRIATE COMMUNICATION AND COMPUTER SKILLS--The student will be able to:
- 07.01 Ask and answer questions coherently and concisely.
 - 07.02 Read and follow written instructions and listen to and follow oral instructions.
 - 07.03 Make oral presentations.
 - 07.04 Write reports using word-processing software.
 - 07.05 Read and interpret industry-related materials.
 - 07.06 Find information in technical literature such as manufacturer's manuals.
 - 07.07 Read and interpret the graphs, charts, diagrams, and tables commonly used in the industry.
 - 07.08 Complete the forms and invoices commonly used in the industry.
 - 07.09 Demonstrate appropriate telephone communication skills.
 - 07.10 Use trade-related computer software.
- 08.0 DEMONSTRATE AN UNDERSTANDING OF THE APPROPRIATE BASIC SCIENCE--The student will be able to:
- 08.01 Explain molecular action as a result of temperature extremes, chemical reaction, and moisture content.
 - 08.02 Draw conclusions or make inferences from data.
 - 08.03 Identify health-related problems that may result from exposure to work-related chemicals and hazardous materials, and demonstrate knowledge of the proper precautions required for handling such materials.
 - 08.04 Explain pressure measurement in terms of PSI and inches of mercury.
 - 08.05 Explain the use of electrical-system testing devices.
- 09.0 DEMONSTRATE EMPLOYABILITY SKILLS--The student will be able to:
- 09.01 Conduct a job search and identify advanced-training opportunities.
 - 09.02 Secure information about a job.
 - 09.03 Identify the documents, including a resume, which may be required for a job application.
 - 09.04 Complete a job-application form.
 - 09.05 Demonstrate competence in job-interview techniques.
 - 09.06 Demonstrate productive work habits and positive attitudes.
 - 09.07 Demonstrate knowledge of how to make job changes appropriately.
 - 09.08 Demonstrate ethical practices and responsibilities.
 - 09.09 Demonstrate acceptable personal hygiene and a professional appearance.
 - 09.10 Apply the principles of time management, work simplification, and teamwork when performing assigned tasks.
 - 09.11 Explain the importance of taking pride in the quality of work performed.
 - 09.12 Describe the importance of drug-free workplace and industry policies toward drug use.
 - 09.13 Describe the ramifications of a poor driving record on employability opportunities.
 - 09.14 Explain the importance of confidentiality in the workplace.

10.0 DEMONSTRATE POSITIVE PUBLIC-RELATIONS SKILLS--The student will be able to:

- 10.01 Exercise self-control.
- 10.02 Identify and demonstrate appropriate responses to criticism.
- 10.03 Explain the importance of interpersonal skills to success in the industry.
- 10.04 Demonstrate respect for person and property.

OCCUPATIONAL COMPLETION POINT - DATA CODE - B

MAINTENANCE REPAIRER, BUILDING - DOT CODE 899.381-010

11.0 IDENTIFY LOCAL, STATE, AND FEDERAL CODES AND REGULATIONS--The student will be able to:

- 11.01 Identify and locate local, state, and federal codes, regulations, and standards.
- 11.02 Identify local, state, and federal regulatory agencies.

12.0 APPLY APPROPRIATE MATH SKILLS--The student will be able to:

- 12.01 Solve problems for volume, weight, area, circumference, and perimeter measurements for rectangles, squares, and cylinders.
- 12.02 Measure tolerance(s) on horizontal and vertical surfaces using millimeters, centimeters, feet, and inches.
- 12.03 Determine the purchase price of materials, including sales tax.
- 12.04 Calculate the following for a specific job:
 - a. Work hours
 - b. Cost of the workers
 - c. Cost to be charged to the client
- 12.05 Explain and compute federal, state, and local taxes.
- 12.06 Calculate the time charged for labor on the job.

13.0 READ CONTRACT DOCUMENTS AND SPECIFICATIONS--The student will be able to:

- 13.01 Explain the purpose and components of contract documents and specifications.
- 13.02 Identify and explain the following elements:
 - a. Dimensions
 - b. Construction views
 - c. Section views
 - d. Site plans
 - e. Foundation plans
 - f. Floor plans and elevations
 - g. Details
 - h. Wiring details
- 13.03 Explain the relationships of the elements of contract documents.
- 13.04 Identify building symbols.
- 13.05 Identify lists of materials and specifications.
- 13.06 Use architectural and engineering scales.

- 14.0 DESCRIBE THE OPERATIONS OF HEAVY EQUIPMENT AND DEMONSTRATE THE USE OF POWER TOOLS--The student will be able to:
- 14.01 Identify different types and uses of heavy equipment.
 - 14.02 Describe the operations of different types of heavy equipment.
 - 14.03 Set up, maintain, and demonstrate the use of power tools.
- 15.0 REPAIR AND REPLACE INTERIOR FLOORS, WALLS, AND CEILINGS--The student will be able to:
- 15.01 Repair a hole in drywall.
 - 15.02 Install paneling.
 - 15.03 Install drywall and finish.
 - 15.04 Check and repair wall coverings.
 - 15.05 Install interior trim.
 - 15.06 Measure the size of a room.
 - 15.07 Replace ceramic tile.
 - 15.08 Repair carpets.
 - 15.09 Repair vinyl composition tile (VCT) and roll flooring.
 - 15.10 Check and repair acoustical ceiling systems.
 - 15.11 Identify the types of insulation.
- 16.0 REPAIR AND REPLACE DOORS, WINDOWS, AND SCREENS--The student will be able to:
- 16.01 Install a prehung door and casing.
 - 16.02 Install door hardware.
 - 16.03 Replace doors.
 - 16.04 Check and replace hinges on doors.
 - 16.05 Check and replace closet doors.
 - 16.06 Remove, measure, and replace door and window lights.
 - 16.07 Replace screen on door and window frames.
 - 16.08 Check and repair window-glaze seals.
 - 16.09 Replace sash locks in windows.
 - 16.10 Inspect and replace window operators and locks.
 - 16.11 Check, repair, and install panic bars on doors.
 - 16.12 Repair a window frame.
- 17.0 REPAIR AND REPLACE CABINETS--The student will be able to:
- 17.01 Identify the parts of a cabinet.
 - 17.02 Identify the types of cabinet-door installation.
 - 17.03 Identify the types of cabinet hardware.
 - 17.04 Install cabinet hardware.
 - 17.05 Describe cabinet-installation procedures.
 - 17.06 Install cabinet shelving.
 - 17.07 Replace or repair surface materials.
- 18.0 PREPARE AND APPLY FINISHES TO SURFACES--The student will be able to:
- 18.01 Erect an extension ladder and a scaffold.
 - 18.02 Prepare the surfaces.
 - 18.03 Apply finished coatings to surfaces with a roller, brush, and sprayer.

- 19.0 REPAIR ROOFS--The student will be able to:
 - 19.01 Identify and explain different types of roofing systems and applications.
 - 19.02 Check and repair asphalt shingles.
 - 19.03 Check and repair roof gutters and downspouts.
 - 19.04 Seal pipes and vents on roofs.
 - 19.05 Check and repair:
 - a. Sheet metal roofs
 - b. Built-up roofs
 - c. Roof flashing

- 20.0 TROUBLESHOOT, REPAIR, AND REPLACE PLUMBING SYSTEMS--The student will be able to:
 - 20.01 Troubleshoot, repair, and replace bathroom fixtures and hardware, such as:
 - a. Lavatory
 - b. Water closet
 - c. Urinal
 - d. Shower
 - e. Bathtub
 - f. Traps
 - g. Drain, waste, and vent (DWV) system
 - 20.02 Troubleshoot, repair, and replace kitchen fixtures and hardware, such as sinks, garbage disposals, faucets, and hot-water-heater tanks.
 - 20.03 Identify and explain various pipes and tubing used in the plumbing trade.
 - 20.04 Test and inspect repaired or replaced plumbing systems.

- 21.0 TROUBLESHOOT, REPAIR, AND REPLACE ELECTRICAL SYSTEMS--The student will be able to:
 - 21.01 Explain basic electrical theory.
 - 21.02 Explain branch circuit systems.
 - 21.03 Identify and explain ground fault circuit interrupter (GFCI) circuitry.
 - 21.04 Troubleshoot electrical systems, using testing and metering devices.
 - 21.05 Repair and replace electrical:
 - a. Outlets
 - b. Switches
 - c. Light fixtures
 - 21.06 Install and replace breakers and fuses.
 - 21.07 Identify types of wiring raceways.
 - 21.08 Replace hot-water-heater unit component parts.
 - 21.09 Wire a blower motor into an electrical supply.
 - 21.10 Test and inspect repaired or replaced electrical systems.
 - 21.11 Explain basic motor-control operation.

- 22.0 MAINTAIN, REPAIR, AND REPLACE HEATING, VENTILATION, AND AIR-COOLING (HVAC) SYSTEMS--The student will be able to:
 - 22.01 Explain heating and cooling principles and code requirements.
 - 22.02 Describe methods of calculating heating and cooling loads.

- 22.03 Explain the operation and types of the following heating methods: water, steam, forced air, gas, electrical components, and heat pumps.
 - 22.04 Troubleshoot and repair a circulation pump, zone valves, burners, pilot lights, and thermocouples in a heating system.
 - 22.05 Identify refrigerants.
 - 22.06 Determine a refrigerant level.
 - 22.07 Describe the proper procedures for descaling air-conditioner units.
 - 22.08 Troubleshoot, repair, and replace air filters, drive belts, and drain systems.
 - 22.09 Troubleshoot, repair, and replace control systems.
 - 22.10 Explain the computer monitoring system associated with heating, ventilation, and air-conditioning (HVAC) control systems and air-quality management.
- 23.0 PERFORM GROUND MAINTENANCE--The student will be able to:
- 23.01 Identify common pests.
 - 23.02 Explain basic irrigation theory and design.
 - 23.03 Provide plant, tree, and shrub care.
 - 23.04 Identify ground-maintenance equipment.
- 24.0 DEMONSTRATE AN UNDERSTANDING OF ENTREPRENEURSHIP--The student will be able to:
- 24.01 Define "entrepreneurship."
 - 24.02 Describe the importance of entrepreneurship to the American economy.
 - 24.03 List the advantages and disadvantages of business ownership.
 - 24.04 Identify the risks involved in the ownership of a business.
 - 24.05 Identify the personal characteristics of a successful entrepreneur.
 - 24.06 Identify the business skills needed to operate a small business efficiently and effectively.
 - 24.07 Describe the employer's responsibilities to support the business and industry.

Florida Department of Education
STUDENT PERFORMANCE STANDARDS

Course Number: 8720310
Course Title: Building Maintenance and Repair 1
Course Credit: 1

COURSE DESCRIPTION:

The purpose of this course is to develop the competencies essential to the building maintenance and repair industry. These competencies include skills and knowledge related to safety practices, math applications, and the use of hand and power tools.

01.0 FOLLOW SAFETY PRACTICES AND DISASTER PLANS--The student will be able to:

- 01.01 Comply with all applicable Occupational Safety and Health Administration (OSHA) rules and regulations.
- 01.02 Identify and locate the Material Safety Data Sheets (MSDS) and follow the procedures as necessary.
- 01.03 Describe "Florida's Right-to-Know" Law as recorded in the Florida Statutes, Chapter 442.
- 01.04 Identify and use safety equipment.
- 01.05 Identify and follow disaster plans.

02.0 COMPUTE BASIC MAINTENANCE-RELATED MATH--The student will be able to:

- 02.01 Solve job-related problems by adding, subtracting, multiplying, and dividing numbers, using fractions, decimals, and whole numbers.
- 02.02 Change numbers to percents.
- 02.03 Solve job-related problems, using a calculator.
- 02.04 Read a ruler and a tape measure.
- 02.05 Compute feet, inches, and yards.
- 02.06 Change hours and minutes to decimals, fractions, and mixed numbers.
- 02.07 Solve job-related problems, using handbooks, charts, and tables.
- 02.08 Determine ratios and proportions.
- 02.09 Convert measurements from the English to the metric system and from the metric to the English system.

03.0 IDENTIFY AND USE BASIC HAND TOOLS--The student will be able to:

- 03.01 Use a claw hammer to drive and pull out nails.
- 03.02 Use handsaws to cut boards.
- 03.03 Use screwdrivers to drive in screws.
- 03.04 Drill holes with hand-powered drills.
- 03.05 Identify and use various types of:
 - a. Wrenches
 - b. Pipe wrenches and plumbing tools
 - c. Chisels
 - d. Staple guns
 - e. Wood planes
 - f. Woodworking files
 - g. Spirit levels
 - h. Socket wrench sets
 - i. Hand or block sanders

j. Carpenters' squares

04.0 IDENTIFY POWER TOOLS AND DESCRIBE THEIR PROPER OPERATION--The student will be able to:

04.01 Identify power tools, including:

- a. Sanders
- b. Drills
- c. Screwdrivers
- d. Hand-held saws
- e. Reciprocating saws
- f. Radial-arm saws
- g. Table saws
- h. Drill presses
- i. Band saws
- j. Miter saws
- k. Planes
- l. Electric routers

04.02 Describe the proper operation of power tools and equipment.

Florida Department of Education
STUDENT PERFORMANCE STANDARDS

Course Number: 8720320
Course Title: Building Maintenance and Repair 2
Course Credit: 1

COURSE DESCRIPTION:

The purpose of this course is to develop the competencies necessary to the building maintenance and repair industry. These competencies relate to construction components and building-repair procedures.

05.0 IDENTIFY CONSTRUCTION COMPONENTS--The student will be able to:

- 05.01 Identify the components of various kinds of structures, including:
 - a. Interior walls
 - b. Exterior walls
 - c. Roofs
 - d. Flooring systems
- 05.02 Identify the types of wall intersections.
- 05.03 Identify the types and installation procedures of:
 - a. Roof sheathing
 - b. Wall sheathing
 - c. Floor sheathing
- 05.04 Identify various roof supports.

06.0 DESCRIBE REPAIR PROCEDURES FOR EXTERIOR MASONRY, STUCCO, AND CONCRETE SURFACES--The student will be able to:

- 06.01 Identify and select the tools and equipment used for mixing mortar.
- 06.02 Describe the factors that affect the consistency of mortar.
- 06.03 Identify the common ratios (M, N, S, and O) of mortar mixtures.
- 06.04 Identify pointing tools and strike mortar joints.
- 06.05 Repoint old work.
- 06.06 Prepare a work area, protecting adjacent areas.
- 06.07 Apply mortar.
- 06.08 Identify the methods of putting up the line.
- 06.09 Identify the types of trowels.
- 06.10 Identify various types of caulking and application.
- 06.11 Describe procedures for stucco repair.
- 06.12 Mix various types of stucco.
- 06.13 Mix various types of concrete, considering application and pounds per square inch (PSI) strength.
- 06.14 Identify and select concrete tools.
- 06.15 Demonstrate procedures for concrete repair and installation.
- 06.16 Identify and select cleaning materials and equipment.
- 06.17 Demonstrate safe and proper procedures for cleaning equipment, materials, work areas, and worker.

Florida Department of Education
STUDENT PERFORMANCE STANDARDS

Course Number: 8720330
Course Title: Building Maintenance and Repair 3
Course Credit: 1

COURSE DESCRIPTION:

This course is designed to provide students with a more in-depth knowledge of building maintenance and repair. The competencies in this course include communication, computer, basic-science, employability, and public-relations skills.

07.0 APPLY APPROPRIATE COMMUNICATION AND COMPUTER SKILLS--The student will be able to:

- 07.01 Ask and answer questions coherently and concisely.
- 07.02 Read and follow written instructions and listen to and follow oral instructions.
- 07.03 Make oral presentations.
- 07.04 Write reports using word-processing software.
- 07.05 Read and interpret industry-related materials.
- 07.06 Find information in technical literature such as manufacturer's manuals.
- 07.07 Read and interpret the graphs, charts, diagrams, and tables commonly used in the industry.
- 07.08 Complete the forms and invoices commonly used in the industry.
- 07.09 Demonstrate appropriate telephone communication skills.
- 07.10 Use trade-related computer software.

08.0 DEMONSTRATE AN UNDERSTANDING OF THE APPROPRIATE BASIC SCIENCE--The student will be able to:

- 08.01 Explain molecular action as a result of temperature extremes, chemical reaction, and moisture content.
- 08.02 Draw conclusions or make inferences from data.
- 08.03 Identify health-related problems that may result from exposure to work-related chemicals and hazardous materials, and demonstrate knowledge of the proper precautions required for handling such materials.
- 08.04 Explain pressure measurement in terms of PSI and inches of mercury.
- 08.05 Explain and demonstrate the use of electrical-system testing devices.

09.0 DEMONSTRATE EMPLOYABILITY SKILLS--The student will be able to:

- 09.01 Conduct a job search and identify advanced-training opportunities.
- 09.02 Secure information about a job.
- 09.03 Identify the documents, including a resume, which may be required for a job application.
- 09.04 Complete a job-application form.
- 09.05 Demonstrate competence in job-interview techniques.
- 09.06 Demonstrate productive work habits and positive attitudes.
- 09.07 Demonstrate knowledge of how to make job changes appropriately.
- 09.08 Demonstrate ethical practices and responsibilities.

- 09.09 Demonstrate acceptable personal hygiene and a professional appearance.
 - 09.10 Apply the principles of time management, work simplification, and teamwork when performing assigned tasks.
 - 09.11 Explain the importance of taking pride in the quality of work performed.
 - 09.12 Describe the importance of drug-free workplace and industry policies toward drug use.
 - 09.13 Describe the ramifications of a poor driving record on employability opportunities.
 - 09.14 Explain the importance of confidentiality in the workplace.
- 10.0 DEMONSTRATE POSITIVE PUBLIC-RELATIONS SKILLS--The student will be able to:
- 10.01 Exercise self-control.
 - 10.02 Identify and demonstrate appropriate responses to criticism.
 - 10.03 Explain the importance of interpersonal skills to success in the industry.
 - 10.04 Demonstrate respect for person and property.

Florida Department of Education
STUDENT PERFORMANCE STANDARDS

Course Number: 8720340
Course Title: Building Maintenance Technology 4
Course Credit: 1

COURSE DESCRIPTION:

The purpose of this course is to develop competencies in identifying codes and regulations, applying math skills, and reading contract documents and specifications.

- 11.0 IDENTIFY LOCAL, STATE, AND FEDERAL CODES AND REGULATIONS--The student will be able to:
- 11.01 Identify and locate local, state, and federal codes, regulations, and standards.
 - 11.02 Identify local, state, and federal regulatory agencies.
- 12.0 APPLY APPROPRIATE MATH SKILLS--The student will be able to:
- 12.01 Solve problems for volume, weight, area, circumference, and perimeter measurements for rectangles, squares, and cylinders.
 - 12.02 Measure tolerance(s) on horizontal and vertical surfaces using millimeters, centimeters, feet, and inches.
 - 12.03 Determine the purchase price of materials, including sales tax.
 - 12.04 Calculate the following for a specific job:
 - a. Work hours
 - b. Cost of the workers
 - c. Cost to be charged to the client
 - 12.05 Explain and compute federal, state, and local taxes.
 - 12.06 Calculate the time charged for labor on the job.
- 13.0 READ CONTRACT DOCUMENTS AND SPECIFICATIONS--The student will be able to:
- 13.01 Explain the purpose and components of contract documents and specifications.
 - 13.02 Identify and explain the following elements:
 - a. Dimensions
 - b. Construction views
 - c. Section views
 - d. Site plans
 - e. Foundation plans
 - f. Floor plans and elevations
 - g. Details
 - h. Wiring details
 - 13.03 Explain the relationships of the elements of contract documents.
 - 13.04 Identify building symbols.
 - 13.05 Identify lists of materials and specifications.
 - 13.06 Use architectural and engineering scales.

Florida Department of Education
STUDENT PERFORMANCE STANDARDS

Course Number: 8720350
Course Title: Building Maintenance Technology 5
Course Credit: 1

COURSE DESCRIPTION:

The purpose of this course is to develop knowledge and skills in the use of power tools and heavy equipment and in the repair and replacement of interior structures, including doors and windows.

14.0 DESCRIBE THE OPERATIONS OF HEAVY EQUIPMENT AND DEMONSTRATE THE USE OF POWER TOOLS--The student will be able to:

- 14.01 Identify different types and uses of heavy equipment.
- 14.02 Describe the operations of different types of heavy equipment.
- 14.03 Set up, maintain, and demonstrate the use of power tools.

15.0 REPAIR AND REPLACE INTERIOR FLOORS, WALLS, AND CEILINGS--The student will be able to:

- 15.01 Repair a hole in drywall.
- 15.02 Install paneling.
- 15.03 Install drywall and finish.
- 15.04 Check and repair wall coverings.
- 15.05 Install interior trim.
- 15.06 Measure the size of a room.
- 15.07 Replace ceramic tile.
- 15.08 Repair carpets.
- 15.09 Repair vinyl composition tile (VCT) and roll flooring.
- 15.10 Check and repair acoustical ceiling systems.
- 15.11 Identify the types of insulation.

16.0 REPAIR AND REPLACE DOORS, WINDOWS, AND SCREENS--The student will be able to:

- 16.01 Install a prehung door and casing.
- 16.02 Install door hardware.
- 16.03 Replace doors.
- 16.04 Check and replace hinges on doors.
- 16.05 Check and replace closet doors.
- 16.06 Remove, measure, and replace door and window lights.
- 16.07 Replace screen on door and window frames.
- 16.08 Check and repair window-glaze seals.
- 16.09 Replace sash locks in windows.
- 16.10 Inspect and replace window operators and locks.
- 16.11 Check, repair, and install panic bars on doors.
- 16.12 Repair a window frame.

Florida Department of Education
STUDENT PERFORMANCE STANDARDS

Course Number: 8720360
Course Title: Building Maintenance Technology 6
Course Credit: 1

COURSE DESCRIPTION:

This course is designed to develop competencies in the repair and replacement of cabinets, roofs, and plumbing systems.

17.0 REPAIR AND REPLACE CABINETS--The student will be able to:

- 17.01 Identify the parts of a cabinet.
- 17.02 Identify the types of cabinet-door installation.
- 17.03 Identify the types of cabinet hardware.
- 17.04 Install cabinet hardware.
- 17.05 Describe cabinet-installation procedures.
- 17.06 Install cabinet shelving.
- 17.07 Replace or repair surface materials.

18.0 PREPARE AND APPLY FINISHES TO SURFACES--The student will be able to:

- 18.01 Erect an extension ladder and a scaffold.
- 18.02 Prepare the surfaces.
- 18.03 Apply finished coatings to surfaces with a roller, brush, and sprayer.

19.0 REPAIR ROOFS--The student will be able to:

- 19.01 Identify and explain different types of roofing systems and applications.
- 19.02 Check and repair asphalt shingles.
- 19.03 Check and repair roof gutters and downspouts.
- 19.04 Seal pipes and vents on roofs.
- 19.05 Check and repair:
 - a. Sheet metal roofs
 - b. Built-up roofs
 - c. Roof flashing

20.0 TROUBLESHOOT, REPAIR, AND REPLACE PLUMBING SYSTEMS--The student will be able to:

- 20.01 Troubleshoot, repair, and replace bathroom fixtures and hardware, such as:
 - a. Lavatory
 - b. Water closet
 - c. Urinal
 - d. Shower
 - e. Bathtub
 - f. Traps
 - g. Drain, waste, and vent (DWV) system
- 20.02 Troubleshoot, repair, and replace kitchen fixtures and hardware, such as sinks, garbage disposals, faucets, and hot-water-heater tanks.
- 20.03 Identify and explain various pipes and tubing used in the plumbing trade.
- 20.04 Test and inspect repaired or replaced plumbing systems.

**Florida Department of Education
STUDENT PERFORMANCE STANDARDS**

Course Number: 8720370
Course Title: Building Maintenance Technology 7
Course Credit: 1

COURSE DESCRIPTION:

This course is designed to provide students with a more in-depth knowledge of building maintenance technology and with competencies in the repair and replacement of electrical, heating, ventilation, and air-cooling (HVAC) systems; ground maintenance; and entrepreneurship.

- 21.0 TROUBLESHOOT, REPAIR, AND REPLACE ELECTRICAL SYSTEMS--The student will be able to:
- 21.01 Explain basic electrical theory.
 - 21.02 Explain branch circuit systems.
 - 21.03 Identify and explain ground fault circuit interrupter (GFCI) circuitry.
 - 21.04 Troubleshoot electrical systems, using testing and metering devices.
 - 21.05 Repair and replace electrical:
 - a. Outlets
 - b. Switches
 - c. Light fixtures
 - 21.06 Install and replace breakers and fuses.
 - 21.07 Identify types of wiring raceways.
 - 21.08 Replace hot-water-heater unit component parts.
 - 21.09 Wire a blower motor into an electrical supply.
 - 21.10 Test and inspect repaired or replaced electrical systems.
 - 21.11 Explain basic motor-control operation.
- 22.0 MAINTAIN, REPAIR, AND REPLACE HEATING, VENTILATION, AND AIR-COOLING (HVAC) SYSTEMS--The student will be able to:
- 22.01 Explain heating and cooling principles and code requirements.
 - 22.02 Describe methods of calculating heating and cooling loads.
 - 22.03 Explain the operation and types of the following heating methods: water, steam, forced air, gas, electrical components, and heat pumps.
 - 22.04 Troubleshoot and repair a circulation pump, zone valves, burners, pilot lights, and thermocouples in a heating system.
 - 22.05 Identify refrigerants.
 - 22.06 Determine a refrigerant level.
 - 22.07 Describe the proper procedures for descaling air-conditioner units.
 - 22.08 Troubleshoot, repair, and replace air filters, drive belts, and drain systems.
 - 22.09 Troubleshoot, repair, and replace control systems.
 - 22.10 Explain the computer monitoring system associated with heating, ventilation, and air-conditioning (HVAC) control systems and air-quality management.

- 23.0 PERFORM GROUND MAINTENANCE--The student will be able to:
- 23.01 Identify common pests.
 - 23.02 Explain basic irrigation theory and design.
 - 23.03 Provide plant, tree, and shrub care.
 - 23.04 Identify ground-maintenance equipment.
- 24.0 DEMONSTRATE AN UNDERSTANDING OF ENTREPRENEURSHIP--The student will be able to:
- 24.01 Define "entrepreneurship."
 - 24.02 Describe the importance of entrepreneurship to the American economy.
 - 24.03 List the advantages and disadvantages of business ownership.
 - 24.04 Identify the risks involved in the ownership of a business.
 - 24.05 Identify the personal characteristics of a successful entrepreneur.
 - 24.06 Identify the business skills needed to operate a small business efficiently and effectively.
 - 24.07 Describe the employer's responsibilities to support the business and industry.