

**Florida Department of Education
CURRICULUM FRAMEWORK**

Program Title: Boatbuilding - Wood and Fabricated
Occupational Area: Industrial Education

	<u>PSAV</u>	<u>Secondary</u>
Program Numbers	I480799	8721000
CIP Number	0648.079901	0648.079901
Grade Level	30, 31	9-12, 30, 31
Length	1350 hours	9 credits
Certification	CAB WOODWK @7G CARPENTRY @7G	CAB WOODWK @7G CARPENTRY @7G

MAJOR CONCEPTS/CONTENT: The purpose of this program is to prepare students for employment as shipfitters (89121705) and boat builders, (DOT 860.361-010).

The content includes, but is not limited to, communication skills, leadership skills, human relations and employability skills, safe and efficient work practices, fiberglass and marine working skills, mechanical systems, piping systems, electrical systems, and frame and form building. A program may be structured to emphasize either wood or fabricated boatbuilding but does not have to cover both areas comprehensively.

This program focuses on broad, transferable skills and stresses understanding and demonstration of the following elements of the Boatbuilding industry; planning, management, finance, technical and product skills, underlying principles of technology, labor issues, community issues and health, safety, and environmental issues.

- II. **LABORATORY ACTIVITIES:** Shop or laboratory activities are an integral part of this program and provide instruction in boat framing, mold building, fiberglass lamination and fabrication, millwork operations, installation of mechanical, electrical and piping systems, plug construction and finishing, painting and wooden boat repair.
- III. **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.

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 exit this program are:

Mathematics 8.0, Language 8.0, Reading 8.0. 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.

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.

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

The standard length of this program 1350 hours.

Listed below are the courses that comprise this program when offered at the secondary level:

OCP A

8721010 - Boatbuilding - Wood and Fabricated 1

8721020 - Boatbuilding - Wood and Fabricated 2

OCP B

8721030 - Boatbuilding - Wood and Fabricated 3

8721040 - Boatbuilding - Wood and Fabricated 4

OCP C

8721050 - Boatbuilding - Wood and Fabricated 5

OCP D

8721060 - Boatbuilding - Wood and Fabricated 6

OCP E

8721070 - Boatbuilding - Wood and Fabricated 7

OCP F

8721080 - Boatbuilding - Wood and Fabricated 8

8721090 - Boatbuilding - Wood and Fabricated 9

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

OCCUPATIONAL COMPLETION POINT - A

FIBERGLASS PLUG SPECIALIST (300 HOURS)

- 01.0 Apply trade-accepted terminology and safety.
- 02.0 Perform hand lamination operations
- 03.0 Demonstrate employability skills.
- 04.0 Perform plug construction operations.
- 05.0 Perform plug finishing operations.

OCCUPATIONAL COMPLETION POINT - B

FIBERGLASS TECHNICIAN (300 HOURS)

- 06.0 Construct molds.
- 07.0 Demonstrate appropriate math skills.
- 08.0 Repair fiberglass.
- 09.0 Repair gelcoat.
- 10.0 Demonstrate appropriate understanding of basic science.

OCCUPATIONAL COMPLETION POINT - C

FABRICATION SPECIALIST (150 HOURS)

- 11.0 Perform fiberglass fabrication operations.
- 12.0 Demonstrate appropriate communication skills.

OCCUPATIONAL COMPLETION POINT - D

WOODEN BOAT TECHNICIAN (150 HOURS)

- 13.0 Perform assembly woodworking operations.
- 14.0 Perform framing operations.
- 15.0 Perform millwork operations.
- 16.0 Perform trim operations

OCCUPATIONAL COMPLETION POINT - E

WOODEN BOAT SPECIALIST (150 HOURS)

- 17.0 Repair wooden boats.
- 18.0 Apply paint.

OCCUPATIONAL COMPLETION POINT - F

BOAT SYSTEMS SPECIALIST (300 HOURS)

- 19.0 Install mechanical systems.
- 20.0 Install piping systems.
- 21.0 Install wiring systems.
- 22.0 Service mechanical systems.
- 23.0 Service piping and wiring systems.
- 24.0 Demonstrate an understanding of entrepreneurship.

Florida Department of Education
STUDENT PERFORMANCE STANDARDS

Program Title: Boatbuilding - Wood and Fabricated
Secondary Number:
Postsecondary Number: I480799

OCCUPATIONAL COMPLETION POINT - A
BOAT BUILDING

01.0 APPLY TRADE ACCEPTED TERMINOLOGY AND SAFETY--The student will be able to:

- 01.01 Use curriculum modules.
- 01.02 Clarify career values.
- 01.03 Use work schedule and progress chart.
- 01.04 Use marine and technical terminology.
- 01.05 Apply shop safety rules.

02.0 PERFORM HAND LAMINATION--The student will be able to:

- 02.01 Identify tools, materials and precautions.
- 02.02 Lay up mat laminates.
- 02.03 Lay up woven laminates.
- 02.04 Lay up directional laminates.
- 02.05 Apply reinforced structural bonds.
- 02.06 Cut and grind laminates to specifications.

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

- 03.01 Conduct a job search.
- 03.02 Secure information about a job.
- 03.03 Identify documents, which may be required when applying for a job interview.
- 03.04 Complete a job application form correctly.
- 03.05 Demonstrate competence in job interview techniques.
- 03.06 Identify or demonstrate appropriate responses to criticism from employer, supervisor or other employees.
- 03.07 Identify acceptable work habits.
- 03.08 Demonstrate knowledge of how to make appropriate job changes.
- 03.09 Demonstrate acceptable employee health habits.
- 03.10 Demonstrate knowledge of the "Florida Right-To-Know Law" as recorded in Florida Statutes Chapter 442.

04.0 PERFORM PLUG CONSTRUCTION OPERATIONS--The student will be able to:

- 04.01 Identify components of line drawings.
- 04.02 Lay down lines from offsets.
- 04.03 Pick up body plan.
- 04.04 Construct patterns and frames.
- 04.05 Construct, fasten, and fair stringers.
- 04.06 Apply planking material.

05.0 PERFORM PLUG FINISHING OPERATIONS--The student will be able to:

- 05.01 Glaze and sheath plug.
- 05.02 Fill and prime plug.
- 05.03 Fair plug.

- 05.04 Prepare and apply finish coat.
- 05.05 Polish finish coat.
- 06.0 CONSTRUCT MOLDS--The student will be able to:
 - 06.01 Prepare plug for mold lamination.
 - 06.02 Gel and skin mold.
 - 06.03 Laminate mold.
 - 06.04 Brace and pull mold.
 - 06.05 Prepare mold for first use.
- 07.0 DEMONSTRATE APPROPRIATE MATH SKILLS--The student will be able to:
 - 07.01 Solve problems for volume, weight, area, circumference and perimeter measurements for rectangles, squares, and cylinders.
 - 07.02 Measure tolerance(s) on horizontal and vertical surfaces using millimeters, centimeters, feet and inches.
 - 07.03 Add, subtract, multiply and divide using fractions, decimals, and whole numbers.
 - 07.04 Determine the correct purchase price, to include sales tax for a materials list containing a minimum of six items.
 - 07.05 Demonstrate an understanding of federal, state and local taxes and their computation.
- 08.0 REPAIR FIBERGLASS--The student will be able to:
 - 08.01 Install point loads and stiffeners.
 - 08.02 Repair laminates.
 - 08.03 Renew bottom paint.
- 09.0 REPAIR GELCOAT--The student will be able to:
 - 09.01 Identify tools, materials and precautions.
 - 09.02 Sand and buff gelcoat.
 - 09.03 Repair gelcoat with putty.
 - 09.04 Repair gelcoat with spray equipment.
- 10.0 DEMONSTRATE APPROPRIATE UNDERSTANDING OF BASIC SCIENCE--The student will be able to:
 - 10.01 Understand molecular action as a result of temperature extremes, chemical reaction, and moisture content.
 - 10.02 Draw conclusions or make inferences from data.
 - 10.03 Identify health-related problems, which may result from exposure to work related chemicals and hazardous materials, and know the proper precautions required for handling such materials.
 - 10.04 Understand pressure measurement in terms of P.S.I., inches of mercury, and K.P.A.
- 11.0 PERFORM FIBERGLASS FABRICATION OPERATIONS--The student will be able to:
 - 11.01 Operate chop gun.
 - 11.02 Prepare and apply bonding putty.
 - 11.03 Identify and apply core materials.
 - 11.04 Fabricate parts by vacuum molding.
 - 11.05 Prepare mold for gelcoat.
 - 11.06 Operate gel gun.
 - 11.07 Pull parts.
 - 11.07 Repair molds.
 - 11.09 Maintain molds.

- 12.0 DEMONSTRATE APPROPRIATE COMMUNICATION SKILLS--The student will be able to:
- 12.01 Write logical and understandable statements, or phrases, to accurately fill out forms/invoices commonly used in business and industry.
 - 12.02 Read and understand graphs, charts, diagrams, and tables commonly used in this industry/occupation area.
 - 12.03 Read and follow written and oral instructions.
 - 12.04 Answer and ask questions coherently and concisely.
 - 12.05 Read critically by recognizing assumptions and implications and by evaluating ideas.
 - 12.06 Demonstrate appropriate telephone/communication skills.
- 13.0 PERFORM ASSEMBLY WOODWORKING OPERATIONS--The student will be able to:
- 13.01 Level hull and set up crossbeams.
 - 13.02 Fabricate and install sub-sole components.
 - 13.03 Fabricate and install sail.
 - 13.04 Construct router, shaper, and tracing patterns.
 - 13.05 Cut bulkheads from patterns.
 - 13.06 Construct straight moldings and posts.
 - 13.07 Construct turned corner moldings and posts.
 - 13.08 Construct solid and laminated curved moldings.
- 14.0 PERFORM FRAMING OPERATIONS--The student will be able to:
- 14.01 Use frame plans and tools.
 - 14.02 Layout dimensions from plans.
 - 14.03 Fit bulkheads.
 - 14.04 Fit faces and tops.
- 15.0 PERFORM MILLWORK OPERATIONS--The student will be able to:
- 15.01 Operate router and shaper.
 - 15.02 Operate table saw and radial arm saw.
 - 15.03 Fabricate cabinetry from plans.
 - 15.04 Apply plastic laminates to cabinetry.
 - 15.05 Operate jointer and surface planer.
 - 15.06 Operate band saw.
- 16.0 PERFORM TRIM OPERATIONS--The student will be able to:
- 16.01 Identify tools and precautions.
 - 16.02 Identify and apply flat trim moldings.
 - 16.03 Identify and apply cap and corner moldings.
 - 16.04 Hang compartment door.
 - 16.05 Install hull-side paneling.
 - 16.06 Install cabinet doors and drawers.
- 17.0 REPAIR WOODEN BOATS--The student will be able to:
- 17.01 Identify wooden boat construction types.
 - 17.02 Repair plank-on-frame construction.
 - 17.03 Use epoxy resin in restoration/repair.
 - 17.04 Maintain wooden boats.

- 18.0 APPLY PAINT--The student will be able to:
 - 18.01 Identify materials and precautions.
 - 18.02 Repair/prepare surface.
 - 18.03 Apply and prepare primer.
 - 18.04 Apply masking and pull tapes.
 - 18.05 Apply paint with spray equipment.

- 19.0 INSTALL MECHANICAL SYSTEMS--The student will be able to:
 - 19.01 Identify tools and precautions.
 - 19.02 Fabricate and install machinery foundations.
 - 19.03 Install engine and shaft line.
 - 19.04 Install mechanical and hydraulic steering.
 - 19.05 Install deck hardware.

- 20.0 INSTALL PIPING SYSTEMS--The student will be able to:
 - 20.01 Identify tools, materials, and precautions.
 - 20.02 Install through-hull devices.
 - 20.03 Install bilge pump.
 - 20.04 Install tank supports and tank.
 - 20.05 Install hand pump water system.
 - 20.06 Install pressurized water system.
 - 20.07 Install PVC-slip drain system.
 - 20.08 Install engine cooling and exhaust.
 - 20.09 Install fuel systems.

- 21.0 INSTALL WIRING SYSTEMS--The student will be able to:
 - 21.01 Identify tools, materials, and precautions.
 - 21.02 Install batteries.
 - 21.03 Select DC conductor size.
 - 21.04 Install DC service equipment.
 - 21.05 Install DC lighting and motor circuits.
 - 21.06 Install starting and charging circuits.
 - 21.07 Install bonding and cathodic protection.
 - 21.08 Install AC service equipment.
 - 21.09 Install AC lighting and receptacle circuits.
 - 21.10 Install on-board generator.

- 22.0 SERVICE MECHANICAL SYSTEMS--The student will be able to:
 - 22.01 Perform routine engine service.
 - 22.02 Maintain hydraulic steering systems.
 - 22.03 Repair and maintain mechanical steering.
 - 22.04 Inspect mast, boom, and rigging.
 - 22.05 Repair rigging.

- 23.0 SERVICE PIPING AND WIRING SYSTEMS--The student will be able to:
 - 23.01 Maintain and repair portable water systems.
 - 23.02 Maintain and repair fuel systems.
 - 23.03 Install and maintain sewage systems.
 - 23.04 Troubleshoot DC systems.
 - 23.05 Troubleshoot AC systems.

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 ownership of a business.

24.05 Identify the necessary personal characteristics of a successful entrepreneur.

24.06 Identify the business skills needed to operate a small business efficiently and effectively.

**Florida Department of Education
STUDENT PERFORMANCE STANDARDS**

Course Number: 8721010
Course Title: Boatbuilding - Wood and Fabricated 1
Course Credit: 1

COURSE DESCRIPTION:

This course is designed to provide an introduction of the related trade terminology, safety rules and regulation, communication and employability skills.

OCCUPATIONAL COMPLETION POINT - A

BOAT BUILDING

- 01.0 APPLY TRADE ACCEPTED TERMINOLOGY AND SAFETY--The student will be able to:
- 01.01 Use curriculum modules.
 - 01.02 Clarify career values.
 - 01.03 Use work schedule and progress chart.
 - 01.04 Use marine and technical terminology.
 - 01.05 Apply shop safety rules.
- 02.0 PERFORM HAND LAMINATION--The student will be able to:
- 02.01 Identify tools, materials and precautions.
 - 02.02 Lay up mat laminates.
 - 02.03 Lay up woven laminates.
 - 02.04 Lay up directional laminates.
 - 02.05 Apply reinforced structural bonds.
 - 02.06 Cut and grind laminates to specifications.
- 03.0 DEMONSTRATE EMPLOYABILITY SKILLS--The student will be able to:
- 03.01 Conduct a job search.
 - 03.02 Secure information about a job.
 - 03.03 Identify documents, which may be required when applying for a job interview.
 - 03.04 Complete a job application form correctly.
 - 03.05 Demonstrate competence in job interview techniques.
 - 03.06 Identify or demonstrate appropriate responses to criticism from employer, supervisor or other employees.
 - 03.07 Identify acceptable work habits.
 - 03.08 Demonstrate knowledge of how to make appropriate job changes.
 - 03.09 Demonstrate acceptable employee health habits.
 - 03.10 Demonstrate knowledge of the "Florida Right-To-Know Law" as recorded in Florida Statutes Chapter 442.

July 2001

Florida Department of Education
STUDENT PERFORMANCE STANDARDS

Course Number: 8721020
Course Title: Boatbuilding - Wood and Fabricated 2
Course Credit: 1

COURSE DESCRIPTION:

This course is designed to provide instruction in Plug construction operations and plug finishing.

04.0 PERFORM PLUG CONSTRUCTION OPERATIONS--The student will be able to:

- 04.01 Identify components of line drawings.
- 04.02 Lay down lines from offsets.
- 04.03 Pick up body plan.
- 04.04 Construct patterns and frames.
- 04.05 Construct, fasten, and fair stringers.
- 04.06 Apply planking material.

05.0 PERFORM PLUG FINISHING OPERATIONS--The student will be able to:

- 05.01 Glaze and sheath plug.
- 05.02 Fill and prime plug.
- 05.03 Fair plug.
- 05.04 Prepare and apply finish coat.
- 05.05 Polish finish coat.

July 2001

Florida Department of Education
STUDENT PERFORMANCE STANDARDS

Course Number: 8721030
Course Title: Boatbuilding - Wood and Fabricated 3
Course Credit: 1

COURSE DESCRIPTION:

This course is designed to provide instruction in the techniques of constructing and using a mold for fiberglass fabrication.

06.0 CONSTRUCT MOLDS--The student will be able to:

- 06.01 Prepare plug for mold lamination.
- 06.02 Gel and skin mold.
- 06.03 Laminate mold.
- 06.04 Brace and pull mold.
- 06.05 Prepare mold for first use.

07.0 DEMONSTRATE APPROPRIATE MATH SKILLS--The student will be able to:

- 07.01 Solve problems for volume, weight, area, circumference and perimeter measurements for rectangles, squares, and cylinders.
- 07.02 Measure tolerance(s) on horizontal and vertical surfaces using millimeters, centimeters, feet and inches.
- 07.03 Add, subtract, multiply and divide using fractions, decimals, and whole numbers.
- 07.04 Determine the correct purchase price, to include sales tax for a materials list containing a minimum of six items.
- 07.05 Demonstrate an understanding of federal, state and local taxes and their computation.

July 2001

Florida Department of Education
STUDENT PERFORMANCE STANDARDS

Course Number: 8721040
Course Title: Boatbuilding - Wood and Fabricated 4
Course Credit: 1

COURSE DESCRIPTION:

This course is designed to provide instruction in the repair of fiberglass and gelcoats and the basic science underlying the process.

08.0 REPAIR FIBERGLASS--The student will be able to:

- 08.01 Install point loads and stiffeners.
- 08.02 Repair laminates.
- 08.03 Renew bottom paint.

09.0 REPAIR GELCOAT--The student will be able to:

- 09.01 Identify tools, materials and precautions.
- 09.02 Sand and buff gelcoat.
- 09.03 Repair gelcoat with putty.
- 09.04 Repair gelcoat with spray equipment.

10.0 DEMONSTRATE APPROPRIATE UNDERSTANDING OF BASIC SCIENCE--The student will be able to:

- 10.01 Understand molecular action as a result of temperature extremes, chemical reaction, and moisture content.
- 10.02 Draw conclusions or make inferences from data.
- 10.03 Identify health related problems which may result from exposure to work related chemicals and hazardous materials, and know the proper precautions required for handling such materials.
- 10.04 Understand pressure measurement in terms of P.S.I., inches of mercury, and K.P.A.

July 2001

Florida Department of Education
STUDENT PERFORMANCE STANDARDS

Course Number: 8721050
Course Title: Boatbuilding - Wood and Fabricated 5
Course Credit: 1

COURSE DESCRIPTION:

This course is designed to provide instruction in fiberglass fabrication operations and communication skills.

11.0 PERFORM FIBERGLASS FABRICATION OPERATIONS--The student will be able to:

- 11.01 Operate chop gun.
- 11.02 Prepare and apply bonding putty.
- 11.03 Identify and apply core materials.
- 11.04 Fabricate parts by vacuum molding.
- 11.05 Prepare mold for gelcoat.
- 11.06 Operate gel gun.
- 11.07 Pull parts.
- 11.07 Repair molds.
- 11.09 Maintain molds.

12.0 DEMONSTRATE APPROPRIATE COMMUNICATION SKILLS--The student will be able to:

- 12.01 Write logical and understandable statements, or phrases, to accurately fill out forms/invoices commonly used in business and industry.
- 12.02 Read and understand graphs, charts, diagrams, and tables commonly used in this industry/occupation area.
- 12.03 Read and follow written and oral instructions.
- 12.04 Answer and ask questions coherently and concisely.
- 12.05 Read critically by recognizing assumptions and implications and by evaluating ideas.
- 12.06 Demonstrate appropriate telephone/communication skills.

July 2001

Florida Department of Education
STUDENT PERFORMANCE STANDARDS

Course Number: 8721060
Course Title: Boatbuilding - Wood and Fabricated 6
Course Credit: 1

COURSE DESCRIPTION:

This course is designed to provide instruction in the tools methods and techniques of boat maintenance repairing of gelcoat, fiberglass wood and metal boat repair.

13.0 PERFORM ASSEMBLY WOODWORKING OPERATIONS--The student will be able to:

- 13.01 Level hull and set up crossbeams.
- 13.02 Fabricate and install sub-sole components.
- 13.03 Fabricate and install sail.
- 13.04 Construct router, shaper, and tracing patterns.
- 13.05 Cut bulkheads from patterns.
- 13.06 Construct straight moldings and posts.
- 13.07 Construct turned corner moldings and posts.
- 13.08 Construct solid and laminated curved moldings.

14.0 PERFORM FRAMING OPERATIONS--The student will be able to:

- 14.01 Use frame plans and tools.
- 14.02 Layout dimensions from plans.
- 14.03 Fit bulkheads.
- 14.04 Fit faces and tops.

15.0 PERFORM MILLWORK OPERATIONS--The student will be able to:

- 15.01 Operate router and shaper.
- 15.02 Operate table saw and radial arm saw.
- 15.03 Fabricate cabinetry from plans.
- 15.04 Apply plastic laminates to cabinetry.
- 15.05 Operate jointer and surface planer.
- 15.06 Operate band saw.

16.0 PERFORM TRIM OPERATIONS--The student will be able to:

- 16.01 Identify tools and precautions.
- 16.02 Identify and apply flat trim moldings.
- 16.03 Identify and apply cap and corner moldings.
- 16.04 Hang compartment door.
- 16.05 Install hull-side paneling.
- 16.06 Install cabinet doors and drawers.
- 16.04 Determine the correct purchase price, to include sales tax for a materials list containing a minimum of six items.
- 16.05 Demonstrate an understanding of federal, state and local taxes and their computation.

Florida Department of Education
STUDENT PERFORMANCE STANDARDS

Course Number: 8721070
Course Title: Boatbuilding - Wood and Fabricated 7
Course Credit: 1

COURSE DESCRIPTION:

This course is designed to provide instruction in the tools methods and techniques of boat maintenance repairing of wooden boats, fiberglass wood and metal boat repair.

17.0 REPAIR WOODEN BOATS--The student will be able to:

- 17.01 Identify wooden boat construction types.
- 17.02 Repair plank-on-frame construction.
- 17.03 Use epoxy resin in restoration/repair.
- 17.04 Maintain wooden boats.

18.0 APPLY PAINT--The student will be able to:

- 18.01 Identify materials and precautions.
- 18.02 Repair/prepare surface.
- 18.03 Apply and prepare primer.
- 18.04 Apply masking and pull tapes.
- 18.05 Apply paint with spray equipment.

Florida Department of Education
STUDENT PERFORMANCE STANDARDS

Course Number: 8721080
Course Title: Boatbuilding - Wood and Fabricated 8
Course Credit: 1

COURSE DESCRIPTION:

This course is designed to provide instruction in the tools, methods and techniques to install mechanical systems, piping systems and wiring

19.0 INSTALL MECHANICAL SYSTEMS--The student will be able to:

- 19.01 Identify tools and precautions.
- 19.02 Fabricate and install machinery foundations.
- 19.03 Install engine and shaft line.
- 19.04 Install mechanical and hydraulic steering.
- 19.05 Install deck hardware.

20.0 INSTALL PIPING SYSTEMS--The student will be able to:

- 20.01 Identify tools, materials, and precautions.
- 20.02 Install through-hull devices.
- 20.03 Install bilge pump.
- 20.04 Install tank supports and tank.
- 20.05 Install hand pump water system.
- 20.06 Install pressurized water system.
- 20.07 Install PVC-slip drain system.
- 20.08 Install engine cooling and exhaust.
- 20.09 Install fuel systems.

21.0 INSTALL WIRING SYSTEMS--The student will be able to:

- 21.01 Identify tools, materials, and precautions.
- 21.02 Install batteries.
- 21.03 Select DC conductor size.
- 21.04 Install DC service equipment.
- 21.05 Install DC lighting and motor circuits.
- 21.06 Install starting and charging circuits.
- 21.07 Install bonding and cathodic protection.
- 21.08 Install AC service equipment.
- 21.09 Install AC lighting and receptacle circuits.
- 21.10 Install on-board generator.

Florida Department of Education
STUDENT PERFORMANCE STANDARDS

Course Number: 8721090
Course Title: Boatbuilding - Wood and Fabricated 9
Course Credit: 1

COURSE DESCRIPTION:

This course is designed to provide instruction in the tools, methods and techniques of boat maintenance servicing mechanical systems, piping and wiring systems and an understanding of entrepreneurship.

22.0 SERVICE MECHANICAL SYSTEMS--The student will be able to:

- 22.01 Perform routine engine service.
- 22.02 Maintain hydraulic steering systems.
- 22.03 Repair and maintain mechanical steering.
- 22.04 Inspect mast, boom, and rigging.
- 22.05 Repair rigging.

23.0 SERVICE PIPING AND WIRING SYSTEMS--The student will be able to:

- 23.01 Maintain and repair portable water systems.
- 23.02 Maintain and repair fuel systems.
- 23.03 Install and maintain sewage systems.
- 23.04 Troubleshoot DC systems.
- 23.05 Troubleshoot AC systems.

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 ownership of a business.
- 24.05 Identify the necessary personal characteristics of a successful entrepreneur.
- 24.06 Identify the business skills needed to operate a small business efficiently and effectively.