MARINE SERVICE TECHNOLOGIES

MASTER PLAN OF INSTRUCTION 2020 - 2021

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MISSION

The mission of Fort Myers Technical College is to provide high quality career and technical training, in order to prepare students for current and emerging industries, delivered by a professional and caring staff in a positive learning environment.

The School District of Lee County does not discriminate on the basis of gender, race, color, age, religion, sex, sexual orientation, national or ethnic origin, marital status, or disability in the provision of educational programs, activities or employment policies as required by Title IX, Title VI, Title VII, Age Discrimination Act of 1967 and Section 504 of the Rehabilitation Act of 1973, 1992, Americans with Disabilities Act, the Florida Educational Equity Act of 1984 and the Boy Scouts of America Equal Access Act.. Questions, complaints, or requests for additional information regarding discrimination or harassment may be sent to: Equity Coordinator, Fort Myers Technical College, 3800 Michigan Ave., Fort Myers, FL 33916, (239) 334-4544.

Lack of English language skills will not be a barrier to admission and participation. The district may assess each student's ability to benefit from specific programs through placement tests and counseling, and, if necessary, will provide services or referrals to better prepare students for successful participation.

FMTC
FORT MYERS TECHNICAL COLLEGE

Fort Myers Technical College
3800 Michigan Avenue
Fort Myers, FL 33916
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THE SCHOOL DISTRICT OF LEE COUNTY

Marine Service Technologies

INTRODUCTION

The Marine Service Technologies program provides the student with the opportunity to learn the skills and techniques of marine service along with laboratory practices, information, related technology, and correct terminology necessary to become gainfully employed in the marine service field. The Marine Service Technologies program is 1350 hours and trains individuals to attain an entry-level position in the marine service industry. The program covers a broad range of instruction that will give an entry-level marine service technician a good foundation for a long career in the marine service industry.

PROGRAM MISSION

The mission of the Marine Service Technologies program is to prepare students for employment in the marine service technology field; to focus on student and industry needs; to maintain constantly updated technologies by the instructor and program advisory committee to keep current with technological changes; and to deliver this training in a professional and positive learning environment.

PROGRAM PHILOSOPHY

The Marine Service Technologies program is based on the following beliefs:

- Education is a continuing process lifelong process.
- Continuing education for occupational competence must be included in the educational process for today's workforce.
- We must strive to provide the most up to date and continuous program and curriculum revisions, based on input from industry leaders, employers, advisory committee members, concerned citizens, students, and school personnel.
- We must incorporate innovative teaching methods that prepare students to meet industry standards.
- We must use careful assessment of abilities and interests so that all students may formulate realistic occupational goals.
- Students' success can almost be guaranteed when they accept responsibility for their own learning; when instruction is relevant, challenging, and interesting; and when students can see regular evidence of their progress.
- It is realistic to assume that occupational education is a choice based on individual interests and gives meaning through application to the basics in the educational experience. This will enhance student retention through interest in meaningful learning. All persons have individual worth and a right to reach their fullest potential.

PROGRAM CONTENT

Marine Service Technologies simulates the world of work by presenting a program which enables individuals to develop occupational skills, positive attitudes, and effective work habits which will contribute to successful employment. The content of the program includes but is not limited to:

- The theory and operation of the 2-stroke and the 4-stroke engines
- Electrical ignition systems, as well as the safe and efficient work practices in the exploration of all functions of the marine power plants.
- Students will have an opportunity for multiple "hands-on" laboratory experiences including troubleshooting and repair of power heads, fuel systems, ignition and electrical systems and accessories.

This program is a planned sequence of instruction consisting of six occupational completion points (OCP). OCPs provide a student with early completion training options linked to employment opportunities established by the Florida Department of Education based on the Standard Occupational Classification (SOC) system and accepted industry titles.

ESSENTIAL TRAINING TASKS

Physical requirements

Must have the ability to;

- Demonstrate high degree of manual and physical dexterity
- Lift at least 50 pounds and move
- Reach above shoulder level
- Grip, stoop, kneel, crouch, bend, crawl, and climb
- Use voice, hearing, and sight effectively to perform jobs in the marine field
- Stand for long periods of time
- Work with chemicals
- Tolerate exposure to dust and/or odors
- Handle supplies
- Use depth perception
- Work in an atmosphere of loud noise
- Work in an atmosphere of changes in temperature
- Perform repetitive tasks

Cognitive requirements

Must have the ability to;

- Interpret a variety of instructions furnished in written, oral, and diagrammatic form
- Perform mathematical computations
- Read and understand computer and related equipment
- Measure accurately
- Differentiate colors
- Work in close or crowded areas
- Collaborate and communicate well with others
- Concentrate
- Demonstrate a high degree of patience
- Cope with high levels of stress
- Handle confrontation and frustration and assist in problem resolution
- Make fast decisions under pressure
- Demonstrate high degree of mental and emotional flexibility
- Perform, prioritize, and complete multiple tasks of relative complexity simultaneously
- Work accurately and effectively without close, direct supervision

ACCOMMODATIONS

Federal and state legislation requires the provision of accommodations for students with disabilities as identified on the secondary student's IEP or 504 plan or post-secondary student's accommodations plan to meet individual needs to ensure equal access. Post-secondary students with disabilities must self-identify, present documentation, required accommodations if needed, and develop a plan with their post-secondary service provider. Accommodations received in post-secondary education may differ from those received in secondary education. Accommodations change the way the student is instructed. 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 services provided are maintained in a confidential file.

TUITION

Tuition is charged for adult students at a reasonable rate that may vary slightly from year to year and is due prior to the first day of each semester. Current fee information is available from Student Services. Tuition is waived for eligible high school dual-enrolled students. Failure to pay all fees due at the time class begins will result in the student not being able to attend class and/or clinical.

CLASS SCHEDULE

Daytime certificated classes meet Monday through Friday from 8:00 A.M. until 2:30 P.M. This amounts to 30 hours of classroom instruction per week. Lunch breaks are 30 minutes in length.

ATTENDANCE POLICY

In an effort to develop appropriate employability skills, FMTC students are expected to attend all class sessions. As is expected in the workplace, when it is necessary to be absent due to illness or emergency situations, all students are to notify the instructor on or before the date of absence. The student attendance policy for each post-secondary program is consistent with industry standards.

Campus attendance is kept via a computerized system. It is the responsibility of the student to **log in** and **out** in order to receive credit for class time. This allows the school to keep accurate attendance records for the actual number of hours and minutes attended.

All adult students are expected to be in attendance at least 90% of their scheduled hours during each semester. Adult students failing to maintain the 90% attendance standard may not be permitted to continue in their program and may be required to sit out one full semester, unless administration approves to waive the 90% standard based on special circumstances.

Absences

A student who is absent for 6 consecutive class sessions, without prior approval and without contact with the instructor, will be withdrawn from enrollment in his/her program. A student withdrawn for absenteeism must petition administration to return. Students exhibiting a pattern of consecutive absences of 4 days may be subject to dismissal as determined by a School Intervention Team. School Intervention Team meetings will be held as necessary to attempt to alleviate issues resulting in excessive absences and to counsel the student of possible alternatives and consequences.

Students who are late for class, including returning late from lunch, must clock in. Students who leave school early must notify their instructor and clock out. This time out of class is recorded as time absent and is counted against the required 90% attendance. Excessive tardies or early departures will be reported to the Student Affairs Specialist and will result in a meeting with the School Intervention Team.

Adult students who know they will be out of school for an extended period of time (4 days or longer) may apply for a Leave of Absence from their program. A Leave of Absence will be granted only once during a twelve-month period. STUDENTS WHO EXERCISE A LEAVE OF ABSENCE MAY HAVE TO EXTEND THEIR TIME IN THEIR PROGRAM AND PAY ADDITIONAL FEES.

Leaving Campus During School Hours

Students must notify their instructor when leaving campus early. This is for the safety of students, to accurately track time, and to allow the instructor to best utilize instructional resources.

PLAN OF INSTRUCTIONAL PRACTICES

Teaching Methods

Marine Service Technologies simulates the world of work by presenting a program which enables individuals to develop occupational skills, positive attitudes, and effective work habits which will contribute

to successful employment. Students are challenged in the safe use of tools and technologies related directly to the field of marine service and the Florida Department of Education Curriculum Framework competencies for Marine Service Technologies.

Safety
Safety is paramount. Students are taught the safe and proper use of power tools, hand tools, small fork lift operation, and fire extinguisher operation, as well as the safe operation of marine equipment on and off the water.

Evaluation
Class performance, quizzes, tests, attendance, portfolio assessments, completion of project assignments, decision-making, work habits, achievement of entry-level competencies, and other methods are used for evaluation.

Work-Based Activities
Work-based learning activities play an integral part of the curriculum of FMTC's career-technical training programs. These activities are planned with two objectives in mind. First, the activity provides students with the opportunity to develop and apply 'real world' experience using the knowledge and skills attained in the program. Second, the activity provides the instructor with objective input from potential employers or customers of program graduates. Each work-based activity has a written instructional plan outlining objectives, experiences, competencies, and evaluation required during the activity.

Work-based activities are program specific and may include:

- Unpaid in-school shop activities to provide customer service opportunities under the direct supervision of the program instructor.
- Unpaid job shadowing experiences that may include in-school or off-campus employer-based experiences under the supervision of a qualified employer representative who is working closely with the program instructor.
- Paid or unpaid cooperative training experiences conducted at the employer's work location under the supervision of a qualified employer representative and under the direction of the program instructor.

Cooperative Education

Cooperative training is available for students and coordinated by the instructor and career specialist. Cooperative training is for students who have shown competence in program training that indicates readiness for placement in an on-the-job program. High school students participating in the cooperative job placement program must be in the 12th grade. To be eligible for a cooperative education experience, students must have completed one-half of the required program hours and requirements.

Students may be returned to the program for additional training if they do not function satisfactorily on the job or when the cooperative agreement is terminated at the request of the student, parent, employer, or program instructor. Veterans will be accepted into the program in accordance with the Department of Veterans Affairs approved program.

Additional information regarding cooperative opportunities may be obtained from the program instructor or career specialist.

Job Shadowing

Job shadowing experiences, or volunteer experiences, are available to students as part of their program training. These experiences are designed to give the student actual hands-on experience doing a variety of related tasks. Length and type of experiences will vary. The program instructor determines appropriateness of the experience. Additional information regarding job-shadowing experiences may be obtained from the program instructor or career specialist.

GRADING PROCEDURE

Teacher Grading Procedure:

Session grades are compiled from 4 areas of learning:

1. Employability Skills - 20% of total grade - based on a points system.
2. Lab – 20% of total grade - grades assessed by prompt completion and accuracy.
3. Performance – 20% of total grade - behavior in the lab showing evidence of classroom learning i.e., safe conduct, orderly work areas and procedures, use of proper tools and service publications.
4. Written Tests – 40% of total grade - results in percentages.

County Grading Policy:

All student work will be taken into consideration when determining student grades. Oral and written tests, group discussions, written work, checklists, homework, and student projects are all representative means which may be used to determine student grades.

The grading scale for the county is:

A 90-100
B 80-89
C 70-79
D 60-69
F 0-59

Fort Myers Technical College is a post-secondary institute designed to provide trained individuals to industry. The approved post-secondary program grading requirements must be met if the student is to receive a certificate.

Program Progress

Students are required to complete the program of training within the hours allotted by the state of Florida for completion. Progress must be at a rate that will allow completion of the program with the number of membership hours stated in the Curriculum Frameworks.

Failure to progress at this rate will require the student to meet with the program instructor, career specialist, and an administrator in order to identify an appropriate completion point or to assist the student in selecting a more appropriate training program.

Work Habits

Effective work habits are the cornerstone to successful employment. Students are expected to demonstrate productive work habits during all phases of enrollment. Instructors will work with students who need assistance in this area to improve the overall possibility for successful employment.

Attendance: Attends class, arrives/leaves on time; begins and ends work as expected.
Character: Displays loyalty, honesty, trustworthiness, dependability, reliability, initiative, self-discipline, and self-responsibility; displays a high level of effort and commitment to performing and completing work.

Teamwork: Respects the right of others; respects confidentiality; is cooperative; is assertive; displays a customer service attitude; seeks opportunities for continuous learning; demonstrates mannerly behavior; encourages and facilitates cooperation, pride, trust, and group identity; fosters commitment and team spirit.
Appearance: Displays appropriate dress, grooming, hygiene, and etiquette; wears full regulation uniform.
Attitude: Displays a willingness to cooperate and accept constructive criticism; sets realistic expectations; approaches assignments with interest.
Productivity: Is prepared for class by reading assignments and completing homework; contributes to class discussions; and involvement in lab activities (in other words, no sleeping or daydreaming). Follows safety practices; conserves and maintains equipment and supplies; keeps work area neat and clean; follows directions and procedures; makes up assignments and tests punctually; notifies proper authorities of situations presenting potential safety hazards; does not use or knowingly permits others to use tools and equipment improperly; stays on task and utilizes time constructively.
Organization: Manifests skill in prioritizing and management of time and stress; demonstrates flexibility in adapting to changes.
Communication: Communicates accurate information to others in a professional and courteous manner; displays appropriate nonverbal (eye contact, body language) and oral (listening, telephone etiquette, grammar) skills; asks pertinent questions; listens attentively to others, notifies instructor in advance of absences or tardies.

SATISFACTORY ACADEMIC PROGRESS

In order to receive and continue to receive financial assistance of any type, a student must maintain satisfactory academic progress. The Financial Aid Advisor will require a progress report to be completed by the student's instructor and submitted to the Financial Aid Office prior to each disbursement.

Students are considered to be making Satisfactory Academic Progress (SAP) if they successfully complete their scheduled clock hours, achieve a specific cumulative grade evaluation or grade point average (GPA), and do not exceed the maximum time limits to complete their course of study. Each Student Academic Progress will be checked at 450 clock hours and prior to subsequent disbursements for students enrolled in programs one academic year or greater. Progress will be checked at the half-way point for programs less than one academic year. No SAP is required prior to the first disbursement.

REQUIREMENTS FOR A CERTIFICATE

All competencies specified in the Curriculum Frameworks for the program must be successfully completed. Successful completion is at least a 75% average in the areas of skills, knowledge, and work habits.

Proficiency in the competency standards listed in the Master Plan of Instruction must be demonstrated.

Students must meet minimum T.A.B.E. skill requirements (or qualify for an exemption) prior to graduation.

In addition to the requirements above, the recommendation of the instructor for certification includes: consideration of personal appearance, willingness to learn and to work, punctuality, cooperative attitude, and appropriate work habits.

Students, who exit the program early and have successfully completed each course or the competencies of an Occupational Completion Point (OCP), will be issued a partial certificate. This certificate does not require a student to master the state-mandated basic skills level.

MARINE SERVICE TECHNOLOGIES STUDENT DRESS CODE

Students who attend FMTC shall dress in a manner appropriate for the job in which they are receiving training, including any special protective gear and professional uniforms. All clothing must be neither distracting nor offensive and be clean, neat, modest, in good repair, and appropriately sized.

Administration has the final authority for determining whether or not a student's apparel conforms to the dress code. When it is determined that it does not, students will be required to change into clothing which will conform to this code or leave campus. Students may return to campus when they have changed into appropriate clothing.

Program designated uniform: collared dark blue shirts (tucked into pants at the waist), dark blue work pants (no jeans) and safety shoes – athletic style (composite toe, ok – NO WORK BOOTS.

Program shirt: A program shirt ("It's a Marine Tech's World") is available for $50.00 only to students who successfully complete the first part of the Marine Service Technologies program. This shirt is worn on Fridays and for special events (field trips, boat shows, etc.).

JOB DESCRIPTIONS

All students participating in the Marine Service Technologies program are expected to be full program completers within the 1350 hour time frame. The following is a brief description of the skills each student can expect to carry into the workforce.

OCP A Marine Rigger (300 Hours)
Students completing the competencies in OCP A will likely be able to obtain entry-level employment as an assistant rigger at marine facilities in the rigging department, delivering new boats, motors, trailers, and other marine related equipment to new owners.

OCP B Outboard Engine Technician (300 Hours)
Students completing the competencies in OCP B will be qualified to assist marine service technicians in servicing small outboard engines. Gain entry-level employment as a marine technician or marine rigger.

OCP C Outboard Diagnostics Technician (150 Hours)
Students completing the competencies in OCP C will be able to work in a marine service department doing general outboard maintenance on all makes and sizes of two and four stroke outboard propulsion units and assist in the diagnostics of marine electrical systems.

OCP D Inboard Gas Engine Technician (300 Hours)
Students completing the competencies in OCP D will be qualified to assist marine sterndrive technicians doing general sterndrive maintenance on all makes and sizes of four stroke sterndrive propulsion units and assist in the diagnostics of marine electrical systems.

OCP E Drive Train Technician (150 Hours)
Students completing the competencies in OCP E will be qualified to assist marine inboard technicians doing general inboard maintenance on all makes and sizes of inboard propulsion units and assist in the diagnostics of marine electrical systems.

OCP F Inboard Diesel Technician (150 Hours)
Students completing the competencies in OCP F will be qualified to assist marine diesel technicians doing general diesel engine maintenance on all makes and sizes of diesel propulsion units and assist in the diagnostics of marine electrical systems.

TEXTBOOKS

For the most recent book list for the Marine Service Technologies program, visit FMTC's online bookstore – www.fmtcshop.com.

REQUIRED MATERIALS

Mechanical pencil	Wire striping/crimping/splicing tools	Adjustable wrench set
Black Sharpie	Flexible claw pick up tool	Tool tote
Black pens	Multimeter (auto-ranging with amp clam preferred)	Tape Measure
Three-ring folder	Flat/Philips screwdriver set	Mercruiser hinge pin tool
Spark Plug Gaper	Pliers set incl. side cutters, needle nose, slip joint	Set Feeler Gauges, standard and metric
Standard and Metric combination wrench set	3/8 Drive standard and metric socket/ratchet/extension kit, deep and shallow	Ball Peen Hammers 10 ounce & 32 ounce
¼ Drive standard and metric socket/ratchet/extension kit, deep and shallow	3/8 Swivel Spark Plug Sockets 5/8” and 13/16"	½ Drive standard socket/ratchet/extension kit, deep and shallow
Universal swivel adapter1/4”, 3/8”, 1/2”	Tire pressure gauge	Air chuck
Starter button	Flashlight	Hex key std. & metric
Compression tester gauge set	Pry bar	O-ring picks
Cordless drill or impact driver	Wire brush	Stevens spark checker
Punch and chisel set	Spark plug boot pliers	Plastic tip hammer
3/8 torque wrench 20-150 ft. lbs.	Safety Glasses – 2 pair	Gasket scraper

PROGRAM OBJECTIVES

See the attached Florida Department of Education Curriculum Frameworks for program objectives and competencies.

Florida Department of Education
Curriculum Framework

Program Title: **Marine Service Technologies**
Program Type: **Career Preparatory**
Career Cluster: **Transportation, Distribution and Logistics**

PSAV – Career Preparatory	
Program Number	T400210
CIP Number	0647061611
Grade Level	30,31
Standard Length	1350
Teacher Certification	DIESEL MECH @7 7G GASENG RPR @7 7G
CTSO	SkillsUSA
SOC Codes (all applicable)	49-3051 – Motorboat Mechanics and Service Technicians
CTE Program Resources	http://www.fldoe.org/academics/career-adult-edu/career-tech-edu/program-resources.stml
Basic Skills Level	Mathematics: 9 Language: 9 Reading: 9

Purpose

This program offers a sequence of courses that provides coherent and rigorous content aligned with challenging academic standards and relevant technical knowledge and skills needed to prepare for further education and careers in the Transportation, Distribution and Logistics career cluster; provides technical skill proficiency, and includes competency-based applied learning that contributes to the academic knowledge, higher-order reasoning and problem-solving skills, work attitudes, general employability skills, technical skills, and occupation-specific skills, and knowledge of all aspects of the Transportation, Distribution and Logistics career cluster.
The content includes but is not limited to the following: service, repair and overhaul of four-stroke and two-stroke cycle engines and outboard motors; and service and repair of boating accessories. With regard to the above, course content will include electrical systems, fuel systems, power transfer systems, ignition systems, cooling systems, lubrication systems, drive systems and boat and trailer rigging.

The course content should also include training in communication, leadership, human relations and employability skills; and safe, efficient work practices.

Additional Information relevant to this Career and Technical Education (CTE) program is provided at the end of this document.

Program Structure

This program is a planned sequence of instruction consisting of six occupational completion points.

This program is comprised of courses which have been assigned course numbers in the SCNS (Statewide Course Numbering System) in accordance with Section 1007.24 (1), F.S. Career and Technical credit shall be awarded to the student on a transcript in accordance with Section 1001.44 (3) (b), F.S.

The following table illustrates the **PSAV** program structure:

OCP	Course Number	Course Title	Course Length	SOC Code
A	MTE0003	Marine Rigger	300 hours	49-3051
B	MTE0090	Outboard Engine Technician	300 hours	49-3051
C	MTE0074	Outboard Engine Diagnostics Technician	150 hours	49-3051
D	MTE0092	Inboard Gas Engine Technician	300 hours	49-3051
E	MTE0093	Drive Train Technician	150 hours	49-3051
F	MTE0056	Inboard Diesel Technician	150 hours	49-3051

Common Career Technical Core – Career Ready Practices

Career Ready Practices describe the career-ready skills that educators should seek to develop in their students. These practices are not exclusive to a Career Pathway, program of study, discipline or level of education. Career Ready Practices should be taught and reinforced in all career exploration and preparation programs with increasingly higher levels of complexity and expectation as a student advances through a program of study.

1. Act as a responsible and contributing citizen and employee.
2. Apply appropriate academic and technical skills.
3. Attend to personal health and financial well-being.
4. Communicate clearly, effectively and with reason.
5. Consider the environmental, social and economic impacts of decisions.
6. Demonstrate creativity and innovation.
7. Employ valid and reliable research strategies.
8. Utilize critical thinking to make sense of problems and persevere in solving them.
9. Model integrity, ethical leadership and effective management.
10. Plan education and career path aligned to personal goals.
11. Use technology to enhance productivity.
12. Work productively in teams while using cultural/global competence.

Standards

After successfully completing this program, the student will be able to perform the following:

01.0 Demonstrate an understanding of workplace safety and workplace organization.
02.0 Adjust and repair trailers.
03.0 Use marine woods, metals, and fiberglass.
04.0 Maintain and repair basic two-stroke cycle outboard engines.
05.0 Maintain and repair fuel systems on boats.
06.0 Maintain and repair electrical systems.
07.0 Prepare delivery checklist.
08.0 Maintain and repair outboard capacitor discharge ignition systems.
09.0 Maintain and repair outboard fuel systems.
10.0 Parts specialist and computer skills to industry standards.
11.0 Maintain and repair basic four-stroke cycle outboard engines.

12.0 Maintain and repair outboard charging systems.
13.0 Maintain and repair outboard battery ignition systems.
14.0 Maintain and repair outboard cranking systems.
15.0 Maintain and repair outboard lubrication systems.
16.0 Maintain and repair outboard cooling systems.
17.0 Maintain and repair outboard lower gear cases.
18.0 Assemble and maintain outboard lower units and housing assemblies.
19.0 Demonstrate employability skills.
20.0 Demonstrate an understanding of entrepreneurship.
21.0 Apply basic computer skills.
22.0 Troubleshoot and solve problems with outboard engines using industry recognized computer-based diagnostic equipment.
23.0 Set up electric and digital control box, and gauges.
24.0 Maintain and repair basic four-stroke cycle inboard gas engine.
25.0 Maintain and repair inboard fuel systems.
26.0 Maintain and repair inboard gas cooling systems.
27.0 Maintain and repair inboard gas lubrication systems.
28.0 Maintain and repair battery ignition systems.
29.0 Maintain and repair capacitor discharge ignition systems.
30.0 Maintain and repair stern drive upper gear cases.
31.0 Maintain and repair stern drive lower gear cases.
32.0 Maintain and repair stern drive intermediate housing.
33.0 Maintain and repair inboard gas transmissions.
34.0 Maintain and repair inboard diesel fuel systems.
35.0 Maintain and repair inboard diesel cooling systems.
36.0 Maintain and repair inboard diesel lubrication systems.
37.0 Maintain and repair inboard diesel charging systems.