A. COURSE DESCRIPTION

Credits: 5
Lecture Hours/Week: 3
Lab Hours/Week: 2
OJT Hours/Week: *.*

Prerequisites:
This course requires the following prerequisite
   MGEM 2603 - Marine Electrical Systems (Number of Years Valid: 5)

Corequisites: None

MnTC Goals: None

This course includes various EFI, DFI, carburetors, fuel pumps, fuel tanks, and oil injection systems. Components from Bombardier Recreational Division, Mercury Marine, Honda Marine, Yamaha Marine, Mercruiser Marine, and Volvo Penta are used in training. Students learn to identify, repair, or replace fuel system components. This course focuses on troubleshooting and synchronizing the carburetors and oil injection pumps to engine needs. Instruction includes classroom instruction and application of factory recommended service procedures. Learners receive hands-on instruction on shop practices and product maintenance using tried and proven methods of operation. Prerequisite: First year of the Marine and Small Engine Mechanic program or instructor approval and MGEM2603.

B. COURSE EFFECTIVE DATES: 08/25/2008 - Present

C. OUTLINE OF MAJOR CONTENT AREAS

1. Define fuels & lubes.
2. Identify & diagnose mechanical fuel delivery systems
3. Identify & diagnose electrical fuel delivery systems.
4. Perform pressure & vacuum tests on fuel delivery systems.
5. Identify fuel system starting & warm-up systems.
6. Demonstrate the safe use of fuel system test equipment.
7. Identify & diagnose outboard carburetor circuits.
8. Identify & diagnose stern drive carburetor circuits.
10. Identify & diagnose oil injection systems.
11. Identify scan tool & laptop diagnostic systems.
12. Perform laptop diagnostics on outboard motors.
13. Perform laptop diagnostics on sterndrive engines.
15. Demonstrate proper disposal of hazardous waste.
D. LEARNING OUTCOMES (General)
   1. The learner will demonstrate understanding of fuel as a power source, shop safety, and fuel delivery components.
   2. The learner will demonstrate understanding and servicing skills of carburetion, fuel injection, and oil injection components.
   3. The learner will demonstrate EFI and DFI diagnostic procedures.
   4. The learner will demonstrate preventative maintenance and off-season storage procedures.
   5. The learner will demonstrate diagnostic skills.

E. Minnesota Transfer Curriculum Goal Area(s) and Competencies
   None

F. LEARNER OUTCOMES ASSESSMENT
   As noted on course syllabus

G. SPECIAL INFORMATION
   None noted