MGEM 2603: Marine Electrical Systems

A. COURSE DESCRIPTION

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

Prerequisites:
This course requires the following prerequisite
   MGEM 1703 - Internship (Number of Years Valid: 5)
Corequisites: None
MnTC Goals: None

This is a study of electrical theory and troubleshooting of capacitive discharge ignition systems. The course covers electrical theory of operation, electrical symbols, components used, testing devices, and troubleshooting. Focus is on practical use of electronic symbols and theory, hands-on testing, and using factory methods and manuals to solve service problems. Several different models of outboard motors and stern drive engines are used for hands-on experience. Learners also work on starters and charging systems used in the marine field. Factory manuals, test procedures, and troubleshooting are covered. Prerequisite: First year of the Marine and Small Engine Mechanic program or instructor approval and MGEM1703.

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

C. OUTLINE OF MAJOR CONTENT AREAS

1. Define modern marine propulsion system designs.
2. Review basic electrical theory.
3. Identify direct current & alternating current electrical sources.
4. Demonstrate the safe use of electrical test equipment.
5. Perform diagnostic test procedures on battery charging systems.
6. Identify & diagnose cranking systems.
7. Identify & diagnose key switch wiring hardness.
8. Assemble & test battery switches & isolators.
9. Assemble & diagnose analog gauge systems.
10. Identify & adjust standard point ignition systems.
11. Remove, install & adjust distributor ignition systems.
12. Verify ignition timing curves and perform adjustments.
13. Identify & diagnose modern capacitor discharge ignition systems.
15. Identify trim & tilt systems.

D. LEARNING OUTCOMES (General)

1. The learner will explain electrical theory, and how it relates to modern marine product.
2. The learner will identify and troubleshoot charging and cranking systems.
3. The learner will identify and troubleshoot ignition systems.
4. The learner will demonstrate electrical troubleshooting procedures.
5. The learner will demonstrate electrical troubleshooting skills of trim and tilt systems.
E. Minnesota Transfer Curriculum Goal Area(s) and Competencies
   None

F. LEARNER OUTCOMES ASSESSMENT
   As noted on course syllabus

G. SPECIAL INFORMATION
   None noted