

Common Course Outline
DEMT 213
Diesel Engine Fuel Management
5 Semester Hours

The Community College of Baltimore County

Description

DEMT 213 -- 5 Credits – Diesel Engine Fuel Management

covers the four major diesel fuel injection systems--distribution pumps, inline diesel pumps, PT pump/injectors, and unit injection. Students learn to remove, test, rebuild, calibrate, time, and install fuel systems. Students also learn to operate and troubleshoot electrical fuel systems.

5 credits: 3 lecture hours per week; 6 laboratory hours per week

Prerequisite: DEMT 101 and DEMT 113

Overall Course Objectives

Upon completion of this course, students will be able to:

1. comply with personal and environmental safety practices associated with a fuel management system including personal protective equipment and the handling, storage, and disposal of fuels, chemicals, and materials in accordance with federal, state, and local regulations;
2. inspect turbocharger(s), wastegate, and piping systems and determine needed action;
3. check air induction system: piping, hoses, clamps, and mounting; check for air restrictions and leaks; service or replace air filter as needed;
4. inspect air/fuel ration control systems and determine needed action;
5. inspect and test power and ground circuits and connections; measure and interpret voltage, voltage drop, amperage, and resistance readings using a digital multimeter (DMM) and determine needed action;
6. interface with vehicle's on-board computer, perform diagnostic procedures using recommended electronic diagnostic equipment and tools (to include PC based software and/or data scan tools) and determine needed action;
7. locate and use relevant service information: diagnostic procedures, flow charts, and wiring diagrams;
8. remove and install electronic unit injectors (EUI) and related components and recalibrate ECM if needed;
9. perform cylinder contribution test utilizing recommended electronic diagnostic tool;
10. inspect fuel tanks, vents, caps, mounts, valves, screens, crossover system, supply and return lines, and fittings and determine needed action;
11. perform on-engine inspections, tests and adjustments; check and adjust timing or replace a time a distributor (rotary) type injection pump and determine needed action;
12. perform on-engine inspections and tests on hydraulic electronic unit injector high pressure oil supply and control systems and determine needed action;

13. perform on-engine inspections and tests on in-line type injection pump electronic controls and determine needed action; and
14. perform on-engine inspection and tests on common rail type injection systems and determine needed action.

Major Topics

- I. Air induction and exhaust systems diagnosis and repair
- II. Fuel supply system diagnosis and repair
- III. Mechanical fuel injection diagnosis and repair
- IV. Electronic fuel management system diagnosis and repair

Course Requirements

Grading/exams: Grading procedures will be determined by the individual faculty member and will be provided on the first day of class.

The following will be required for this course:

1. Written paper or suitable practical project
2. Midterm exam
3. Comprehensive final (including a practical exam).
 - If a written paper is assigned, the following will apply:
 - a. Topic of the paper will be selected by the student and should relate to the subject material of the course.
 - b. The paper should be six (6) to eight (8) pages in length, typewritten, and double-spaced. It should include in addition to the six (6) to eight (8) pages of text, an author and title page and bibliography utilizing a minimum of three reference resources excluding classroom materials.
 - c. All papers are due when 80% of the class sessions are completed.

In addition, students can expect additional grades from the following areas:

4. Quizzes
5. Lab Projects
6. Homework Assignments.

Other Course Information

This course is a Diesel and Equipment Maintenance Technology core course.

Individual faculty members may include additional course objectives, major topics, and other course requirements to the minimum expectations stated in the Common Course Outline.

(8) Date Revised: 10/17/06