

Course Outline
DEMT 113
Fundamentals of Diesel Engine
5 Credit Hours

The Community College of Baltimore County

Description

DEMT 113 – Fundamentals of Diesel Engine

explores the theory of diesel engine operation principles and construction of two and four stroke cycle, and single and multiple cylinder engines. The student learns to time the engine to factory specifications, disassemble, inspect, measure all parts, and compare results to factory specifications.

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

Prerequisites: RDNG 052, ENGL 051, MATH 082

Overall Course Objectives

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

1. comply with personal and environmental safety practices;
2. perform air intake system restriction and leakage tests and determine needed action;
3. perform intake manifold pressure (boost) test and determine needed action;
4. remove, clean, inspect for visible damage, and replace cylinder head(s) assembly;
5. clean and inspect threaded holes, studs, and bolts for serviceability and determine needed action;
6. inspect cylinder head for cracks/damage, check mating surfaces for warpage, check condition of passages, core/expansion, and gallery plugs and determine needed action;
7. disassemble head and inspect valves, guides, seats, springs, retainers, rotators, locks, and seals and determine needed action;
8. measure valve head height relative to deck and valve face-to-seat contact and determine needed action;
9. inspect injector sleeves and seals, measure injector tip or nozzle protrusion and perform needed action;
10. inspect and adjust valve bridges (crossheads) and guides and perform needed action; and
11. reassemble cylinder head.

Major Topics

- I. Theory and operation of the diesel internal combustion engine
- II. Valve train operation
- III. Reciprocating assembly operation
- IV. Cooling system operation
- V. Lubrication system operation

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.