

PALOMAR COLLEGE
COURSE OUTLINE OF RECORD FOR
DEGREE CREDIT COURSE

_____ Transfer Course A.A. Degree Applicable Course
(check all that apply)

COURSE NUMBER AND TITLE:

DMT 55 / RDMT 55 Heavy-Duty Diesel Tune-Up and Engine Analysis

UNIT VALUE: 3

MINIMUM NUMBER OF SEMESTER HOURS: 96

BASIC SKILLS REQUIREMENTS:

Appropriate language and computational skills

ENTRANCE REQUIREMENTS:

PREREQUISITE: DMT 50 & DMT 51

COREQUISITE: None.

RECOMMENDED PREPARATION: None.

SCOPE OF COURSE:

The use of softwares and diagnostic equipment in performing diesel tune-up topics include: Theory of operation, tune-up procedures, fuel system function and repair, diagnostic equipment usage, electronic engine controls, mechanical and electronic engine system troubleshooting.

SPECIFIC COURSE OBJECTIVES:

Students will:

1. Apply principles of shop safety.
2. Identify tune-up and testing tools.

3. Apply principles of heavy-duty engine testing techniques.
4. Justify selected heavy-duty tune-up procedures used.
5. Perform engine analysis using electronic diagnostic equipment.

CONTENT IN TERMS OF SPECIFIC BODY OF KNOWLEDGE:

- I. Introduction to Tune-Up
 - A. Shop Safety
 - B. Diesel Theory of Operation
 - C. Tune-up Fundamentals
 - D. Service Manuals and Computer Usage
- II. Engine Tune-Up Procedures
 - A. Two Cycle
 1. Valve and Injector Timing
 2. Rack Adjustment
 3. Governor Adjustment
 4. Jacobs Brake Adjustments
 - B. Four Cycle
 1. Valve and Injector Adjustments
 2. Pump Timing
 3. Governor Adjustments
 4. Fuel Control Adjustments
 5. Jacobs Brake Adjustment
- III. Fuel Systems
 - A. Types and Characteristics
 - B. Fuel Flows and Filtering
 - C. Function and Repair of Injectors and Injection Pumps
- IV. Troubleshooting and Diagnostic Equipment
 - A. Troubleshooting Procedures
 1. Flow Chart
 2. Test Points
 - B. Diagnostic Equipment
 1. Manometer
 2. Fuel Calibration Test Stand
 3. Dynamometer
 4. Computer Based Diagnostic Units

- C. Smoke Analysis
 - 1. Emission Regulations
 - 2. Testing Equipment

REQUIRED READING:

Robert N. Brady. Modern Diesel Technology. Prentice Hall, 1996.

SUGGESTED READING:

Engine manufacturer's service and reference manuals.

REQUIRED WRITING:

Laboratory reports (five page) on tune-up procedures of a specific engine not covered in class and classroom notebook.

OUTSIDE ASSIGNMENTS:

Students are expected to spend a minimum of three hours per unit per week in class and on outside assignments, prorated for short term classes.

Research and develop tune-up procedures for a specific engine (approximately five pages), read text and prepare for exams.

INSTRUCTIONAL METHODOLOGY:

Check all that apply:

- lecture
- laboratory
- lecture-laboratory combination
- directed study

This course may be offered as a distance education course and meets Title 5 regulations 55370, 55372, 55374, 55376, 55378, and 55380.

Yes No

If yes, check all that apply (See guidelines for preparation for definitions.)

- telecourse
- mediated instruction
- computer assisted instruction

GRADING POLICY AND STANDARDS (include methods of determining whether the stated objectives have been met by students):

Grading by unit exams, laboratory performance and reports, special report and attendance.

Exams	40%
Participation	10%
Lab/Lab participation	40%
Special Report	10%

(Tune-up procedure as outside assignment).

IS COURSE REPEATABLE FOR REASON(S) OTHER THAN DEFICIENT GRADE?

Yes No Number of times course may be taken for credit: 2.

If yes, identify specific provision of Title 5 Division 2 section(s) 55761-55763 and 58161 which qualifies course as repeatable: 58161 C-2-a.

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