

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 70 / RDMT 70 Medium-Duty Diesel Engine Tune-Up

UNIT VALUE: 3 **MINIMUM NUMBER OF SEMESTER HOURS:** 96

BASIC SKILLS REQUIREMENTS: Appropriate language and computational skills.

ENTRANCE REQUIREMENTS:

PREREQUISITE: None.

COREQUISITE: None.

RECOMMENDED PREPARATION: None.

SCOPE OF COURSE:

The use of diesel tune-up and diagnostic equipment. Topics include: Fuel systems; compression testing; fuel pump and injection timing; troubleshooting procedures; alternators, regulator and starting systems.

SPECIFIC COURSE OBJECTIVES:

Students will:

1. Apply principles of shop safety.
2. Identify medium-duty testing and tune-up equipment.
3. Apply principles of medium-duty testing techniques to troubleshooting.
4. Analyze fuel injection test results.
5. Justify selected medium-duty tune-up procedures used.

CONTENT IN TERMS OF SPECIFIC BODY OF KNOWLEDGE:

- I. Intro to Tune-Up
 - A. Theory of Operation
 - B. Tune-Up Fundamentals

- II. Tune-Up and Diagnostic Equipment
 - A. Manometer
 - B. Pyrometer
 - C. Dynamometer
 - D. Fuel Flow Test Stand
 - E. Heat Chalk
 - F. Compression Gauges
 - G. Vacuum and Pressure Gauges

- III. Engine Tune-Up Procedures
 - A. Engine Identification
 - B. Four Cycle
 - C. Checks and Adjustments

- IV. Fuel System
 - A. Types and Characteristics
 - B. Fuel Flows and Filtering
 - C. Function and Repair of Injectors and Injector Pumps

- V. Troubleshooting
 - A. Procedures
 - B. Diagnostic Equipment
 - C. Smoke Analysis
 - D. Dynamometer Checks

REQUIRED READING:

Brady, Robert N. Diesel Fuel Systems. Reston, VA: Reston Publishing Co., 1981.

Applicable service manual for the engine on which work is being performed.

Instructor's hand-out's of related materials.

SUGGESTED READING:

Service and reference manuals. Current editions.

Go West

Heavy Duty Truck

Diesel Superintendent

REQUIRED WRITING:

Laboratory report on a specific tune-up procedure consisting of not less than five pages in length. Students are required to maintain a 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 a tune-up procedure for a specific engine.

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, lab performance, report, and attendance.

- 40% Laboratory work is a major part of the student's grade as students are required to demonstrate proficiency in the use of diagnostic and tune-up equipment as well as troubleshooting procedures.
- 20% Quizzes are given four times throughout the course and are intended to measure the student's level of understanding with regard to the current lessons.
- 10% Midterm exam is given half way through the semester and is a comprehensive review of the subject matter presented in that interim.
- 20% Final examination consists of a comprehensive review of the subject matter presented throughout the semester.

10% Students are required to submit a laboratory report consisting of not less than five pages on a specific tune-up procedure as related to the coursework.

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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