PALOMAR COLLEGE
COURSE OUTLINE OF RECORD FOR
DEGREE CREDIT COURSE

_____ Transfer course _X_ A.A. degree applicable course
(check all that apply)

COURSE NUMBER AND TITLE: DMT 50/RDMT 50 – Introduction to Diesel Mechanics

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:

Theory and practice of fundamental skills for the maintenance and operation of basic diesel engines. Topics for study include: basic theory of operation; engine applications; engine lubricating and cooling; intake, exhaust and fuel systems; and electronic control.

SPECIFIC COURSE OBJECTIVES:

Upon completion of this course, the successful student will be able to:

1. Apply principles of shop safety and hazardous materials control
2. Explain the theory of operation of all systems of a diesel engine, correctly using transportation industry terminology
3. Identify engine components and functions for all systems of a diesel engine
4. Analyze and correct problems related to diesel servicing, referencing service manuals and other resources as necessary
5. Troubleshoot basic engine performance problems, using a variety of manual and computerized test equipment
6. Identify the different types of engine control circuits
7. Properly connect scan tooling to an engine
8. Follow procedures indicates by scan tools to diagnose system problems and correct as indicated

CONTENT IN TERMS OF SPECIFIC BODY OF KNOWLEDGE:

I. Engine Identification and Description
   A. Theory of Operation
      1. Two and four cycle operation
      2. Diesel vs. gasoline
      3. Diesel applications
   B. Engine Identification
      1. Series and types
      2. Rotation and accessory arrangement
      3. Data plates
   C. Service Manuals
      1. Correct usage of traditional and on-line resources
      2. Torque and engine specification

II. Lubrication Systems
   A. Lubrication oil
   B. Lubricant flow
   C. Filtering
      1. Types and function
      2. Material and change intervals
   D. Function and repair
      1. Pumps
      2. Coolers
      3. Relief and regulator valves
   E. Lubricant contamination
      1. Types
      2. Lubricant analysis

III. Cooling Systems
   A. Coolants
      1. Use of corrosion inhibitors and anti-freeze
      2. Heat transfer and its deterrents
   B. Coolant flow
   C. Function and repair
      1. Radiator
      2. Thermostats
      3. Water pumps
      4. Shutterstats

IV. Intake and Exhaust System
   A. Air cleaners
      1. Types and function
      2. Servicing
   B. Superchargers and Turbochargers
      1. Types and function
      2. Servicing and repair

V. Fuel System
   A. Diesel fuel
      1. Types
      2. Characteristics
   B. Fuel flows
   C. Fuel filtering
      1. Types and function
      2. Materials and change interval
   D. Injector function and servicing
   E. Injector pump function and servicing

VI. Engine Electronic Control
   A. Engine control circuits
   B. Reference resources
   C. Diagnosing system codes

VII. Engine Maintenance and Troubleshooting Procedures
   A. Preventive Maintenance
      1. Types
      2. PM Service Records
   B. Troubleshooting Procedures
      1. Procedure charts
      2. Testing equipment: manometers; heat-chalk; vacuum and pressure gauges; compression gauges

VIII. Employment Opportunities
   A. Transportation industry overview
   B. Career ladders
   C. Job search and application

REQUIRED READING:

Brady, Robert N. Modern Diesel Technology. First ed. Ingelwood Cliffs: Prentice Hall, 1996.

SUGGESTED READING:

Service and reference manuals; diesel/transportation industry periodicals; on-line references

REQUIRED WRITING:

Minimum of two laboratory reports, each at least one page in length; research report of approximately 1500 words on some aspect of diesel engines.

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.

Daily work on reading assignments and lab sheets. Written report or special project.

INSTRUCTIONAL METHODOLOGY:

Check all that apply:
____ lecture
____ laboratory
__X__ 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 __X__

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):

Unit exams	40%
Laboratory performance and reports	40%
Class participation	10%
Research report	10%

IS COURSE REPEATABLE FOR REASON(S) OTHER THAN DEFICIENT GRADE?
Yes ____ No __X__ Number of times course may be taken for credit: __1__

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

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