SAN BERNARDINO VALLEY COLLEGE

COURSE OUTLINE

I. *CATALOG DESCRIPTION:*

DIVISION: TECHNICAL

DEPARTMENT: AUTOMOTIVE

COURSE ID NUMBER: DIESEL 028

COURSE TITLE: Heavy-duty truck preventive maintenance service

CLASS HOURS: 3 HOURS LECTURE
3 HOURS LABORATORY

UNITS: 4

COURSE DESCRIPTION: Theory and practical shop work in maintenance and preventive maintenance service of heavy-duty trucks and semi-tractor systems. Fundamentals of truck components and systems are explained as students perform routine service tasks on a Ford semi-tractor truck. Course is designed to provide students the needed skills and knowledge to perform entry level labor tasks in the heavy-duty truck service industry.

SCHEDULE DESCRIPTION: Theory and practical shop work in maintenance and preventive maintenance service of heavy-duty trucks and semi-tractor systems. Course is designed to provide students the needed skills and knowledge to perform entry level labor tasks in the heavy-duty truck service industry.

ENTRANCE SKILLS:

PREREQUISITE(S): NONE
COREQUISITE(S): NONE

II. ***NUMBER OF TIMES COURSE MAY BE TAKEN FOR CREDIT:*** One

III. ***EXPECTED OUTCOMES FOR STUDENTS:***

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

A. Identify the safe use and care of tools, chemicals, and the correct protective clothing and safety gear for various situations
B. Identify and order new service parts, lubricants, and oils as required

C. Describe the design, operation, and components of the heavy-duty truck and semi-tractor
D. Perform routine servicing of the heavy-duty truck and semi-tractor systems and components in a manner consistent with accepted industry standards
E. Demonstrate college level writing competency by writing comprehensive preventive maintenance service logs and narrative reports
F. Contrast and compare the preventive maintenance service requirements of light duty trucks to heavy duty trucks
G. Calculate the cost of operating a fleet of trucks, including service, maintenance, drivers' wages based on data supplied by Dalton Trucking Company
H. Write a service maintenance agreement document
I. Develop a hypothesis from examining a variety of failed diesel truck components; determine needed repairs, and write a failure/damage report

IV. ***CONTENT:***

UNIT 1: Introduction to servicing heavy - duty trucks
Truck classifications
Heavy - duty trucks
General shop safety

UNIT 2: Electrical fundamentals
Batteries
Flow of electricity
Measuring electricity
Troubleshooting
Winterizing batteries

UNIT 3: Clutches – fundamentals
Clutch function
Basic components
Periodic maintenance

UNIT 4: Standard transmission – servicing
Lubrication
Preventive maintenance

UNIT 5: Torque converters
Design
Basic operation
Maintenance and service

UNIT 6: Automatic transmission – maintenance
Inspection and care
Shift point adjustment

UNIT 7: Drive shafts – fundamentals
Construction
Drive line arrangements
Universal joint working angles
Drive shaft phasing
Drive shaft inspection
Lubrication
Universal joint replacement
Chassis vibration diagnosis
PTO drive shafts

UNIT 8: Heavy - duty truck axles – fundamentals
Types of axles
Driving axles
Lubrication
Non-drive axles

UNIT 9: Steering systems – fundamentals
System components
Power steering systems
Air-assisted steering systems

UNIT 10: Wheels and tires
Wheels and rim
Tire to rim hardware
Tires
Tire, rim, and wheel service
Wheel, hubs, bearings, and seals

UNIT 11: Air brake servicing – fundamentals
Maintenance and safety
Safety considerations
Maintenance tests
System components – overview

UNIT 12: Suspension systems – fundamentals
Spring-type suspensions
Equalizing beam suspensions
Torsion bar suspensions
Air bag (spring) suspensions
Cab air systems
Driver air-suspended seats

UNIT 13: Fifth wheel
Types of fifth wheels
Operation
Inspection
Lubrication
Maintenance
Sliding fifth wheel
Fifth wheel and the driver

UNIT 14: Preventive maintenance program
Setting up a preventive maintenance program
Out-of-service or dead lining a vehicle
Preventive maintenance scheduling
Vehicle records
Lubricants
Winterizing

V. ***METHODS OF INSTRUCTION:***

The methods of instruction include, but are not limited to:

A. Lecture and direct laboratory demonstration by instructor
B. Guided laboratory practice by the learner and presentations by field experts

VI. ***TYPICAL ASSIGNMENTS:***

Write a brief narrative describing the function, purpose, and recommended service requirements of a specific heavy-duty truck system or component.

Typical Question: Describe the importance of routine chassis inspections.

Typical Lab Assignment:
A. Inspect and adjust wheel bearing torque.
B. Replace wheel hub oil seals and inspect brake lining material.

VII. ***EVALUATION(S):***

A. Student progress is evaluated by:
1. Oral and written tests
2. Successful completion of labor tasks in accordance with manufacturers specifications
3. Writing a comprehensive research paper
4. A comprehensive written final exam
Typical question: Upon evaluation of service reports, lubricant, and oil analysis reports, develop a

preventive maintenance schedule.

B. Frequency of evaluation:
   1. Weekly assignments
   2. One midterm examination
   3. One final examination

VIII. ***TYPICAL TEXT(S):***

Title:	Heavy Duty Truck Systems, Second Edition
Author:	Andrew Norman, Robert Scharff, and John A. Corinchock
Publisher:	Delmar
Date of Publication:	1996
Reading Level:	Primarily college level

IX. ***OTHER SUPPLIES REQUIRED OF STUDENTS:*** None