COURSE INFORMATION FORM

DISCIPLINE Automotive Technology
COURSE TITLE Diesel Diagnosis and Repair
CR.HR 6 LECT HR. 3 LAB HR. 6 CLIN/INTERN HR. CLOCK HR. 

CATALOG DESCRIPTION
Discussion of diesel engine construction and operation as compared to gasoline engines. Study of diesel engine air, fuel, emissions, and electronic control systems. Study of how diesel engines and systems operate and how to diagnose, service, and repair these systems.

PREREQUISITES
Auto 150 Automotive Power Plants, Auto 166 Automotive Electrical Systems

EXPECTED STUDENT OUTCOMES IN THE COURSE
Upon completion of this course, the student will be able to:
1. Demonstrate the cognitive and manipulative skills necessary to complete assigned tasks.
2. Describe and employ safe work habits, observing both personal safety and a concern for the safety of others.
3. Analyze, diagnose, and determine necessary actions to solve diesel air intake, fuel system, and emission control concerns.
4. Apply procedures needed to successfully perform service operations.
5. Employ effective behaviors necessary to successfully work with others.
CLASS-LEVEL ASSESSMENT MEASURES

Student accomplishment of expected student outcomes will be assessed using the following measures. (Identify which measures are used to assess which outcomes.)
1. Written evaluation (1-4)
2. Oral evaluation (1-5)
3. Performance exams (1-3)
4. Written Laboratory assignments (1-4)

PROGRAM-LEVEL OUTCOMES ADDRESSED

General Education Outcomes
Specify which general education outcomes, if any, are substantially addressed by the course by completing the “Course/Program Assessment Matrix” to show the relationship between course and program outcomes and assessment measures.

Occupational Program Outcomes
Specify which occupational program outcomes, if any, are substantially addressed by the course by completing the “Course/Program Assessment Matrix” to show the relationship between course and program outcomes to assessment measures.

1. Demonstrate the knowledge necessary to obtain industry recognized certifications.
2. Students will demonstrate the knowledge of thorough application of safety rules and regulations.
3. Students will exhibit professional behavior.
4. Students will be able to use mathematics as it pertains to the Auto Technicians.
Individual instructors may order this outline as fits the needs of their individual courses. In addition, they may place more emphasis on some areas than on others. What is assured is that this particular list is covered in the course.
Other topics may be added to a course as the instructor sees fit, and as time and interest allow. An *asterisk can be used to mark an item as optional.

I. Base Engine: Similarities and Differences versus Gasoline Engine
   A. Two Stroke Cycle
   B. Four Stroke Cycle
   C. Compression Ratio
   D. Lubrication Requirements
   E. Coolant Requirements

II. Air Intake Systems
   A. Naturally Aspirated
   B. Forced Induction
      1. Turbo Chargers
         a. Basic Turbo
         b. Waste Gates
         c. Variable Geometry
         d. Series Turbo
      2. Super Chargers
      3. After Coolers

III. Exhaust Systems
    A. Exhaust after Treatment
       1. Catalytic Converters
       2. Diesel Particulate Filters
    B. Exhaust Brakes

IV. Fuel System
    A. Injector Location
       1. Indirect Injection
       2. Direct Injection
    B. Injection Types
       1. Mechanical Injection
       2. High Pressure Oil
       3. High Pressure Common Rail

V. Emissions Controls
   A. Positive Crankcase Ventilation
   B. Exhaust Gas Recirculation
   C. Electronic Throttle Bodies
   D. Catalytic Converters
   E. Diesel Particulate Filters

VI. Electrical Systems
    A. Starting
    B. Charging
    C. Glow plugs
    D. Powertrain Control Module

VII. Maintenance
    A. Fuel Systems
    B. Lubrication Systems
    C. Cooling System