DE ANZA COLLEGE
APPLIED TECHNOLOGIES DIVISION
Automotive Technology
ENGINE PERFORMANCE PROGRAM

Course Information Sheet

AT 99D Intermediate Engine Performance Systems

I. General Information:

Instructor: Pete Vernazza
Classroom Number: El2F
Office: (408) 864-8216
Tool Room: (408) 864-8768
Email: vernazzapete@fhda.edu
Dates: 2-16-15 through 3-27-15
Days: Monday through Friday
Hours: 7:30 AM to 12:20 PM
Final Examination Date: 3-27-15
Office Hour – 12:30pm to 1:30pm. Location: E12F
Winter Quarter 2015
Auto 99D55. CRN 00217

One hundred fifty hours lecture-laboratory per quarter

Electronically controlled engine performance systems. Diagnosing, troubleshooting, and repairing the automotive fuel-injection systems of domestic automobiles. Testing techniques for system input and output devices using automotive scanners and oscilloscopes.

Student Learning Outcome - The student will be able to examine a vehicle with a no start condition, and using analytical skills learned in class, be able to deduce the malfunctioning component(s) by checking the three major systems: spark, fuel and the PCM.

II. Course Objectives

The student will:

A. Describe the Closed Loop System
B. Diagnose system problems and replace or adjust system components as needed
C. Interpret serial data information provided by the onboard computer

D. Diagnose system problems and replace or adjust system components to accepted performance and emission standards
E. Use a four-gas analyzer to test and adjust fuel systems
F. Inspect and analyze automotive gasoline-engine fuel-injection systems
G. Repair and adjust these systems to manufacturer's specifications
H. Identify and explain the differences between fuel-injection systems
I. Identify and explain the operation of common parts in gasoline-engine fuel-injection systems

III. Essential Student Materials

A. Texts as listed
B. Basic tool set and tune-up tool set
C. Approved shop clothing, safety shoes, and safety glasses
D. Scientific calculator (T.I. 30 or better)

IV. Essential College Facilities

Classroom and automotive technology laboratory

V. Expanded Description: Content and Form

A. Intermediate electronic engine control systems
   1. Computer input sensors and circuits
   2. Computer output actuators and circuits

B. Diagnostic equipment and special tools
   1. Troubleshooting
   2. Electrical test equipment
   3. Mechanical test equipment

C. On-board diagnostic systems
   1. Self diagnosing electronic engine controls
   2. Non-self diagnosing controls

D. Electronic fuel injection systems
   1. Central fuel injection (TBI)
   2. Port fuel injection
      a. MPFI
      b. SFI

E. Testing and repair procedures, fuel injection
   1. Emission standards and specifications
   2. Four-gas analyzer operation and test result interpretation
   3. Specialty tool and equipment procedures

F. Electronic test equipment
   1. DVOM usage
   2. Advanced scanner usage

VI. Assignments

A. Reading from texts and handouts
B. Lab assignments per expanded National Automotive Technology Education Foundation (NATEF) task list

VII. Methods of Evaluating Objectives

A. Problem-solving quizzes
B. Objective examinations covering major lecture topics
C. Objective final examination
D. Lab assignments per NATEF task list
E. Performance final examination

VIII. Texts and Supporting References

A. Texts:
1. Halderman, James D. *Advanced Engine Performance Diagnosis*. Prentice Hall, New York, 2011.

Classroom and Lab Conduct

A. Students will be dismissed from class for disruptive behavior per college policy

B. Students will wear safety glasses, coveralls, and work shoes for the duration of labs.

C. All required tools must remain available for lab activities. Basic hand tools cannot be checked from the tool room after the first six weeks. Spot checks of tools will be made at random. Students without the required tools will be disqualified from the automotive laboratory.

D. Students are to remain in assigned areas through clean up.

E. There is one official 20-minute break between lecture and lab. Additional breaks are at the discretion of the instructor.

F. It is expected that work will be completed with pride and craftsmanship.

Grading System

90% and higher = A
80% to 89% = B
70% to 79% = C

60% to 69% = D
59% or lower = F

Per department policy, a minimum grade of "C" is required.
Grades less than "C" in two courses are cause for dismissal from the Day Program

Attendance Policy

Just as on the job, regular, punctual attendance in required. Always call or email if you are going to be late or absent. The following limits and conditions apply per department policy:

a. Students must record attendance on a time card. Punch in prior to 7:30 AM (start of class) and out at 12:20 PM (or at end of class). Punch in neatly and orderly.
b. For each tardy, there is a 1-hour penalty. 7:30AM is tardy.
c. Forgetting to punch in or out will constitute a 1-hour penalty.