AUMT 2317  
ENGINE PERFORMANCE ANALYSIS I

COURSE DESCRIPTION
This course covers the theory of operation, diagnosis and service of ignition and emission systems. This is the first of two courses covering engine performance. Basic mechanical engine diagnosis will be reviewed. The course includes electronic ignition, distributorless ignition and emission control systems. Engine analyzers and computerized scan tools will be introduced as a means to diagnose engine performance problems.

TEXT AND REFERENCES
Selected manufacturer specific materials/publications
Instructor supplied materials

COURSE GOALS
The following list of course goals will be addressed in the course. These goals are directly related to the performance objectives. (* Designates a CRUCIAL goal)

1. attend class on time
2. demonstrate proper safety attitude
3. supply required tools
4. wear proper attire
5. define common engine performance problems
6. explain common engine mechanical diagnostic procedures
7. describe mechanical engine problem symptoms
8. check engine vacuum
9. check engine compression
10. interpret compression test results
11. define related SAE J1930 acronyms*
12. locate necessary service manual information
13. apply necessary service manual information*
14. demonstrate scan tool operation*
15. interpret related scan tool data*
16. interpret related scan tool data*
17. explain combustion process
18. explain fuel chemistry
19. define emission control system terms
20. explain air injection system operation
21. explain catalytic converter operation
22. explain EGR system operation
23. explain fuel evaporative emission system operation
24. explain heated air inlet system operation
25. explain PCV system operation
26. check air injection system operation
27. check EGR system operation
28. check PCV system operation
29. explain emission system related performance problems
30. list high emission causes
31. explain common emission system diagnostic procedures
32. activate related ECM diagnostics
33. troubleshoot common emission system problems*
34. explain ignition system operation
35. explain ignition related performance problems
36. define ignition system terms
37. explain ignition advance systems
38. explain common ignition diagnostic procedures
39. demonstrate engine analyzer operation
40. interpret secondary ignition oscilloscope waveform*
41. troubleshoot common secondary ignition system problems*
42. interpret primary ignition oscilloscope waveform
43. troubleshoot common primary ignition system problems*
44. check ignition advance systems
45. troubleshoot ignition advance problems
46. recondition distributor
47. adjust ignition timing
48. check secondary ignition wire resistance
49. replace spark plugs
50. check engine idle speed
51. adjust engine idle or limits
52. perform four-gas test
53. interpret four-gas results

STUDENT LEARNING OUTCOMES

- Identify and explain the operation of base engine, ignition, and fuel system components
- Analyze and understand the operation of base engine, ignition and fuel systems
- Perform common diagnostic tests of the base engine, ignition and fuel system components and systems in accordance with industry guidelines
- Troubleshoot and service common base engine, ignition and fuel system concerns in accordance with industry guidelines

STUDENT CONTRIBUTIONS

Each student will spend at least 15 hours per week preparing for class. Attendance is critical in this class.

CLASS EVALUATION

Final grade is composed of:
33.3% Lab Grade
33.3% Test and Quizzes (written and or practical)
33.3% Final Exam (written and or practical)
Final grade will be of the letter type:
A = 90 - 100
B = 80 - 89
C = 70 - 79
F = Below 70 points
I = Incomplete

COURSE SCHEDULE

1. Engine Diagnosis
   A. Engine performance problems
   B. Diagnostic equipment
   C. Engine mechanical problems
   D. Diagnostic procedures
   E. Service manuals
   F. Scan tools

2. Fuel and Emissions
   A. Fuels and combustion
   B. Vehicle emissions
   C. Emission control systems
   D. Electronic concentrated control system
   E. Emission system diagnosis and service

3. Ignition Systems
   A. Ignition system operation
   B. Ignition system diagnosis and service
   C. Automotive oscilloscopes

4. Engine Performance Diagnosis and Service
   A. Routine service procedures
   B. Advanced diagnostics

RECEIVING YOUR GRADES

End-of-semester grades will not be mailed to you by the college. To receive your grades you have two options: through the Internet or through the Telephone Touch-Tone System. Depending on your choice use the following directions:

Internet Access to Grades:

1. Go to the Dallas County Community College website (http://www.dcccd.edu)
2. Next, look at the Online Services heading.
3. Under the Online Services heading click on eConnect-Register, Pay, Check Grades.
4. You are now on the student menu.
5. Next click on My Personal Information (this will expand the menu)
6. Now click on My Grades
7. Enter your seven digit student ID (not your social security #)
8. Enter your password or if it is your first time to use the system enter your date of birth.
   (Example: Feb 16, 1965  021665)
9. Now select the grade type you wish to review (CR-Credit Grades) and click on submit.
10. Grades start with “oldest” term—now find yours.

**Telephone Access to Grades:**

1. Dial 972-613-1818.
2. Press 2 for grades.
3. Press 1 — wait for directions to enter your seven digit Student ID#.
4. Enter PIN (Six digit -- Example: Date of birth Feb 16, 1965 021665)
5. Select correct option for the semester grades you are inquiring about.

**STOP BEFORE YOU DROP**

Did you know that under a new Texas law (TEC Section 51.907), if you drop too many classes without having an acceptable reason, **your GPA could be affected**? Be sure you understand how this law may affect you before you drop a class.

The new law applies to students who enroll in a Texas public institution of higher education (including DCCCD) for the first time in fall 2007 or later. Under this law, you may not drop more than six classes without an acceptable reason during your entire undergraduate career without penalty.

**FINANCIAL AID STATEMENT**

Students who are receiving any form of financial aid should check with the Financial Aid Office prior to withdrawing from classes. Withdrawals may affect your eligibility to receive further aid and could cause you to be in a position of repayment for the current semester. **Students who fail to attend or participate after the drop date are also subject to this policy.**

**GRADING POLICY**

**LAB GRADE**

- The lab average, which consists of 33.3% of your grade, is comprised of your progress everyday in class.
- Your attitude
- Your ability to get along with others (Treating others with respect)
- Your attire
- Your productivity with the days workstations
- Your ability to stay quiet when the instructor is talking or performing a demo
- Cussing is not allowed in class!

**NOTE:** You start every day with 100 points; as long as there are no problems with the items listed above you will end the day with 100 points for a daily lab grade.

**NOTE:** If any of the problems listed above occurs, then points will be subtracted from the 100 points that day. The amount of the points subtracted will be up to the sole discretion of the instructor. If the you have more point deductions than the 100 points for that day, then the points left over from that day of deductions will be subtracted from the next day.
Since our classes lasts five and one half hours every day, missing one of our classes is like missing five regular college classes. Therefore anyone missing three days of an automotive course will fail the course no matter how good your quiz average and final test grades are. (There are exceptions to every rule for instance a family member-getting ill or passing away, but you must call the instructor to let him know the situation.)

Fighting will result in all the students involved in the altercation being sent home for two days. After the two day cool off period a meeting will be arranged with the instructor and the dean to decide weather the student will be allowed back into the ASSET program or put on a one-year suspension. (This includes fighting anywhere on campus property)

Racism or racial comments ARE NOT TOLLORATED!!!!!!

QUIZ GRADE

The quiz average, which consists of 33.3% of your grade, is comprised of adding all the quizzes taken by the student during the course and dividing it by the number of quizzes given during the course. (This may include written quizzes, oral quizzes, hands-on quizzes, CBTs, and web based items.)

NOTE: If you are late for a quiz, that is you are not in your seat when the instructor hands out the quiz, then you will take a zero for that quiz. (Unless you have an excused tardy or absence that has been prearranged by the student with the instructor.)

FINAL TEST

The final test, which consists of 33.4% of your grade, is comprised of the final test of the course that may include a written or practical or both. 
NOTE: If you are late for the final test, that is not in your seat when the final test is handed out, then you will be able to take the test when you return, but fifteen points will be subtracted from your test for the tardiness. 

NOTE: If you are absent for the final test you may not be able to make up the final test, therefore you will take a zero for the final test. The zero will be averaged in with your quiz average and lab average. (If you have an excused absence, then you will be able to take the final exam on a later date. An excused absence is one that the instructor has been told about by the student.)

YOU CANNOT PASS THIS CLASS IF:

- You do not complete all required web-based courses.
- You do not complete all required computer based courses.
- You are absent for three or more days.