

El Paso Community College

Syllabus

Part II

Official Course Description

SUBJECT AREA	<u>Automotive Technology</u>			
COURSE RUBRIC AND NUMBER	<u>AUMT 2434</u>			
COURSE TITLE	<u>Automotive Engine Performance Analysis II</u>			
COURSE CREDIT HOURS	4	3	:	4
	Credits	Lec		Lab

I. Catalog Description

Studies diagnosis and repair of emission systems, computerized engine performance systems, and advanced ignition and fuel systems. Includes use of advanced engine performance diagnostic equipment. May be taught manufacturer specific. **Prerequisite: AUMT 2417. (3:4). Lab fee.**

II. Course Objectives

- A. Unit I. Overview of Engine Performance II
 - 1. Describe the major components of the course and describe basic dynamometer use.
 - 2. List the safety rules associated with dynamometer use.
 - 3. List the basic dynamometer control functions.
 - 4. Perform dynamometer tests and diagnostic procedures.
 - 5. List the basic dynamometer vehicle tests.
- B. Unit II. Common Vehicle Emission Control Systems
 - 1. Identify pollutants and describe emission control legislative history.
 - 2. Describe the use of evaporative emission control devices.
 - 3. List the components in the pre-combustion systems.
 - 4. List the components in the post-combustion systems.
 - 5. Describe engine design and system changes as related to emission control.
- C. Unit III. Inspection and Maintenance IM-240
 - 1. List the emission control requirements for cars and light trucks.
 - 2. Perform a five gas analysis on a vehicle.
 - 3. Diagnose emission control failures in the fuel, ignition, and combustions systems.
 - 4. List the steps required to do a dynamometer emission test.
- D. Unit IV. Manufacturer Scan-tool Requirements and Use
 - 1. List the procedural steps needed when using a Chrysler Motors Star scan-tool.
 - 2. List the procedural steps needed when using a General Motors Tech II scan-tool.
 - 3. List the procedural steps required when using a Ford Motor Company star scan-tool.

4. List the procedural steps required when testing Asian Imports and European imports with a Geniysis or Modis scan-tool.
- E. Unit V. OBD II Diagnostics and Other Requirements
1. Describe the diagnostic scan-tool procedures used on Chrysler OBD II
 2. Describe the diagnostic scan-tool procedures used on General Motors OBD II
 3. Describe the diagnostic scan-tool procedures used on Ford Motor Company OBD II
 4. Describe the diagnostic scan-tool procedures used on Asian Imports OBD II
 5. Describe the diagnostic scan-tool procedures used on European Import OBD II
- F. Unit VI. Oscilloscope Use
1. Test a fuel injector through the use of lap scope pattern.
 2. Interpret and draw an ignition system scope pattern and determine system conditions
 3. List the procedural steps when testing engine sensors with a scope.
 4. Identify and draw the correct alternator charging system scope pattern.
- G. Unit VII. Alternative Vehicles and Energy Sources
1. Describe the basic function of a gasoline electric hybrid vehicle.
 2. Describe the theoretical function of a fuel cell.
 3. Define flex fuel technology and identify its advantages and/or disadvantages as currently implemented.
 4. List the most common alternative fuels used in today's vehicles and the overall modifications required in converting to these fuels.

III. THECB Learning Outcomes (WECM)

1. Diagnose and repair emission control systems.
2. Computerized engine performance systems, and advanced ignition and fuel systems.
3. Use of advanced engine performance diagnostic equipment.

IV. Evaluation

A. Grading Criteria

Unit exams will count 40% toward the final grade.

Unit lab exams will count 60% toward the final grade.

B. Grading Scale

90 to 100 = A

80 to 89 = B

70 to 79 = C

60 to 69 = D

Below 60 = F

C. Cheating will not be permitted. Any person caught cheating will receive a grade of zero for that exam.

V. Disability Statement (Americans with Disabilities Act [ADA])

EPCC offers a variety of services to persons with documented sensory, mental, physical, or temporary disabling conditions to promote success in classes. If you have a disability and believe you may need services, you are encouraged to contact the Center for Students with Disabilities to discuss your needs with a counselor. All discussions and documentation are kept confidential. Offices located: VV Rm C-112 (831-2426); TM Rm 1400 (831-5808); RG Rm B-201 (831-4198); NWC Rm M-54 (831-8815); and MDP Rm A-125 (831-7024).

VI. 6 Drop Rule

Students who began attending Texas public institutions of higher education for the first time during the Fall 2007 semester or later are subject to a 6-Drop limit for all undergraduate classes. Developmental, ESL, Dual Credit and Early College High School classes are exempt from this rule. All students should consult with their instructor before dropping a class. Academic assistance is available. Students are encouraged to see Counseling Services if dropping because exemptions may apply. Refer to the EPCC catalog and website for additional information.