AUTO 52 Course Outline as of Spring 2011

CATALOG INFORMATION

Dept and Nbr: AUTO 52 Title: ENGINE PERF/POLL CONTRL
Full Title: Automotive Engine Performance and Pollution Control
Last Reviewed: 9/20/2010

Units		Course Hours per Week		Nbr of Weeks	Course Hours Total	
Maximum	8.00	Lecture Scheduled	6.00	17.5	Lecture Scheduled	105.00
Minimum	8.00	Lab Scheduled	6.00	6	Lab Scheduled	105.00
		Contact DHR	0		Contact DHR	0
		Contact Total	12.00		Contact Total	210.00
		Non-contact DHR	0		Non-contact DHR	0

Total Out of Class Hours: 210.00 Total Student Learning Hours: 420.00

Title 5 Category:	AA Degree Applicable
Grading:	Grade Only
Repeatability:	00 - Two Repeats if Grade was D, F, NC, or NP
Also Listed As:	
Formerly:	

Catalog Description:
Lecture, demonstration and practical lab experience in the operation, troubleshooting and repair of the ignition, fuel and pollution control systems of late model automobiles. Emphasis on the proper use of tools and diagnostic equipment. Course prepares students to pass the A.S.E. (Automotive Service Excellence) Engine Performance Certification Exam and enter the automotive trade as an apprentice level technician specializing in engine performance and emission control.

Prerequisites/Corequisites:

Recommended Preparation:
Eligibility for ENGL 100 or ESL 100 and Course Completion of AUTO 56

Limits on Enrollment:

Schedule of Classes Information:
Description: Lecture, demonstration and practical lab experience in the operation, troubleshooting and repair of the ignition, fuel and pollution control systems of late model automobiles. Emphasis on the proper use of tools and diagnostic equipment. Course prepares

students to pass the A.S.E. (Automotive Service Excellence) Engine Performance Certification Exam and enter the automotive trade as an apprentice level technician specializing in engine performance and emission control. (Grade Only)
Prerequisites/Corequisites:
Recommended: Eligibility for ENGL 100 or ESL 100 and Course Completion of AUTO 56
Limits on Enrollment:
Transfer Credit: CSU;
Repeatability: Two Repeats if Grade was D, F, NC, or NP

ARTICULATION, MAJOR, and CERTIFICATION INFORMATION:

AS Degree:	**Area**			Effective:	Inactive:
CSU GE:	**Transfer Area**			Effective:	Inactive:
IGETC:	**Transfer Area**			Effective:	Inactive:
CSU Transfer:	Transferable	Effective:	Fall 1981	Inactive:	Fall 2017
UC Transfer:		Effective:		Inactive:	

CID:

Certificate/Major Applicable:
Both Certificate and Major Applicable

COURSE CONTENT

Outcomes and Objectives:
Upon completion of this course, students will be able to:
1. Evaluate and repair engine systems based on an application of engine operation principles.
2. Test, diagnose, and repair engine mechanical components.
3. Explain the operation of automotive ignition, fuel, and integrated electronic engine controls, including OBDII (On Board Diagnostics, generation II).
4. Analyze and diagnose common problems and repair automotive ignition, fuel, and integrated electronic engine controls, including OBDII.
5. Successfully pass a mock A.S.E. Engine Performance Certification Exam and be prepared to enter the automotive trade as an apprentice level technician specializing in engine performance and emission control.

Topics and Scope:

1. Review of basic engine operation, lubrication and cooling systems
   a. Principles of engine operation
   b. Testing engine mechanical components
2. Ignition systems operations and service
   a. Ignition system principles and components
   b. Distributor systems
   c. Waste-spark systems
   d. Coil-on-plug systems
   e. Ignition troubleshooting and diagnosis
3. Computer control systems - theory and principles of operation

a. Sensor networks
b. Actuators and modules
c. Scan tool testing

4. Fuel system operation and service - principles of operation (atmospheric, pressure and vacuum)
a. Air induction system - normally aspirated and forced induction
b. Fuel supply systems
c. Fuel metering systems
d. Testing, inspecting and troubleshooting fuel systems
e. Gas analyzer, scope testing and scan tool data

5. Emission control systems
a. Crankcase
b. Evaporative
c. Tail pipe

6. Exhaust system
a. Components
b. Inspection
c. Exhaust gas recirculation systems
d. Other emission controls
e. Smog check procedures - introduction

Assignment:

1. Students will be required to keep a notebook of all class assignments and class notes that will be graded for completeness and organization.
2. Reading: 50 pages per week.
3. Class performances and performance exams: In the lab, students will be evaluated on their ability to follow industry approved diagnostic and repair procedures in a reasonable amount of time.
4. Component identification.
5. Lab reports: Complete work orders, diagnostic sheets, parts orders, and time sheets correctly and in a neat and readable manner.
6. Six unit tests, midterm, and final exam.

Methods of Evaluation/Basis of Grade:

Writing: Assessment tools that demonstrate writing skills and/or require students to select, organize and explain ideas in writing.

Notebook	Writing 5 - 10%

Problem Solving: Assessment tools, other than exams, that demonstrate competence in computational or non-computational problem solving skills.

Lab reports	Problem solving 5 - 20%

Skill Demonstrations: All skill-based and physical demonstrations used for assessment purposes including skill performance exams.

Class performances, performance exams, component identification	Skill Demonstrations 30 - 50%

Exams: All forms of formal testing, other than skill performance exams.

Exams: multiple choice, true/false, completion	Exams 30 - 50%

Other: Includes any assessment tools that do not logically fit into the above categories.

Attendance and participation	Other Category 10 - 15%

Representative Textbooks and Materials:
Vidler, Douglas M. Automotive Engine Performance, 3rd edition. Delmar, 2005.