Course Syllabus

AUTO-2440 - Hybrid Electric Vehicle Power Management

3.00 credits

Course Fee: $105.00

Prerequisite: AUTO-1440

This course is a study in the practical application of the Hybrid Electric Vehicle's power management system. Areas of study will include computer controls of the Internal Combustion Engine (ICE) and electric power plant. Service procedures and diagnostic procedures will be covered. (4 contact hrs) South Campus.

Macomb Community College

Official Course Syllabus

Outcomes and Objectives

OUTCOME 1: At the end of this course the student will be able to demonstrate knowledge of the operation of the Hybrid Electric Vehicle (HEV).

OBJECTIVES:

1. Given a Hybrid Electric Vehicle the student will disable the high voltage battery system with 100% accuracy.
   a. Given a scan tool the student will diagnose the trouble code and locate the proper flow chart to complete the repair with 100% accuracy.

Course Assessments

Written Test
Performance Test
Lab Sheets
Visual Observation
A pretest and posttest will be given at the beginning and end of this unit. It will be comprised of 10 questions covering the objectives listed. The faculty will review the data and make corrections in course material covered if needed.

Course Content Outline

I. Hybrid Vehicle Review
   a. Terminology
   b. Safety
   c. Modes of operation
   d. Series, parallel, series parallel

II. Honda HEV
   a. Batteries
   b. IMA system
   c. Regenerative braking system
   d. Maintenance
   e. Diagnostics

III. Toyota
   a. Systems overview (hybrid synergy drive)
   b. Batteries
   c. ICE (Internal Combustion Engine)
   d. Transaxle
   e. Brakes
   f. E/EC power steering
   g. Air conditioning
   h. Maintenance
   i. Diagnostics

IV. Ford
   a. System overview
   b. Maintenance
   c. Diagnostics

V. General Motors
   a. Systems overview
   b. Batteries
   c. ICE (Internal Combustion Engine)
   d. Transaxle
   e. Brakes
   f. E/EC power steering
   g. Air Conditioning
   h. Maintenance
   i. Diagnostics
   j. Dual mode system

VI. Future HEVs

VII. Alternative Fuels
   a. Bio-Diesel
   b. Fuel-Cell
   c. CNG (Compressed Natural Gas)
   d. E85

Department Contacts

Faculty: Dan Claus, Kurtis LaHaie, Stan Urban
Associate Dean: Gerald Knesek

Academic Development Office Use Only

CCA 06-07-0089 New Course 12.20.06

OAD: Chris Panos

12.21.06