COURSE INFORMATION FORM

DISCIPLINE  Automotive Technology
COURSE TITLE  Automotive Engine Performance
CR.HR  6  LECT HR.  3  LAB HR.  6  CLIN/INTERN HR.  _______  CLOCK HR.  _______

CATALOG DESCRIPTION
This course incorporates the history, theories of operation, diagnosis, and repair of fuel systems, emissions systems and electronic engine management systems. Ignition system theory and secondary system checks will be covered. This course will emphasize published diagnostics procedures.

PREREQUISITES
AUTO 100, AUTO 150, and AUTO 166.
Concurrent enrollment in or completion of AUTO 279.

EXPECTED STUDENT OUTCOMES IN THE COURSE (ESO)
Upon completion of this course, the student will be able to:

1. Demonstrate the cognitive and manipulative skills necessary to complete assigned tasks.
2. Describe and employ safe work habits, observing both personal safety and a concern for the safety of others.
3. Analyze, diagnose, and determine necessary actions to solve engine performance related concerns.
4. Apply procedures needed to successfully perform service operations.
5. Employ effective behaviors necessary to successfully work with others.

GENERAL EDUCATION OUTCOMES (ESO)
Specify which general education outcomes, if any, are substantially addressed by the course. Numbers in parentheses identify the Expected Student Outcomes linked to the specific General Education Outcome.

<table>
<thead>
<tr>
<th>Outcomes</th>
<th>ESO</th>
</tr>
</thead>
</table>

Revised 5/9/13
PROGRAM-LEVEL OUTCOMES

CAREER AND TECHNICAL EDUCATION PROGRAM OUTCOMES
Specify which Career and Technical program outcomes, if any, are substantially addressed by the course by completing the “Career and Technical Education template” to show the relationship between course and program outcomes to assessment measures.

1. Students will demonstrate the knowledge necessary to obtain industry recognized certifications.
2. Students will demonstrate or apply knowledge of basic sciences to the practices of automotive technology.
3. Students will demonstrate the knowledge and application of safety rules and regulations.
4. Students will exhibit professional behavior.
5. Students will be able to use mathematics as it pertains to automotive technicians.

CLASS-LEVEL ASSESSMENT MEASURES
Student accomplishment of expected student outcomes may be assessed using the following measures. (Identify which measures are used to assess which outcomes.)

1. Written evaluation (1-4)
2. Oral evaluation (1-5)
3. Performance exams (1-4)
4. Written laboratory assignments (1-5)
Individual instructors may order this outline as fits the needs of their individual courses. In addition, they may place more emphasis on some areas than on others. What is assured is that this particular list is covered in the course. Other topics may be added to a course as the instructor sees fit, and as time and interest allow. An *asterisk can be used to mark an item as optional.

I. Introduction
   A. Safety review
   B. Service information review
   C. Basic theory review
      1. Newton’s law of motion
      2. Work and energy
      3. Torque
      4. Power
      5. Vacuum
   D. Engine design, and operation review
      1. Four-stroke cycle
      2. Engine measurements and performance
      3. Engine efficiency
   E. Engine mechanical diagnosis review
   F. Electricity and electronics review
      1. Basic electricity
      2. Types of circuits
      3. Battery, charging, and starting system diagnosis review
      4. AC generators

II. Ignition secondary systems system
   A. DI
   B. EI
   C. COP/CNP
   D. Secondary ignition system quick checks

III. Fuels
   A. Gasoline composition
   B. Diesel composition
   C. Alternative fuels
   D. Additives

IV. Fuel systems
   A. Fuel supply systems
B. Fuel delivery systems
   1. Throttle body injection
   2. Port fuel injection
   3. Sequential port fuel injection
   4. Gasoline direct injection

V. Emission controls
   A. Pollutants
   B. PCV systems
   C. EGR systems
   D. Evaporative emission controls
   E. Catalytic converters
   F. Air injection systems

VI. Engine management systems
   A. On board diagnostics
   B. Inputs and outputs
   C. Processing
   D. Idle speed control systems
   E. Throttle actuator control systems