



MASTER COURSE OUTLINE

Prepared By: Dick Wynder

Date: January 2016

COURSE TITLE

Automotive Engine Performance

GENERAL COURSE INFORMATION

Dept.: AUT

Course Num: 220

(Formerly:)

CIP Code: 47.0604

Intent Code: 21

Program Code: 712

Credits: 18

Total Contact Hrs Per Qtr.: 264

Lecture Hrs: 132

Lab Hrs: 132

Other Hrs:

Distribution Designation:

COURSE DESCRIPTION (as it will appear in the catalog)

This comprehensive course covers the theory and operation of various ignition systems, fuel delivery systems, emission controls, computerized engine controls, and the use of diagnostic test equipment. Classroom and laboratory lessons provide in-depth training using modern test equipment to diagnose and repair these complex systems. This course is designed to prepare students for the ASE/NATEF Engine Performance Test (A8).

PREREQUISITES

AUT 121 Automotive Electrical and Electronic Systems and **AUT 115** Automotive Shop Safety and Environmental Issues OR instructor permission

TEXTBOOK GUIDELINES

Appropriate Engine Performance textbook as chosen by Automotive Faculty (Example: *Automotive Engine Performance and NATEF Correlated Task Sheets for Engine Performance* 4th Edition 2014; James D. Haldeman, Pearson Publishing)

COURSE LEARNING OUTCOMES

Upon successful completion of the course, students should be able to demonstrate the following knowledge or skills:

1. Perform safely in the automotive shop
2. Use and interpret automotive service information obtained from manuals and computerized service information systems
3. Skillfully operate modern automotive diagnosis and test equipment
4. Diagnose and repair ignition systems
5. Diagnose and repair fuel delivery systems
6. Diagnose and repair emission control systems
7. Diagnose and repair computerized engine control systems
8. Take the Automotive Service Excellence (ASE) Certification Test for Engine Performance (A8)

INSTITUTIONAL OUTCOMES

IO3 Human Relations/Workplace Skills: Students will be able to demonstrate teamwork, ethics, appropriate safety awareness and/or workplace specific skills

COURSE CONTENT OUTLINE

Week 1 & 2

- Safety, tools, and service information
- Environmental and hazardous materials
- Starting and charging system testing
- Digital meters and oscilloscopes
- Engine operation, parts & specifications
- Engine condition diagnosis

Week 3 & 4

- Engine cooling system operation and diagnosis
- Engine lubrication system operation and diagnosis
- Gasoline, diesel and alternative Fuels
- Intake and exhaust systems

Week 5 & 6

- Ignition system components and operation
- Ignition system testing and service

Week 6 & 7

- Fuel delivery
- Emission control device operation, diagnosis, and service

Week 8 – 10

- Computer fundamentals and onboard diagnostics
- Computer operation, diagnosis, and service
- Computer sensors, operation and diagnosis
- Fuel injection components and operation

DEPARTMENTAL GUIDELINES *(optional)*

DIVISION CHAIR APPROVAL

DATE