

Course Objectives/Course Outline
Spokane Community College

Course Title: Advanced Principles of Engine Performance, Air Conditioning, and Electrical

Prefix and Course Number: AUTO 221

Course Learning Outcomes:

By the end of this course, a student should be able to:

- be able to service and repair basic fuel systems, emissions, and ignition systems.
- diagnose engine, ignition, fuel, or emissions control problems with an infrared exhaust analyzer.
- perform analytic/diagnostic procedures on vehicles with onboard or self-diagnostic type computer systems.

Course Outline:

- I. Carburetion
 - A. Advanced Service and Repair Techniques
 1. carburetor acceleration enrichment systems
 2. carburetor idle compensator valves and vents
 3. carburetor idle speed/fuel mixture
 - a. propane enrichment adjustment method
 - b. closed-loop fuel control systems
 - c. float, needles, and seats
- II. Fuel Pump Systems
 - A. Advanced Service and Repair Techniques
 1. gas tank
 - a. filter
 - b. cap
 - c. fuel lines
 - d. hoses
 2. fuel pumps
 - a. pump controls
 - b. filters
- III. Advanced Exhaust Emissions Service and Repair Techniques
 - A. Positive Crankcase Ventilation
 - B. Spark Timing Controls
 - C. Idle Speed Controls
 - D. Exhaust Gas Recirculation
 - E. Exhaust Gas Treatment
- IV. Advanced Fuel Injection Service and Repair Techniques
 - A. Fuel Injection Components
 1. nozzles
 2. pumps
- V. Advanced Ignition Systems Service and Repair Techniques
 - A. Electronic Ignition Systems
 1. ignition primary circuit and wiring
 2. ignition secondary circuit and wiring
 3. ignition point/condenser
 4. timing and timing advance
 5. wiring harness and connectors
 6. ignition coil

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