AUTO 148: ENGINE MANAGEMENT SYSTEMS SERVICE AND REPAIR

Citrus College Course Outline of Record

Heading	Value
Effective Term:	Fall 2025
Credits:	4
Total Contact Hours:	108
Lecture Hours :	54
Lab Hours:	54
Hours Arranged:	0
Outside of Class Hours:	108
Total Student Learning Hours:	216
Prerequisite:	AUTO 141 and AUTO 146.
Strongly Recommended:	ENGL C1000; MATH 144.
Transferable to CSU:	Yes
Transferable to UC:	No
Grading Method:	Standard Letter, Pass/No Pass

Catalog Course Description

Intended for the incumbent worker, returning student, or person seeking a career change into the automotive service industry. This course is part of the Automotive Service and Repair curriculum intended for students with availability in the evening. The course covers essential engine management systems theory, along with inspection, diagnosis, service and repair of the following systems: Ignition, air and fuel delivery, electronic engine controls, and auxiliary emission controls. Course prepares students for ASE Engine Performance (A8) certification. 54 lecture hours, 54 lab hours.

Course Objectives

- Service the ignition system following manufacturer's procedures.
- Diagnose a misfire caused by the ignition system and recommend corrective action.
- Retrieve DTCs with either a scan tool or an alternate retrieval method.
- Test input sensors and recommend corrective action.
- Perform a heath check and pull a data list in order to identify a parameter that is out of range.
- Identify ignition, fuel, and emission control devices.

Major Course Content

1. Safety issues related to ignition, fuel and exhaust systems.
2. Ignition systems inspection, service, diagnosis & repair.
    a. Spark advance
    b. Primary Ignition diagnosis
    c. Secondary Ignition Diagnosis
    d. Oscilloscopes
3. Computer control systems inspection, service, diagnosis & repair.
    a. Input sensor testing
    b. Actuator testing
    c. Feedback fuel control
    d. Electronic Fuel Injection
    e. On-Board Diagnostics
    f. Diagnostic trouble codes
    g. DTC Retrieval methods
4. Intro to engine Fuels and Combustion
5. Intro to emissions regulations
6. Intro to auxiliary emission-control devices inspection, service, diagnosis & repair.

Lab Content

1. Ignition systems inspection, service, and diagnosis.
    a. Spark advance
    b. Primary Ignition diagnosis
    c. Secondary Ignition Diagnosis
    d. Oscilloscopes
2. Computer control systems inspection, service, and diagnosis.
    a. Input sensor testing
    b. Actuator testing
    c. Feedback fuel control
    d. Electronic Fuel Injection
    e. On-Board Diagnostics
    f. Diagnostic trouble codes
    g. DTC Retrieval methods
3. Auxiliary emission-control devices inspection, service, and diagnosis.

Suggested Reading Other Than Required Textbook

Industry-related technical articles from trade journals/periodicals.

Examples of Required Writing Assignments

Students will be assigned industry based technical article summaries/ evaluations from trade journals.

Examples of Outside Assignments

ASE Pre/review questions, electronic service information to complete guided discovery based learning.

Instruction Type(s)

Lab, Lecture, Online Education Lecture