AUTO 168: ENGINE CONTROL SYSTEMS SERVICE, DIAGNOSIS AND REPAIR

Citrus College Course Outline of Record

Heading	Value
Effective Term:	Spring 2022
Credits:	8.5
Total Contact Hours:	243
Lecture Hours :	108
Lab Hours:	135
Hours Arranged:	0
Outside of Class Hours:	216
Prerequisite:	AUTO 151 and AUTO 166.
Strongly Recommended:	ENGL 101; Elementary algebra or higher or direct placement based on multiple measures.
Transferable to CSU:	Yes
Transferable to UC:	No
Grading Method:	Standard Letter

Catalog Course Description

Intended for those seeking a career in the automotive service and repair industry. This National Automotive Technicians' Education Foundation certified course is one component of the Toyota Technical Education Network and Technicians' Education Cooperative programs. 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. This course prepares students for ASE Engine Performance (A8) certification. 108 lecture hours, 135 lab hours.

Course Objectives

- Upon satisfactory completion of the course, students will be able to: complete ninety-five percent (95%) of Priority 1 (P-1), seventy percent (70%) of Priority 2 (P-2) twenty-five percent (25%) of the Priority 3 (P-3) required National Automotive Technician Education Foundation (NATEF) objectives for Engine Performance (A8). Please see attached NATEF objectives or www.natef.org for the most current objectives.

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. Engine Fuels and Combustion
5. Emissions regulations
6. Auxiliary emission-control devices inspection, service, diagnosis & repair.
7. Combustion chemistry
   a. Five-gas exhaust analysis
   b. Three-way catalytic converter inspection, service, diagnosis & repair.

Lab Content

1. Ignition systems inspection, service, diagnosis & repair.
   a. Spark advance
   b. Primary Ignition diagnosis
   c. Secondary Ignition Diagnosis
   d. Oscilloscopes
2. 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
3. Auxiliary emission-control devices inspection, service, diagnosis & repair.
4. Combustion chemistry
   a. Five-gas exhaust analysis
   b. Three-way catalytic converter inspection, service, diagnosis & repair.

Suggested Reading Other Than Required Textbook

electronic journals, printed matter, on-line articles

Examples of Required Writing Assignments

Students will locate a relative technical article and write an evaluation of that article, including its technical merit, application to current course topics, and the usefulness of the article to their continued studies.

Examples of Outside Assignments

Students will locate a relative technical article and write an evaluation of that article, including its technical merit, application to current course topics, and the usefulness of the article to their continued studies.

Instruction Type(s)

Lab, Lecture, Online Education Lecture