AUTO 141: ENGINE MECHANICAL MAINTENANCE AND LIGHT REPAIR

Citrus College Course Outline of Record

Heading	Value
Effective Term:	Fall 2023
Credits:	2
Total Contact Hours:	54
Lecture Hours :	27
Lab Hours:	27
Hours Arranged:	0
Outside of Class Hours:	54
Total Student Learning Hours:	108
Strongly Recommended:	AUTO 140A or minimum one year industry experience.
Transferable to CSU:	No
Transferable to UC:	No
Grading Method:	Standard Letter, Pass/No Pass

Catalog Course Description

Intended for the incumbent worker, re-entry person or person seeking a career change into the automotive service industry. This course is part of the Maintenance and Light Repair (MLR) curriculum. This course covers essential engine theory, inspection, diagnosis, service and repair. Engine inspection and measurements are covered, with emphasis on in-vehicle repairs. 27 lecture hours, 27 lab hours.

Course Objectives

- Test the engine for a leak cylinder and recommend corrective action.
- Inspect for engine fluid leaks and recommend corrective action.
- Replace engine covers following manufacture repair procedures and specifications.
- Pressure test cooling system and recommend corrective action.
- Replace radiator, water pump and thermostats following manufacture repair procedures and specifications.
- Replace a timing belt following manufacture repair procedures and specifications.
- Adjust valves following manufacture repair procedures and specifications.

Major Course Content

1. Engine mechanical related safety
2. Audible voice commands when working with a helper.
3. Working around machinery in motion
4. Shop ergonomics
5. Tool placements
6. Fasteners, seals and gaskets related to engine repair.
7. Fasteners
8. Terminology
9. Selection
10. Repair
11. Seals
12. Installation
13. Gaskets
14. Theory of Operation of Various Engines and Related Systems
15. Engine block
16. Rotating assembly
17. Reciprocating assembly
18. Valve train
19. Cooling system
20. Exhaust system
21. Diagnosis, Repair and Service of Engines and Related Systems Using Manufacturer Standards and Service Information
22. Engine testing
    a. Compression
    b. Leak Down
    c. Head-gasket
23. Engine covers and gaskets
24. Valve train
    a. Timing belt
    b. Valve adjustment
25. Cooling system
    a. Radiator
    b. Water pump
    c. Thermostat

Engine mechanical related safety

1. Audible voice commands when working with a helper.
2. Working around machinery in motion
3. Shop ergonomics
4. Tool placements

Fasteners, seals and gaskets related to engine repair.

1. Fasteners
2. Terminology
3. Selection
4. Repair
5. Seals
6. Installation
7. Gaskets

Theory of Operation of Various Engines and Related Systems

1. Engine block
2. Rotating assembly
3. Reciprocating assembly
4. Valve train
5. Cooling system
6. Exhaust system

Diagnosis, Repair and Service of Engines and Related Systems Using Manufacturer Standards and Service Information

1. Engine testing
    a. Compression
    b. Leak Down
    c. Head-gasket

Engine covers and gaskets

1. Valve train
    a. Timing belt
    b. Valve adjustment
2. Cooling system
    a. Radiator
    b. Water pump
    c. Thermostat

Lab Content

1. Diagnosis, Repair and Service of Engines and Related Systems Using Manufacturer Standards and Service Information
2. Engine testing
    a. Compression
    b. Leak Down
    c. Head-gasket
3. Engine covers and gaskets
    a. Check for oil leaks
    b. Reseal engine covers
4. Valve train
    a. Timing belt
    b. Valve adjustment
5. Cooling system
    a. Radiator
    b. Water pump
    c. Thermostat

Suggested Reading Other Than Required Textbook

Industry related periodicals, forums, and approved text

Examples of Required Writing Assignments

3-4 page research paper using APA format on future of engine development for fuel economy and/or performance or on alternative fuel usage in engines.

Examples of Outside Assignments

Complete ASE review/preparation questions precision measuring worksheets.

Instruction Type(s)

Lab, Lecture, Online Education Lecture