NC AU141: ENGINE MECHANICAL SERVICE AND REPAIR

Citrus College Course Outline of Record

Heading	Value
Effective Term:	Fall 2025
Credits:	0
Total Contact Hours:	63
Lecture Hours :	27
Lab Hours:	36
Hours Arranged:	0
Outside of Class Hours:	54
Total Student Learning Hours:	117
Strongly Recommended:	AUTO 140A, NC AU140 or minimum one year industry experience.
Transferable to CSU:	No
Transferable to UC:	No
Grading Method:	Non-Credit Course

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 only. This course covers essential engine theory, inspection, diagnosis, service and repair. Engine inspection and measurements are covered, with emphasis on in-vehicle repairs. This course is the noncredit equivalent of credit course AUTO 141. 27 lecture hours, 36 lab hours.

Course Objectives

- Test the engine for cylinder leakage 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.
- Remove and reinstall cylinder head, evaluate condition of cylinder head and block deck surface.

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 and technical journals.

Examples of Required Writing Assignments

Weekly technical article summaries/evaluations from industry related periodicals and technical journals.

Examples of Outside Assignments

Complete ASE review/preparation questions precision measuring worksheets.

Instruction Type(s)

Lab, Lecture, Online Education Lecture