

University of Arkansas - Fort Smith
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General Syllabus

ASTE 12804 Automotive Engines

Credit Hours: 4

Lecture Hours: 2

Laboratory Hours: 4

Prerequisite or corequisite: ASTE 12304 Theory and Maintenance

Effective: 2018-2019

I. Course Information

A. Catalog Description

Major emphasis is on the design and rebuilding of automotive engines. Live vehicles are used for an actual shop experience. Modern equipment, servicing techniques and costs involved in engine rebuilding are covered.

B. Additional Information

Engine rebuilding is the major emphasis in this course. The operation, function and components of an engine are reviewed. Specific areas include engine rebuilding, engine overhauling, cylinder re-boring, valve re-facing, re-seating and the use of precision measuring instruments.

II. Student Learning Outcomes

A. Subject Matter

Upon successful completion of this course, the student will be able to:

1. Comply with personal and environmental safety practices associated with clothing, eye protection, hand tools, power equipment, proper ventilation, and the handling, storage and disposal of chemicals/materials in accordance with local, state and federal safety and environmental regulations.
2. Perform engine diagnosis, removal and reinstallation (R&R)
3. Cylinder Head and Valve Train Diagnosis and Repair.
4. Engine Block Assembly Diagnosis and Repair
5. Lubrication and Cooling Systems Diagnosis and Repair

B. University Learning Outcomes

This course enhances student abilities in the following areas:

Communication Skills (written and oral)

Students must deal effectively with customers' complaints and ask effective questions to elicit more information.

Analytical Skills

Critical Thinking Skills: Students must analyze data gathered from customer complaints, inspections, tests, etc. in order to diagnose automotive engines problems.

III. Major Course Topics

- A. Safety Practices
- B. Theory of Engine Operation
- C. Engine Operating Systems
- D. Engine Materials and Fasteners
- E. Intake and Exhaust Systems
- F. Cylinder Heads
- G. Camshafts and Valve Trains
- H. The Cylinder Block Assembly
- I. Engine Seals, Sealants and Gaskets
- J. High-Performance Engines