

J. Sargeant Reynolds Community College
Course Content Summary

Course Prefix and Number: AUT 111

Credits: 4

Course Title: Automotive Engines I

Course Description: Presents analysis of power, cylinder condition, valves and bearings in the automotive engine to establish the present condition, repairs, or adjustments. Lecture 3 hours. Laboratory 3 hours. Total 6 hours per week.

General Course Purpose: Identify, care, and use of hand tools, power tools, and precision measuring equipment. Discuss the basic theory, operation, and repair of internal combustion engines. Safety will be emphasized.

Course Prerequisites and Co-requisites:

None

Student Learning Outcomes:

Upon completing the course, the student will be able to

- a. Explain the theory and functioning of internal combustion engines (ICE);
- b. Identify and list various types of engines and their operational advantages and disadvantages;
- c. Demonstrate general overhaul and repair of ICE components;
- d. Demonstrate general overhaul and repair procedures on selected ICE;
- e. Demonstrate proper maintenance and preventative maintenance procedures on ICE;
- f. Identify various engine failures and the causes;
- g. Demonstrate basic tests to check the mechanical condition of the engine;
- h. Demonstrate basic tests of the engine's cooling system;
- i. Demonstrate basic tests of the engine's lubrication system;
- j. Demonstrate various internal maintenance procedures related to the engine; and
- k. Demonstrate various in-vehicle repairs of an engine.

Major Topics to Be Included:

- a. Shop Safety
- b. Personal Safety
- c. Tool and Equipment Safety
- d. Measuring Systems (standard and metric)
- e. Introduction to Internal Combustion Engines
- f. Noise Diagnosis
- g. Engine Disassembly, Component Identification, Overhaul Procedures and Reassembly
- h. Installing and Timing of Components
- i. Lubricating and Cooling Systems
- j. Intake and Exhaust Systems
- k. Engine Sealing and Reassembly
- l. Adhesives, Sealants, and Other Chemical Sealing Materials
- m. Engine Failures
- n. Basic Engine Tests
- o. Coding System Tests
- p. Lubrication System Tests
- q. In-vehicle Repairs
- r. Periodic Maintenance

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