

**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. Part I of II. 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

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

Major Topics to Be Included:

- Shop Safety
- Personal Safety
- Tool and Equipment Safety
- Measuring Systems (standard and metric)
- Introduction to Internal Combustion Engines
- Noise Diagnosis
- Engine Disassembly, Component Identification, Overhaul Procedures and Reassembly
- Installing and Timing of Components
- Lubricating and Cooling Systems
- Intake and Exhaust Systems

- Engine Sealing and Reassembly
- Adhesives, Sealants, and Other Chemical Sealing Materials
- Engine Failures
- Basic Engine Tests
- Coding System Tests
- Lubrication System Tests
- In-vehicle Repairs
- Periodic Maintenance

Effective Date/Updated: January 24, 2019