

Course Objectives/Course Outline
Spokane Community College

Course Title: Basic Principles of Engine Theory

Prefix and Course Number: HEQ 121

Course Learning Outcomes:

By the end of this course, a student should be able to:

- understand basic engine theory and operation as it applies to gasoline engines and two- and four-cycle diesel engines
- describe the function of lubrication and cooling system components
- diagnose system malfunctions for carburetors, fuel injectors, and diesel fuel systems

Course Outline

- I. Basic Engine Theory and Operation
 - A. Gasoline Engines
 - B. Two-Cycle Diesel Engines
 - C. Four-Cycle Diesel Engines
- II. Engine Carburetion Theory and Operation
 - A. Component Circuitry
 - B. Types of System Malfunctions
 - C. Adjustments
- III. Diesel Fuel Theory and Operation
 - A. Fuel Injection
 - B. Component Testing and Adjustment
- IV. Air Intake and Exhaust Systems Theory and Operation
 - A. Gas Engines
 1. intake
 2. filters
 3. ducting
 4. manifolds
 5. mufflers
 - B. Diesel Engines
 1. intake
 2. filters
 3. ducting
 4. manifolds
 5. exhaust turbochargers
 6. blowers
 7. mufflers
- V. Lubrication and Cooling Systems Theory and Operation
 - A. Types
 - B. Radiators
 - C. Fans
 - D. Cooling Pumps
 - E. Oil Pumps
 - F. Oil Coolers

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- VI. Engine Governor/Speed Control Device Theory and Operation
 - A. Gasoline Engines
 - B. Diesel Engines
- VII. Liquefied Petroleum Gas Fuel System Theory and Operation