South Central College

AST 2812  Basic Air Conditioning

Course Outcome Summary

Course Information

Description  This course covers the principles of air conditioning. Various system types, malfunction diagnosis, testing, and repair are studied in the classroom. Practical work such as component replacement, charging, and performance testing will be on actual systems. (Prerequisite: Admission into the Automotive Service program and AST1112 or instructor approval)

Total Credits  2
Total Hours  48

Types of Instruction

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Pre/Corequisites

Admission into the Automotive Service program

Institutional Core Competencies

Critical and Creative Thinking - Students will be able to demonstrate purposeful thinking with the goal of using a creative process for developing and building upon ideas and/or the goal of using a critical process for the analyzing and evaluating of ideas.

Course Competencies

1. **Exhibit professionalism**
   Learning Objectives
   - Describe refrigerant safety precautions / refrigerant equipment usage
   - Exhibit shop safety practices

2. **Describe air conditioning operating principals**
   Learning Objectives
   - Identify air conditioning laws
   - Define air conditioning terms
   - Describe air conditioning system component operation
3. **Perform air conditioning maintenance**

   **Learning Objectives**
   Identify different air conditioning oils, determine recommended oil and oil capacity for system
   Measure air conditioning oil level, diagnose oil condition, determine correct oil to add
   Perform air conditioning system flush, determine need for additional A/C system filter
   Identify abnormal operating noises in the A/C system; determine necessary action
   Remove, inspect, and reinstall A/C compressor, mountings, determine correct oil quantity
   Inspect, remove, and/or replace A/C compressor drive belts, pulleys, tensioners and visually inspect A/C components for signs of leaks; determine needed action

4. **Perform correct use and maintenance of refrigerant handling equipment according to equipment manufacturer's standards**

   **Learning Objectives**
   Identify R-134 and R-12 refrigerant systems by label or gauge hose fittings
   Describe R134A temperature pressure relationship
   Identify refrigerant type using refrigerant identifier
   Describe leak testing methods
   Perform A/C leak test; determine necessary action
   Recycle refrigerant / test for non-condensable gases / label and store
   Identify and recover A/C system refrigerant, test for sealants

5. **Performance test air conditioning; A/C system malfunctions**

   **Learning Objectives**
   Identify and interpret heating and air conditioning problems; determine needed action
   Select and connect proper A/C gauge set depending on refrigerant type
   Interpret manifold gauge readings
   Partial charge air conditioning system
   Evacuate air conditioning system
   Charge air conditioning system / hand manifold gauge set
   Charge air conditioning system / charging station

6. **Describe air conditioning systems controls**

   **Learning Objectives**
   Identify air conditioning vacuum controls
   Identify air conditioning air flow and identify the source of A/C system odors
   Inspect evaporator housing drain; perform necessary action

**SCC Accessibility Statement**

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Additional information and forms can be found at: [www.southcentral.edu/disability](http://www.southcentral.edu/disability)

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