

**J. Sargeant Reynolds Community College
Course Content Summary**

Course Prefix and Number: AUT 185 **Credits:** 4

Course Title: HVAC Systems - OEM

Course Description:

Presents automotive heating and air conditioning systems. Introduces diagnostic procedures emphasizing performing proper A/C performance testing and refrigerant handling. Develops diagnostic strategies to locate and repair faults in air conditioning systems, including Hybrid (3-Phase) A/C compressors. This course is intended for students in an original equipment manufacturing (OEM) training program. Lecture 2 hours. Laboratory 8 hours. Total 10 hours per week. 4 credits

General Course Purpose:

This course is intended for students in an OEM training program to provide specific instruction and hands-on practice of the OEM's HVAC systems with a focus on developing appropriate diagnostic strategies following OEM-specific repair procedures. The course focuses on the tools and equipment, strategies for inspection, service, and repair of OEM-specific vehicles.

Course Prerequisites and Co-requisites:

- **Prerequisite:**
 - Acceptance and good standing in an original equipment manufacturer (OEM) training program.
 - AUT 181 Electrical I - OEM or program head approval.
- **Co-Requisite:**
 - None

Student Learning Outcomes:

Upon completing the course, the student will be able to

- Prepare to sit for the A7 – Heating, Ventilation and Air Conditioning ASE examination
- Identify, handle, and dispose of refrigerant related to air conditioning service operations
- Identify and describe principles of engine cooling system operation, refrigeration systems, passenger heating, and cooling, and heat movement theory
- Inspect, diagnose, service, and repair HVAC systems
- Diagnose, service and repair, HVAC related systems such as automatic temperature control, rear HVAC, climate controlled seats, and hybrid battery cooling systems

Major Topics to Be Included:

- Refrigerant description, identification, handling and regulations
- Engine cooling, heating systems, and basics of air conditioning
- HVAC system inspection, diagnosis, and repair
- HVAC related systems diagnosis and repair
- Other technologies as required by the OEM's specifications

Effective Date/Updated: January 1, 2023