

COURSE OUTLINE

Revised By: Howard Andersen 2014

DEPARTMENT:	Automotive Technology
CURRICULUM:	Automotive Technology
COURSE TITLE:	Air Conditioning and Heating
COURSE NUMBER:	AUT 116
TYPE OF COURSE:	Vocational Preparatory
COURSE LENGTH:	Normally 4 weeks
CREDIT HOURS:	6
LECTURE HOURS:	20
LAB HOURS:	80
CLASS SIZE:	20 maximum
PREREQUISITES:	MVM 100 (Introduction to Automotive Technology I), MVM 102 (Introduction to Automotive Technology II), AUT 100 (Introduction to Electricity), AUT 102 (Advanced Electrical Systems), AUT 104 (Automotive Electronics), basic math skills, and 9 th grade or higher reading level (as evidence by appropriate placement test scores), and/or instructor permission.

COURSE DESCRIPTION:

Contents include: Basic principles involving air conditioning and heating systems; troubleshooting and diagnosing of air conditioning and heating systems; removal and reinstalling of air conditioning and heating components in vehicles. In addition, the function and construction of each component, as well as their diagnosis and service procedures will be covered. Instruction in safety, environmental awareness, human relations and leadership are taught as an integral part of this unit.

STUDENT LEARNING OUTCOMES ADDRESSED:

1. Critical Thinking - Use problem solving skills to diagnose and repair air conditioning and heating problems. (SLO 401)

2. Technology – Proper use and care of air conditioning and heating repair tools and equipment. (SLO 5.1)

PROGRAM OUTCOMES:

1. Inspect, diagnose, replace and service each of the major systems in various types of HVAC systems. (SLO 4.1)
2. Locate sources, make parts write-ups, calculate costs and explain repair or service. (SLO 2.1, 2.2 & 7.1)
3. Handle customer needs, complaints, questions and special challenges. (SLO 3.1 & 3.2)
4. Access and apply manufacturer’s specifications in repair and replacement. (SLO 7.1)
5. Work safely and responsibly within all shop safety and environmental guidelines and standards. (SLO 6.4 & 6.5)
6. Demonstrate ability to pass the ASE test required for NATEF certification. (SLO 1.1, 1.2 & 7.1)
7. Communicate and document service records. (SLO 2.1)
8. Compute costs, time and measurements. (SLO 2.1, 2.2 & 7.1)
9. Work independently and in groups to service, repair, test and maintain vehicles. (SLO 3.1 & 6.3)
10. Use technology to test vehicles. (SLO 5.1)
11. Work with accuracy, dependability, proficiency and in a timely manner, when servicing equipment. (SLO 6.3 & 6.4)

GENERAL COURSE OBJECTIVES:

At the end of the course the student will:

1. Identify the components and parts of the air conditioning and heating systems
2. Know how to identify the different refrigerants.
3. Explain the function of the components and parts of the air conditioning and heating systems.
4. Performance test air conditioning and heating systems using temperature and pressure readings.
5. Perform service, diagnosis and repair procedures on air conditioning and heating systems.
6. Demonstrate proficiency in NATEF competencies.

TOPICAL OUTLINE:

APPROX. HOURS

1. Safety practices	5
2. Components of air conditioning and heating systems	10
3. Principles of air conditioning and heating systems	25
4. Diagnosing air conditioning and heating systems	30
5. Maintaining and repairing air conditioning and heating systems	<u>30</u>
Total	100