



Broward Community College

Course Outline

LAST REVIEW: 2005-2006

NEXT REVIEW: 2010-2011

STATUS: A

COURSE TITLE: Heating and Air Conditioning Theory

COMMON COURSE NUMBER: AER2758C

CREDIT HOURS: 4

CONTACT HOUR BREAKDOWN

(per 16 week term)

CLOCK HOURS:

Lecture: 48 Lab: 48

(Voc. Course ONLY)

Clinic: Other: 89

PREREQUISITE(S):

COREQUISITE(S):

PRE/COREQUISITE(S):

COURSE DESCRIPTION: A course designed to teach the principles and operations of automotive heating systems, air-conditioning systems and accessories to provide practical experience in testing, analyzing, installing and repairing heating systems, air conditioning systems, air conditioning tools and equipment, lines, fittings, and valves; operational checks and adjustment, minor repairs, and the special tools, and instruments to be used

UNIT TITLES:

1. Air Conditioning and Heating Theory
2. Air Conditioning and Heating Repair

I. Course Overview:

Upon successful completion of this course, the students should be able to explain how automotive heating and air conditioning systems operate and how to repair them.

II. Units:

Unit 1. Air Conditioning and Heating Theory

General Outcome:

- 1.0 The students should be able to discuss the operating principles and construction of automotive air conditioning and heating systems.

Specific Learning Outcomes:

Upon successful completion of this unit, the students should be able to:

- 1.1 Describe the operation of a typical automotive air conditioning and heating system.
- 1.2 Identify each air conditioning system component and explain its relation to adjacent components.
- 1.3 Identify the various types of automotive air conditioning systems).
- 1.4 Explain how the various types of automotive air conditioning systems differ in construction and operation.
- 1.5 Discuss the effects of R-12 refrigerant on the earth's atmosphere and the related need for recycling.
- 1.6 Describe the design and service changes necessitated by the use of R134A refrigerant.
- 1.7 Describe the procedure for retrofitting R-12 systems to R-134A refrigerant.

Unit 2. Air Conditioning and Heating Repair

General Outcome:

2.0 The students should be able to discuss the maintenance requirements and repair procedures of automotive air conditioning and heating systems.

Specific Learning Outcomes:

Upon successful completion of this unit, the students should be able to:

- 2.1 Diagnose heating or air conditioning problems.
- 2.2 Attach all test equipment and perform all test procedures.
- 2.3 Discharge, evacuate, recover refrigerant, and charge an air conditioning system according to manufacturer's recommendations.
- 2.4 Test and repair fan and compressor clutch circuits and other electrical control circuits in both manual and electronically controlled systems.
- 2.5 Remove and replace the following: (a) Compressors, (b) Condensers, (c) Receiver/Driers, (d) Thermostatic Expansion Valves and Orifice Tubes (e) Evaporators, (f) Fan Clutches, (g) Fan Motors, (h) Heater Cores (i) Air conditioning and heater hoses.