AIRC 210
COMFORT COOLING SYSTEMS
3 Semester Hours

The Community College of Baltimore County

Description

Comfort Cooling Systems
Applies the theory and principles of refrigeration to comfort cooling and explains the use of electric heat pumps in residential and light commercial applications; describes the regulations and procedures that apply to refrigerant recovery, recycling and reclaiming and offers hands-on laboratory work in recovery and troubleshooting.
Prerequisite: AIRC 115 and ELEI 101

Overall Course Objectives.

Upon completion of this course the student will be able to:

1. Understand the various designs and applications of comfort cooling systems.
2. Understand the theory and operation of heat pumps.
3. Troubleshoot problems in comfort cooling equipment
4. Install, repair, and service comfort cooling equipment
5. Understand the regulations, procedures and equipment that apply to refrigerant recovery reclaiming and recycling as set forth in the current EPA guidelines.

Major Topics

I. Identify the components of cooling-only systems.
II. Check and adjust charge on refrigeration systems.
III. Evacuate refrigeration systems.
IV. Pump down refrigeration systems.
V. Check for refrigerant leaks.
VI. Calculate charge weight for a refrigeration system.
VII. Perform start-up procedures.
VIII. Trace control and line voltage circuits using schematic and wiring diagrams.
IX. Connect control circuits.
X. Check electrical components with multimeters and clamp-on ammeters.
XI. Describe the operation of various types of single phase ac motors.
XII. Describe the components and operation of heat pump systems.
XIII. Define Coefficient of Performance (C.O.P) and Seasonal Energy.
XIV. Efficiency Ratio (S.E.E.R.)
XV. Compare different methods of controlling heat pump defrosting.
XVI. Describe methods of providing auxiliary and emergency heat.
XVII. Use balance point diagrams to determine auxiliary heat requirements and outdoor thermostat settings.
XVIII. Measure air flow rates using various instruments
XIX. Evaluate system air flow requirements.
XX. Perform methods for recovering and reclaiming refrigerant and system clean-up.
XXI. Perform maintenance procedures.
XXII. Contrast split-system and package equipment.
XXIII. Define EPA regulations pertaining to recovery, recycling, and reclaiming refrigerants.

Course Requirements

Grading: Grading procedures will be determined by the individual faculty member but will include the following:

1. Attendance and participation.
2. Two written exam: mid-term and final.
3. A minimum of twelve classwork/lab assignments.
4. A minimum of four quizzes.
5. Two practical lab exams, mid-term and final.
6. Environmental Protection Agency Refrigeration Certification Exam (national)

Other Course Information

This is an AIRC core course.