

**Common Course Outline**  
**AIRC 232**  
**Advanced Residential Systems**  
**3 Semester Hours**

**The Community College of Baltimore County**

**Description**

**AIRC 232 - 3credits - Advanced Residential Systems** presents advanced service techniques for maintenance and repair of residential air conditioning equipment and controls. Students learn to troubleshoot and repair major components of a residential air conditioning system. Topics include advanced system analysis, measurement of operating efficiency, and inspection and correction of all major system components. Upon completion, students restore a HVAC system so that it operates at manufacturers' specifications.

**3 Credits:** 2 lecture hours per week; 2 lab hours per week

**Prerequisites:** AIRC 115, AIRC 205, AIRC 210, ELEI 101, and ELEI 201 or approval by the program coordinator

**Overall Course Objectives**

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

1. develop a set of planned maintenance procedures and schedules;
2. identify and correct faults on a simulated HVAC system;
3. inspect a HVAC system for leaks and proper operation;
4. troubleshoot and repair residential cooling equipment;
5. troubleshoot and repair accessories to residential HVAC equipment;
6. perform planned or essential maintenance on natural and LP Gas fired HVAC systems;
7. perform planned or essential maintenance on oil powered HVAC systems;
8. perform planned or essential maintenance on electric powered HVAC systems;
9. read wiring diagrams and troubleshoot tables for various pieces of HVAC equipment;  
and
10. measure the operating efficiency of a residential unit.

**Major Topics**

- I. Inspection procedures
- II. Troubleshooting procedures
- III. Planned maintenance schedules
- IV. Cooling units
- V. Heating units, gas and oil
- VI. Heat pumps
- VII. Boilers

## **Course Requirements**

Grading/exams: Grading procedures will be determined by the individual faculty member and will be provided on the first day of class.

The following will be required for this course:

1. Approved practical project or written paper  
If a written paper is assigned, the following will apply:
  - a. Topic of the paper will be selected by the student and should relate to the subject material of the course.
  - b. The paper should be six (6) to eight (8) pages in length, typewritten, and double-spaced. It should include in addition to the six (6) to eight (8) pages of text, an author and title page and bibliography utilizing a minimum of three reference resources excluding classroom materials.
  - c. All papers are due when 80% of the class sessions are completed.
2. Lab or software simulation project using time and accuracy grading format
3. Midterm exam
4. Comprehensive final
5. Minimum of three (3) classroom assignments
6. Minimum of four (4) homework assignments
7. Class discussion and participation

## **Other Course Information**

This course is a Heating Ventilating, Air Conditioning and Energy Technology program elective.