

Common Course Outline

AIRC 205

Heating Systems

3 Semester Hours

The Community College of Baltimore County

Description

AIRC 205 – 3 Credits - Heating Systems investigates the construction and operation of gas fired, oil fired and electric forced air heating equipment. Students practice safe and appropriate procedures for installing, testing, adjusting, and maintaining heating equipment.

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

Prerequisite: AIRC 115 and ELEI 101

Overall Course Objectives

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

1. explain combustion principles;
2. describe applications of fuel oils;
3. identify components of gas, oil, and electric heating units;
4. explain the differences between propane and natural gas furnaces;
5. illustrate gas pilot ignition methods;
6. identify types of gas burners and heat exchangers;
7. test gas furnace efficiency;
8. test a thermocouple;
9. check fuel pump operation;
10. test and adjust oil burners for maximum efficiency;
11. describe the operation of sequencers and heat relays in electric furnaces;
12. list safety procedures for operating controls in hydronic systems;
13. describe the difference between passive and active solar heating systems; and
14. perform maintenance, service and repairs on oil, gas, mechanical and electric heating systems.

Major Topics

- I. Safety procedures
- II. Combustion
- III. Fuel oils
- IV. Gas, oil, and electric heating units
- V. Furnace efficiency
- VI. Thermocouples
- VII. Humidification
- VIII. Solar heating systems

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. Midterm exam
3. Comprehensive final
4. Minimum of three (3) classroom assignments
5. Minimum of four (4) homework assignments
6. Class discussion and participation

Other Course Information

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