

Common Course Outline
AIRC 222
Commercial Refrigeration Systems
3 Semester Hours

The Community College of Baltimore County

Description

AIRC 222 – 3 credits - Commercial Refrigeration Systems investigates the methods and procedures used to analyze and diagnose problems with ice machines, reach-in coolers and freezers, and walk-in coolers and freezers. Emphasis is placed on light commercial type equipment. Students practice diagnostics through simulation and hands-on practice.

3 credits: 3 lecture hours per week

Prerequisites: AIRC 115, AIRC 210, ELEI 101, and ELEI 201 or approval of program coordinator

Overall Course Objectives

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

1. demonstrate operation of commercial refrigeration units, ice machines, restaurant specialty systems and their functions;
2. demonstrate troubleshooting and typical operating conditions for commercial refrigeration systems;
3. describe the application and function of specialized commercial refrigeration components;
4. identify common mechanical and electrical controls found on commercial A/C and refrigeration systems;
5. describe defrost systems and the function of the system components;
6. analyze operating conditions of medium and low temperature refrigeration systems;
7. adjust the superheat setting of a thermostatic expansion valve;
8. apply the refrigeration cycle to the operation of commercial refrigeration equipment;
9. outline the different methods for charging commercial refrigeration systems having either air-cooled or water-cooled condensers;
10. determine cut-in and cut-out pressure settings for pressure controls for direct temperature control, pump down and condenser fan cycling;
11. compare and contrast the different designs of commercial ice machines;
12. describe the different means of low ambient control; and
13. comply with personal and environmental safety practices.

Major Topics

- I. Safe practices and procedures
- II. Specialized commercial components

- III. Mechanical and electrical controls
- IV. Defrost systems
- V. Refrigerant cycle
- VI. Charging methods
- VII. Ice machines

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 elective.