

AIR CONDITIONING & REFRIGERATION (AIRC)

AIRC 10 Technical Mathematics in Air Conditioning and Refrigeration

2 Units (Degree Applicable)

Lecture: 27 Lab: 27

Develops mathematical skills required for the study and application of air conditioning and refrigeration, including measurements and equations applied to heat loads, air distribution, electricity, and the design of air conditioning and refrigeration equipment.

AIRC 11 Welding for Air Conditioning and Refrigeration

2 Units (Degree Applicable)

Lecture: 18 Lab: 54

Fundamentals of welding related to the field of air conditioning and refrigeration with emphasis on the sterile techniques and skills required for joining copper refrigerant lines and the procedures for light fabrication.

AIRC 12 Air Conditioning Codes and Standards

3 Units (Degree Applicable)

Lecture: 54

Building codes and standards as they apply to the air conditioning and refrigeration industry. Develops skills necessary to read and interpret building codes and resolve installation and service problems as they apply to the construction industry.

AIRC 20 Refrigeration Fundamentals

4 Units (Degree Applicable)

Lecture: 54 Lab: 71

Principles of mechanical refrigeration based on the refrigeration cycle and associated mechanical components. Develops skills for interpreting service gauge pressures and sensible temperatures, system dehydration techniques, and the safe handling and containment of refrigerants.

AIRC 25 Electrical Fundamentals for Air Conditioning and Refrigeration

5 Units (Degree Applicable)

Lecture: 72 Lab: 54

Electrical principles and practices used in air conditioning, refrigeration, and heat pump systems as applied to the development and interpretation of schematics and the sequential approach to wiring circuits including power supplies, motors, and controls. Develops skills for designing electrical circuits, and electrical trouble shooting.

AIRC 26 Gas Heating Fundamentals

2 Units (Degree Applicable)

Lecture: 36

Advisory: AIRC 25 and AIRC 12

Theory, operation, and application of natural gas and propane heating systems used in residential and light commercial heating installations, including the properties of fuel gasses, gas combustion, furnace construction, pilot proving devices, and ignition systems.

AIRC 30 Heat Load Calculations and Design

4 Units (Degree Applicable)

Lecture: 72

Advisory: AIRC 20

Heat loss and heat gain will be examined, developed, and applied to residential dwellings air conditioning systems. Equipment sizing, selection, and duct design based on the Heat Load of the structure. Heat Load calculation software will be explored and used to aid in the process.

AIRC 31 Commercial Electrical for Air Conditioning and Refrigeration

4 Units (Degree Applicable)

Lecture: 54 Lab: 54

Advisory: AIRC 25

Electrical control of commercial air conditioning and refrigeration equipment emphasizing time clocks, defrost, three phase transformers, three phase motors, Variable Frequency Drives, and troubleshooting of three phase systems.

AIRC 32A Air Properties and Measurement

1.5 Units (Degree Applicable)

Lecture: 27

Advisory: AIRC 20 and AIRC 30

Investigates the air-side operating theory and application of comfort cooling systems. This course will broaden the student's understanding of air conditioning systems by addressing psychrometrics to include the measurement of dry bulb and wet bulb temperatures, relative humidity, dew point temperatures, and sensible and latent heat processes.

AIRC 34 Commercial Systems

4 Units (Degree Applicable)

Lecture: 63 Lab: 27

Advisory: AIRC 20 and AIRC 25

This course is designed for the advanced student to gain familiarity with commercial systems, which are not limited to air handlers, cooling towers, water pumps, chillers, and thermal storage. Students will also increase their understanding of how large complex buildings are to be conditioned.

AIRC 61 Building Automation Fundamentals

4 Units (Degree Applicable)

Lecture: 54 Lab: 54

Advisory: AIRC 20 and AIRC 25 and AIRC 31 and AIRC 34

Basics of commercial heating, ventilation, and air conditioning (HVAC) control theory as it applies to control systems. Building automation systems (BAS) controller wiring for power, communication, inputs, and outputs. Navigating the computer operating system environment, BAS software, and applications. Word processing, spreadsheets, and flow-charts for use with BAS systems.

AIRC 65 Building Automation Networks and Programming

4 Units (Degree Applicable)

Lecture: 54 Lab: 54

Advisory: AIRC 61

Programming heating, ventilation, and air conditioning (HVAC) direct digital controllers using line (text) programming, icon based programming, and block programming. Stresses good programming practices including complete program documentation.

AIRC 67 Energy Management

4 Units (Degree Applicable)

Lecture: 72

Advisory: *AIRC 31 and AIRC 34 and AIRC 65*

Principles and practical applications for energy cost reduction and strategies. Emphasis on the use of Building Automation Systems to achieve control over energy costs. Includes theory for sustainable Green Building Technologies with introduction to Energy Star buildings and Leadership in Energy and Environmental Design (LEED) programs.

AIRC 95 Work Experience in Air Conditioning and Refrigeration

1-4 Units (Degree Applicable)

(May be taken for Pass/No Pass only)

Prerequisite: *Approval of college Work Experience supervisor and compliance with Work Experience regulations as designated in the College Catalog.*

Work experience in Air Conditioning & Refrigeration at an approved work site with related classroom instruction. This work experience may be during a regular semester or during a summer session. A minimum of 75 paid clock hours or 60 non-paid clock hours per semester is required for each one unit of credit. It is recommended that the hours per week are equally distributed throughout the semester. Instructor approval required.