

AIR CONDITIONING AND REFRIGERATION (AIR)

AIR 111 Air Conditioning & Refrig Controls I (3 CR.)

Presents electron theory, magnetism, Ohm's Law, resistance, current flow, instruments for electrical measurement, A.C. motors, power distribution controls and their application. Lecture 2 hours. Laboratory 2 hours. Total 4 hours per week. Credit for Prior Learning available for this course. More information at <https://www.nvcc.edu/admissions/cpl.html>.

Prerequisite or Corequisite 6

Credit for Prior Learning available for this course. More information at <https://www.nvcc.edu/admissions/cpl.html>.

AIR 121 Air Cond & Refrigeration I (4 CR.)

Studies refrigeration theory, characteristics of refrigerants, temperature and pressure, tools and equipment, soldering, brazing, refrigeration systems, system components, compressors, evaporators, and metering devices. Presents charging and evaluation of systems and leak detection. Explores servicing the basic system. Explains use and care of oils and additives and troubleshooting of small commercial systems. Lecture 3 hours. Laboratory 3 hours. Total 6 hours per week.

Prerequisite or Corequisite 6

Credit for Prior Learning available for this course. More information at <https://www.nvcc.edu/admissions/cpl.html>.

AIR 122 Air Cond & Refrigeration II (4 CR.)

Studies refrigeration theory, characteristics of refrigerants, temperature and pressure, tools and equipment, soldering, brazing, refrigeration systems, system components, compressors, evaporators, and metering devices. Presents charging and evaluation of systems and leak detection. Explores servicing the basic system. Explains use and care of oils and additives and troubleshooting of small commercial systems. Lecture 3 hours. Laboratory 3 hours. Total 6 hours per week.

Prerequisite(s) AIR 121

Credit for Prior Learning available for this course. More information at <https://www.nvcc.edu/admissions/cpl.html>.

AIR 134 Circuits And Controls I (3 CR.)

Presents circuit diagrams for air conditioning units, reading and drawing of circuit diagrams, types of electrical controls, and house wiring circuits. Includes analysis of air conditioning circuits, components, analysis and characteristics of circuits and controls, testing, and servicing. Lecture 2 hours. Laboratory 2 hours. Total 4 hours per week.

Prerequisite(s) AIR 111

Credit for Prior Learning available for this course. More information at <https://www.nvcc.edu/admissions/cpl.html>.

AIR 154 Heating Systems I (4 CR.)

Introduces types of fuels and their characteristics of combustion; types, components and characteristics of burners, and burner efficiency analyzers. Studies forced air heating systems including troubleshooting, preventive maintenance and servicing. Lecture 3 hours. Laboratory 3 hours. Total 6 hours per week.

Prerequisite or Corequisite 1

Credit for Prior Learning available for this course. More information at <https://www.nvcc.edu/admissions/cpl.html>.

AIR 205 Hydronics And Zoning (4 CR.)

Presents installation, servicing, troubleshooting, and repair of hydronic systems for heating and cooling. Includes hot water and chilled water systems using forced circulation as the transfer medium. Lecture 3 hours. Laboratory 3 hours. Total 6 hours per week.

Prerequisite(s) AIR 154

Credit for Prior Learning available for this course. More information at <https://www.nvcc.edu/admissions/cpl.html>.

AIR 207 Heat Loads & Psychrometrics (4 CR.)

A proficiency in basic Algebra is highly recommended. Studies air and its properties, characteristics, and measurements as applied to human comfort. Considers control of temperature, humidity, and distribution of air and air mixtures. Studies heat loss and heat gain factors. Considers the effect, the selection and layout of residential air conditioning and refrigeration systems. Lecture 3 hours. Laboratory 3 hours. Total 6 hours per week.

Prerequisite(s) AIR 121

Credit for Prior Learning available for this course. More information at <https://www.nvcc.edu/admissions/cpl.html>.

AIR 213 Air Cond & Refrigeration Controls III (4 CR.)

Introduces electrical, pneumatic and electronic control circuits as applied to year-round air conditioning systems. Includes reading wiring and schematic diagrams, troubleshooting, and designing high and low voltage control systems. Lecture 3 hours. Laboratory 3 hours. Total 6 hours per week.

Prerequisite(s) AIR 134

AIR 231 Circuits and Controls IV (4 CR.)

Applies controls and control circuits to air conditioning and refrigeration, including components, pilot devices and controls, and circuit diagrams. Lecture 3 hours. Laboratory 3 hours. Total 6 hours per week.

AIR 232 Circuits and Controls V (3 CR.)

Presents application and design of wiring and schematic diagrams of commercial refrigeration systems. Teaches fundamentals of operation and applications of pneumatic controls including basic pneumatic control circuits. Lecture 2 hours. Laboratory 3 hours. Total 5 hours per week.

AIR 235 Heat Pumps (4 CR.)

Studies theory and operation of reverse cycle refrigeration including supplementary heat as applied to heat pump systems, including service, installation and maintenance. Lecture 3 hours. Laboratory 3 hours. Total 6 hours per week.

Prerequisite(s) AIR 122 and AIR 134

AIR 238 Advanced Troubleshooting And Service (4 CR.)

Presents advanced service techniques on a wide variety of equipment used in refrigeration, air conditioning, and phases of heating and ventilation and controls. Lecture 3 hours. Laboratory 3 hours. Total 6 hours per week.

AIR 240 Direct Digital Controls (DDC) I (3 CR.)

Studies the principles of direct digital controls. Presents common terms used within the HVAC control industry. Covers the function and operating characteristics of sensors, controllers, and final control devices. Highlights transfer function for a control device and details the development of equations for typical control transfer functions. Lecture 2 hours. Laboratory 2 hours. Total 4 hours per week.

AIR 251 Air Conditioning Systems I (4 CR.)

Includes troubleshooting the cooling system. Lecture 3 hours. Laboratory 3 hours. Total 6 hours per week.

Prerequisite(s) AIR 122 and AIR 134 Studies equipment used in air component sizing, selection, and application; servicing and repairing of coils and compressors

AIR 252 Air Conditioning Systems II (4 CR.)

Studies piping design and sizing, installation, condensers, and water towers. Includes valves, strainers, and accessories; duct systems and air distribution design and their relationship with volume, static pressure and velocity. Lecture 3 hours. Laboratory 3 hours. Total 6 hours per week.

AIR 257 Gas-Fired Warm Air Furnaces (4 CR.)

Covers the study of mid- and high-efficiency gas-fired warm air furnaces and their components. Includes equipment components, installation, servicing, and maintenance. Lecture 3 hours. Laboratory 3 hours. Total 6 hours per week.

Prerequisite(s) AIR 154

AIR 276 Refrigerant Usage EPA Certification (1 CR.)

Prepares HVAC technicians for a refrigerant certification test mandated by the Environmental Protection Agency (EPA). Reviews refrigerant recovery, recycle, and reclamation procedures for service work associated with air conditioning and refrigeration. Examines environmental impact including ozone depletion resulting from refrigeration utilization. Lecture 1 hour. Total 1 hour per week.

Prerequisite or Corequisite R