

AHR - AIR CONDITIONING, HEATING AND REFRIGERATION TECHNOLOGY

AHR 101 **4 credit hours (lecture: 3 | lab: 3)** **Introduction to Air Conditioning and Refrigeration**

Course present theories, demonstrations and lab experiences in area of basic vapor compression cycle in refrigeration. Content includes functioning and operating characteristics of mechanical refrigeration system: condensers, evaporators, compressors, refrigerant control devices, refrigerants, test equipment, and special service procedures connected with basic refrigeration cycle. The Clean Air Act set by EPA for proper use of refrigerants explained.

Instruction Type: In-Person | Online Fee: \$45
Term Typically Offered: Fall | Spring | Summer

AHR 102 **4 credit hours (lecture: 3 | lab: 3)** **Heating**

Course covers basic principles of residential heating systems. Content includes proper installation, service and safety procedures, and introductions of the proper procedures to troubleshoot and diagnose reasons for the malfunction of the furnace. Focus is on the combustion process and consumer safety.

Instruction Type: In-Person | Online | Hybrid Fee: \$45
Term Typically Offered: Fall | Spring | Summer

AHR 103 **4 credit hours (lecture: 3 | lab: 3)** **Sheet Metal Layout and Fabrication**

Course covers methods of fabrication. Content includes laying out and fabricating sheet metal ducts and fittings used in heating and air conditioning installations.

Instruction Type: In-Person | Online Fee: \$50
Term Typically Offered: Fall | Spring | Summer

AHR 104 **4 credit hours (lecture: 3 | lab: 3)** **Introduction to Electricity and Automatic Controls**

Course introduces electricity and automatic controls. Content includes electrical safety, basic wiring skills, electrical components, household wiring, wire sizing, conduct sizing, proper procedure to bend thin wall, the explanation of series and parallel circuits as well as hands-on experience with electrical tools and meters.

Instruction Type: In-Person | Online Fee: \$45
Term Typically Offered: Fall | Spring | Summer

AHR 105 **1 credit hours (lecture: 1 | lab: 0)** **EPA Section 608 Certification**

Course designed to prepare for "EPA Section 608" certification exam. Certification in proper refrigerant use required by law for work on refrigeration systems. Examination fees required.

Prerequisite: AHR 101 with a minimum grade of C or consent of department chair.

Instruction Type: In-Person | Online Fee: \$50
Term Typically Offered: Fall | Spring | Summer

AHR 201 **4 credit hours (lecture: 3 | lab: 3)** **Commercial Refrigeration Systems**

Course covers the entire refrigeration cycle, from compressor discharge to compressor suction, for low, medium, and high pressure refrigeration systems. Content includes various types of refrigeration systems, medium and low pressure temperature and their proper installation, product to be cooled, desired temperature to be maintained, humidity conditions, problems involving system balance and component capacity, as well as the use of heat load charts.

Prerequisite: AHR 101 or consent of the instructor or department chair.

Instruction Type: In-Person | Online Fee: \$45
Term Typically Offered: Fall | Spring | Summer

AHR 202 **4 credit hours (lecture: 3 | lab: 3)** **Air Conditioning II – Split System**

Course covers principles of residential air conditioning systems. Content includes evaluation and classroom hands-on experience in use of psychometrics, residential air conditioning equipment types and installation. Lab and the simulators focus on systems performance problems and diagnostics.

Prerequisite: AHR 101 and AHR 105 with a minimum grade of C or consent of department chair.

Instruction Type: In-Person | Online | Hybrid Fee: \$45
Term Typically Offered: Fall | Spring | Summer

AHR 203 **3 credit hours (lecture: 3 | lab: 0)** **Residential Heating and Air Conditioning Load Calculations**

Course covers calculation of heating and cooling loads to determine appropriate selection of equipment in new construction. Content includes construction and heat transfer through structure, and computations for heat gains and heat losses for various building structures.

Instruction Type: In-Person | Online
Term Typically Offered: Fall | Spring | Summer

AHR 204 **3 credit hours (lecture: 3 | lab: 0)** **Air Distribution Systems (Design)**

Course covers air moving and treating equipment, and distribution of air using appropriate devices. Content includes blower performance, static and dynamic pressures and pressure drop due to friction, sizing and selection of ductwork and blowers, diffusers, registers and grilles as well as the evaluation of overall system performance.

Instruction Type: In-Person | Online
Term Typically Offered: Fall | Spring | Summer

AHR 206 **4 credit hours (lecture: 3 | lab: 3)** **Residential Hot Water Boilers and Hydronics Technology**

Course covers conventional and modern residential hydronic systems. Content includes "Near boiler" piping, accessories and zoning operations; proper sizing of heat emitting components, baseboards and piping. Hands on experience with tools and the operation of a boiler system.

Instruction Type: In-Person | Online | Hybrid Fee: \$50
Term Typically Offered: Fall | Spring | Summer

AHR 208 **4 credit hours (lecture: 3 | lab: 3)** **Advanced Automatic Controls**

Course covers advanced automatic controls used presently in high-efficiency furnaces. Content includes electronic ignition systems, generic sequence of automatic controls, and ladder type wiring diagrams.

Prerequisite: AHR 104 with a minimum grade of C or consent of department chair.

Instruction Type: In-Person | Online Fee: \$45
Term Typically Offered: Fall | Spring | Summer

AHR 212 **3 credit hours (lecture: 3 | lab: 0)**

Indoor Air Quality

Course covers sources of pollutants, methods of control, and management techniques to maintain acceptable indoor air quality.

Instruction Type: In-Person | Online

Term Typically Offered: Fall | Spring | Summer

AHR 213 **4 credit hours (lecture: 4 | lab: 0)**

Commercial HVAC Systems Applications

Course covers various types of HVAC systems used in commercial buildings and the proper procedure to select and size for the primary and secondary HVAC. Content includes all-air, air-hydraulic, all-hydraulic and unitary systems and their layouts for air filtration, odor removal, heating, cooling, and air distribution.

Prerequisite: AHR 201 or consent of department chair.

Instruction Type: In-Person | Online

Term Typically Offered: Fall | Spring | Summer

AHR 214 **4 credit hours (lecture: 3 | lab: 3)**

Energy Audit, Analysis and Management

Course covers conducting energy audit, surveying and evaluation procedures for energy using systems, and establishing energy management procedures and schedule.

Instruction Type: In-Person | Online

Fee: \$45

Term Typically Offered: Fall | Spring | Summer

AHR 215 **4 credit hours (lecture: 4 | lab: 0)**

Steam Boiler Operations

Course covers principles of boiler operation for both low- and high-pressure steam boilers. Content includes complete boiler setup from feedwater systems to boiler and piping layout and assembly, combustion accessories and controls, steam accessories, draft controls, and pressure reducing stations. Focus is on boiler room operation and safety. ASME code standards for high-pressure steam boilers are emphasized.

Instruction Type: In-Person | Online | Hybrid