# AHR. Air Conditioning, Heating, Refrigeration

## AHR-110 Introduction to Refrigeration
Class 2  Lab 6  Clinical 0  Work 0  Credit 5
This course introduces the basic refrigeration process used in mechanical refrigeration and air conditioning systems. Topics include terminology, safety, and identification and function of components; refrigeration cycle; and tools and instrumentation used in mechanical refrigeration systems. Upon completion, students should be able to identify refrigeration systems and components, explain the refrigeration process, and use the tools and instrumentation of the trade.

Minimum State Prerequisites: None
Minimum State Corequisites: None

## AHR-114 Heat Pump Technology
Class 2  Lab 4  Clinical 0  Work 0  Credit 4
This course covers the principles of air source and water source heat pumps. Emphasis is placed on safety, modes of operation, defrost systems, refrigerant charging, and system performance. Upon completion, students should be able to understand and analyze system performance and perform routine service procedures.

Minimum State Prerequisites: Take One: AHR-110 or AHR-113
Minimum State Corequisites: None

## AHR-112 Heating Technology
Class 2  Lab 4  Clinical 0  Work 0  Credit 4
This course covers the fundamentals of heating including oil, gas, and electric heating systems. Topics include safety, tools and instrumentation, system operating characteristics, installation techniques, efficiency testing, electrical power, and control systems. Upon completion, students should be able to explain the basic oil, gas, and electrical heating systems and describe the major components of a heating system.

Minimum State Prerequisites: None
Minimum State Corequisites: None

## AHR-113 Comfort Cooling
Class 2  Lab 4  Clinical 0  Work 0  Credit 4
This course covers the installation procedures, system operations, and maintenance of residential and light commercial comfort cooling systems. Topics include terminology, component operation, and testing and repair of equipment used to control and produce assured comfort levels. Upon completion, students should be able to use psychrometrics, manufacturer specifications, and test instruments to determine proper system operation.

Minimum State Prerequisites: None
Minimum State Corequisites: None

## AHR-130 HVAC Controls
Class 2  Lab 2  Clinical 0  Work 0  Credit 3
This course covers the types of controls found in residential and commercial comfort systems. Topics include electrical and electronic controls, control schematics and diagrams, test instruments, and analysis and troubleshooting of electrical systems. Upon completion, students should be able to diagnose and repair common residential and commercial comfort system controls.

Minimum State Prerequisites: Take One: AHR-111, ELC-111, or ELC-112
Minimum State Corequisites: None

## AHR-133 HVAC Servicing
Class 2  Lab 6  Clinical 0  Work 0  Credit 4
The course covers the maintenance and servicing of HVAC equipment. Topics include testing, adjusting, maintaining, and troubleshooting HVAC equipment and record keeping. Upon completion, students should be able to adjust, maintain, and service HVAC equipment.

Minimum State Prerequisites: None
Minimum State Corequisites: Take One: AHR-112 or AHR-113

## AHR-160 Refrigerant Certification
Class 1  Lab 0  Clinical 0  Work 0  Credit 1
This course covers the requirements for the EPA certification examinations. Topics include small appliances, high pressure systems, and low pressure systems. Upon completion, students should be able to demonstrate knowledge of refrigerants and be prepared for the EPA certification examinations.

Minimum State Prerequisites: None
Minimum State Corequisites: None
AHR-180 HVACR Customer Relations
Class 1  Lab 0  Clinical 0  Work 0  Credit 1
This course introduces common business and customer relation practices that may be encountered in HVACR. Topics include business practices, appearance of self and vehicle, ways of handling customer complaints, invoices, telephone communications, and warranties. Upon completion, students should be able to present themselves to customers in a professional manner, understand how the business operates, complete invoices, and handle complaints.
Minimum State Prerequisites: None
Minimum State Corequisites: None

AHR-211 Residential System Design
Class 2  Lab 2  Clinical 0  Work 0  Credit 3
This course introduces the principles and concepts of conventional residential heating and cooling system design. Topics include heating and cooling load estimating, basic psychrometrics, equipment selection, duct system selection, and system design. Upon completion, students should be able to design a basic residential heating and cooling system.
Minimum State Prerequisites: None
Minimum State Corequisites: None

AHR-212 Advanced Comfort Systems
Class 2  Lab 6  Clinical 0  Work 0  Credit 4
This course covers water-cooled comfort systems, water-source/geothermal heat pumps, and high efficiency heat pump systems including variable speed drives and controls. Emphasis is placed on the application, installation, and servicing of water-source systems and the mechanical and electronic control components of advanced comfort systems. Upon completion, students should be able to test, analyze, and troubleshoot water-cooled comfort systems, water-source/geothermal heat pumps, and high efficiency heat pumps.
Minimum State Prerequisites: Take AHR-112
Minimum State Corequisites: None

AHR-213 HVACR Building Code
Class 1  Lab 2  Clinical 0  Work 0  Credit 2
This course covers the North Carolina codes that are applicable to the design and installation of HVACR systems. Topics include current North Carolina codes as applied to HVACR design, service, and installation. Upon completion, students should be able to demonstrate the correct usage of North Carolina codes that apply to specific areas of the HVACR trade.
Minimum State Prerequisites: None
Minimum State Corequisites: None

AHR-240 Hydronic Heating
Class 1  Lab 3  Clinical 0  Work 0  Credit 2
This course covers the accepted procedures for proper design, installation, and balance of hydronic heating systems for residential or commercial buildings. Topics include heating equipment; pump, terminal unit, and accessory selection; piping system selection and design; and pipe sizing and troubleshooting. Upon completion, students should be able to assist with the proper design, installation, and balance of typical hydronic systems.
Minimum State Prerequisites: Take AHR-112
Minimum State Corequisites: None

AHR-250 Heating, Ventilating, and Air Conditioning Diagnostics
Class 0  Lab 4  Clinical 0  Work 0  Credit 2
This course is a comprehensive study of air conditioning, heating, and refrigeration system diagnostics and corrective measures. Topics include advanced system analysis, measurement of operating efficiency, and inspection and correction of all major system components. Upon completion, students should be able to restore a residential or commercial AHR system so that it operates at or near manufacturers’ specifications.
Minimum State Prerequisites: None
Minimum State Corequisites: None