

# HVAC & REFRIGERATION TECHNOLOGY (HVAC), AAS

## Overview

The HVAC & Refrigeration Technology program teaches you to design, estimate, install, and maintain modern Heating, Ventilation, Air Conditioning and Refrigeration (HVACR) systems. Dunwoody's program provides graduates the flexibility to go down various career paths in the industry and take on a wide variety of roles throughout their career.

With a thorough understanding of all aspects of HVACR systems upon graduation, you'll be ready to join a pipefitters union or work for a residential and/or commercial HVACR service company, a construction or engineering services firm, or take on roles with organizations who need in-house HVACR and building controls and management expertise.

Credits earned in the HVAC Installation & Refrigeration Technology AAS directly transfer into the following Dunwoody programs:

- Construction Management Bachelor of Science (CMGT) (<https://catalog.dunwoody.edu/catalog-student-handbook/academic-programs/construction-sciences-building-technology/construction-management-cmgt-bachelor-science/>)
- Business Management & Leadership Bachelor of Science (AMGT) (<https://catalog.dunwoody.edu/catalog-student-handbook/academic-programs/business/business-management-leadership-amgt-bs/>)

## Program Outcomes

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## Degree Requirements

Code	Title	Credits
<b>General Requirements</b>		
Humanities Elective		3
Social Sciences Elective		3
Math/Science Elective		3
Communications Elective		3
General Elective		3
<b>Technical Requirements</b>		
HVAC1101	Fundamentals of HVAC	6
HVAC1102	Exploring HVAC	6
HVAC1201	Advanced HVAC	6
HVAC1202	HVAC Performance	6
HVAC2101	Commercial HVACR	6
HVAC2102	HVACR Performance	6
HVAC2201	HVAC Installation & Design	6
HVAC2202	HVAC Installation Performance	6
<b>Total Credits</b>		<b>63</b>

## Courses

### HVAC1101 | Fundamentals of HVAC | Lecture (6 Credits)

Are you ready to begin your training in the wizardry of HVAC? Air, water and electricity all behave similarly; this class will give you the power to see what others do not. This entry level course will cover the fundamentals a student will need to navigate their way through the world of HVAC. Your voyage will begin with basic electricity where you will study the theories and application of common HVAC equipment. The course will delve into residential heating where you will explore the basics of heat transfer and find out how a residential heating system operates. A learner will be introduced to real-world procedures and practices involving the heating systems of residential homes. The basic residential air-conditioning systems will also be covered in depth. Airflow measurement and air distribution will be explored. Topics being presented in this lecture course will be followed by a related lab session. Your lab sessions will be rotated to reflect the topics covered in this base course.

### HVAC1102 | Exploring HVAC | Laboratory (6 Credits)

It's time to operate the equipment. This course is a hands-on experience all the way through. Beginning with electricity, you will wire circuits, energize motors, diagram and wire your own electrical designs and learn how to do all of this safely. The class then moves into heating where the basic operation and diagnostic procedures of a residential furnace are covered. Air-conditioning is next, where you will learn copperwork and common practices involving residential A/C. This course is designed to accompany the Fundamentals of HVAC lecture course. This is the place you apply the knowledge you are being introduced to.

### HVAC1201 | Advanced HVAC | Lecture (6 Credits)

Now that you have developed an understanding of the basics, we are taking a deeper dive into HVAC. This course will build on some of the basic principles you have been introduced to. Heating, electrical and air-conditioning will all be expanded in detail. We will also delve into some new topics like alternative fuels and attaining higher efficiencies. This course will include three separate credentialing exams for electrical, gas heating and the EPA608 Refrigerant Handling Certification. Topics being presented in this lecture course will be followed by a related lab session. Your lab sessions will be rotated to reflect the topics covered in this base course.

### HVAC1202 | HVAC Performance | Laboratory (6 Credits)

Are you ready for the Hurt Locker? Dunwoody's Heating Performance lab journeys into the realm of advanced residential furnace troubleshooting. You will be indoctrinated into the Dunwoody Hurt Locker and test your skills in a lab full of realistically sabotaged equipment. This course has become a student favorite. Along with Hurt Locker, you will learn proper methods of repairing natural gas burning appliances. Oil furnace and electric furnaces will also be covered in detail. The course will also revisit electrical wiring and schematics. Last but not least air-conditioning will expand into more complex processes and include residential heat pumps. As with all Lab classes in Dunwoody HVAC, your assignments will be showing proof of results in your hands-on work.

**HVAC2101 | Commercial HVACR | Lecture (6 Credits)**

Commercial HVACR is a vast topic, but this course will guide you through every twist and turn of this fascinating path to a career. The course begins with an introduction to the low-pressure refrigeration system. We are not talking comfort cooling anymore, unless you're a pail of ice cream. Learn how the industry keeps things cool and provides refrigeration to our supply chain, production facilities and more. After refrigeration Commercial HVAC will be showcased. Commercial heating and cooling is delivered through many different types of systems. We will show you the most widely used systems in this modern age. Direct Digital Control (DDC) will be introduced and explored in detail as well.

**HVAC2102 | HVACR Performance | Laboratory (6 Credits)**

Put your new skillset to the test in the Commercial HVACR Performance lab course. In this session, you will build a refrigerator from a list of parts, diagnose problems in malfunctioning commercial equipment, perform preventative maintenance in commercial HVACR equipment found in grocery stores, restaurants and many other common applications. As with any Dunwoody HVAC lab course, you will spend time learning with your hands. This is the Dunwoody difference.

**HVAC2201 | HVAC Installation & Design | Lecture (6 Credits)**

Whether installing equipment into a new structure or replacing equipment that can no longer be fixed, installation is an integral part of daily operations in the HVAC field. Beginning with sheet metal fabrication, you will learn to build industry standard air distribution systems. After you learn to design and fabricate, you will move into the role of installer performing actual equipment installations. You will learn about local and national mechanical codes, and requirements for professional installations of residential and commercial HVAC equipment including boiler systems. Gas piping installation and venting installation will also be included. This course also includes a deep dive into residential and commercial HVAC design. Sizing equipment for a specific location, estimating large and small jobs of all kinds. You will also be introduced to computer aided drafting and system design. Blueprint reading will also be covered in detail.

**HVAC2202 | HVAC Installation Performance | Laboratory (6 Credits)**

This course guides students through the world of HVAC installation. Residential and commercial equipment will be covered. Beginning with sheet metal fabrication, you will learn how to create layouts and build quality ductwork and fittings. Stressing adherence to national and local codes and quality standards, the session will allow students to perform actual installations of HVAC equipment. This lab course will also introduce computer aided drafting and modern estimating tools using commonly used industry software.