

Heating, Ventilation & Air Conditioning



Why HVAC?

The Heating, Ventilation and Air Conditioning program provides students with the education and training to enter careers as climate control technicians. It is offered with a two-year or three-year track because of the large number of credits required.

HVAC is in high demand. People and businesses depend on these systems and must keep them in good working order, regardless of economic conditions. As a result, HVAC is a recession-proof career.

This multi-disciplinary program includes heating, ventilation, refrigeration, air conditioning and electricity. Through problem solving, inquiry and analysis skills gained while in the HVAC program, students are prepared to become industry leaders. Upon satisfactory completion, the graduate is prepared to enter the field to design, install, service, maintain and troubleshoot residential and commercial HVAC systems.

Program Outcomes

Students who graduate from this program will be able to:

- Read and interpret electrical diagrams, wire control systems from electrical diagrams, set controls, design controls systems and diagnose and repair faults in electrical control systems
- Properly size, design and install HVAC systems following the relevant codes and industry practice
- Articulate the purpose and operation of HVAC system components, the operation of HVAC systems, diagnose, repair faults and perform maintenance on HVAC systems
- Demonstrate positive work traits, have good customer service skills, think critically and continue to upgrade knowledge and skills
- Obtain up to 550 required lab hours, which are approved by the State of NH Fire Marshall's office for the gas fitters license
- Be prepared for the NORA certification and the NH gas fitters/piping installer license through the heating portion and EPA certification that counts toward required hours for the Massachusetts refrigeration license

Potential Jobs

- Residential/Commercial HVAC Service Technician
- Residential/Commercial HVAC Installation Technician
- Commercial Refrigeration Service and Installation Technician
- HVAC System Designer
- HVAC Sales Professional

Average Median Annual Wage

There is a wide range of jobs in the HVAC industry. According to bls.gov, the 2020 average salary for a **Heating, AC and Refrigeration Mechanic** in NH was \$53,410. The industry is expected to grow 15% from 2016-2026.

Admissions Requirements

- It is recommended that students complete courses in algebra I, algebra II and science. Advanced levels of mathematics and a physics course are preferred.

Technical Standards:

- Physical strength to maneuver and/or lift heavy objects
- Good manual dexterity and the ability to climb a ladder
- Adequate vision for reading instructions and blueprints and should not have color blindness (adaptive equipment acceptable)
- Students should be aware that many employers will require criminal background checks and a clean driving record

Degree & Certificate Requirements

Heating, Ventilation & AC Degree

Degree Program - First Year

First Year	Fall Semester	TH	LAB	CR
HVAC101M	Introduction to HVAC Systems or Open Elective	3	0	3
HVAC109M	Related Electricity I Theory	3	0	3
HVAC110M	Related Electricity I Lab	0	3	1
HVAC111M	Fundamentals of Refrigeration I Theory	3	0	3
HVAC112M	Fundamentals of Refrigeration I Lab	0	3	1
HVAC114M	Fundamentals of Heating I Theory	3	0	3
HVAC115M	Fundamentals of Heating I Lab	0	3	1
FYE100M	MCC Essentials	1	0	1
Total		13	9	16

First Year	Spring Semester	TH	LAB	CR
HVAC119M	Related Electricity II Theory	3	0	3
HVAC120M	Related Electricity II Lab	0	3	1
HVAC121M	Fundamentals of Refrigeration II Theory	3	0	3
HVAC122M	Fundamentals of Refrigeration II Lab	0	3	1
HVAC134M	Fund. of Gas Heating and Piping Installation Theory	3	0	3
HVAC135M	Fund. of Gas Heating and Piping Installation Lab	0	3	1
ENGL110XM or ENGL110M	College Composition I with Corequisite or College Composition I	4	0	4
	Mathematics Elective	3	0	3
Total		16	9	19

Degree Program - Second Year

Second Year	Fall Semester	TH	LAB	CR
HVAC211M	Commercial Refrigeration Theory	3	0	3
HVAC212M	Commercial Refrigeration Lab	0	6	2
HVAC223M	Warm Air and Steam Systems Theory	3	0	3
HVAC224M	Warm Air and Steam Systems Lab	0	6	2
	Liberal Arts Elective	3	0	3
	Social Science Elective	3	0	3
Total		12	12	16

Second Year	Spring Semester	TH	LAB	CR
HVAC221M	Residential and Commercial AC and Heat Pumps Theory	3	0	3
HVAC222M	Residential and Commercial AC and Heat Pumps Lab	0	6	2
HVAC213M	Hydronic Systems Theory	3	0	3
HVAC214M	Hydronic Systems Lab	0	6	2
	Science Elective	3	0	3
	Foreign Language/Humanities/Fine Arts Elective	3	0	3
Total		12	12	16
Total Credits - 67				

Note: A 3-year degree track exists at Manchester Community College. Please see HVAC program advisor for more information.

View the NEW 2 year HVAC Certificate online at mccnh.edu/programs.

All courses and degree requirements are subject to change. For the most current information on MCC programs, visit mccnh.edu.

Advanced HVAC Certificate

		TH	LAB	CR
HVAC227M	Testing and Balancing I	2	3	3
HVAC228M	Testing and Balancing II	2	3	3
HVAC243M	DDC and Building Automation Controls I	3	3	4
HVAC244M	DDC and Building Automation Controls II	3	3	4
HVAC256M	Advanced HVAC I	3	3	4
HVAC257M	Advanced HVAC II	1	3	2
Total Credits - 20				

AC & Refrigeration Certificate

		TH	LAB	CR
HVAC109M	Related Electricity I Theory	3	0	3
HVAC110M	Related Electricity I Lab	0	3	1
HVAC111M	Fundamentals of Refrigeration I Theory	3	0	3
HVAC112M	Fundamentals of Refrigeration I Lab	0	3	1
HVAC119M	Related Electricity II Theory	3	0	3
HVAC120M	Related Electricity II Lab	0	3	1
HVAC121M	Fundamentals of Refrigeration II Theory	3	0	3
HVAC122M	Fundamentals of Refrigeration II Lab	0	3	1
HVAC211M	Commercial Refrigeration Theory	3	0	3
HVAC212M	Commercial Refrigeration Lab	0	6	2
HVAC221M	Residential & Commercial AC & Heat Pumps Theory	3	0	3
HVAC222M	Residential & Commercial AC and Heat Pumps Lab	0	6	2
Total Credits - 26				

Heating Services Certificate

		TH	LAB	CR
HVAC109M	Related Electricity I Theory	3	0	3
HVAC110M	Related Electricity I Lab	0	3	1
HVAC114M	Fundamentals of Heating I Theory	3	0	3
HVAC115M	Fundamentals of Heating I Lab	0	3	1
HVAC119M	Related Electricity II Theory	3	0	3
HVAC120M	Related Electricity II Lab	0	3	1
HVAC134M	Fund. of Gas Heating & Piping Installation Theory	3	0	3
HVAC135M	Fund. of Gas Heating & Piping Installation Lab	0	3	1
HVAC213M	Hydronic Systems Theory	3	0	3
HVAC214M	Hydronic Systems Lab	0	6	2
HVAC223M	Warm Air and Steam Systems Theory	3	0	3
HVAC224M	Warm Air and Steam Systems Lab	0	6	2
HVAC230M	Gas Equipment Installation and Service Theory	4	0	4
Total Credits - 30				

Accreditation/Certification Information

Students will complete the in-class portion of the State of NH Gas Fitters gas piping installer's license while in the program. Students will be prepared for and offered the opportunity to obtain their NORA Bronze Certification and Section 608 (EPA) Certification.