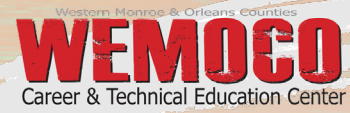


HVAC/Plumbing

Because water and climate control systems are in every building



Learn and practice the fundamentals of fitting, assembling and preparing piping. Install residential/commercial heating, air conditioning, refrigeration and ventilation systems.

Units of Study

- Blueprint Reading and Plumbing Drawings
- Drain Waste and Vent Systems
- Water Distribution Systems
- Fixtures, Valves and Faucets
- Water Heaters
- Boilers
- Radiant Heat and Baseboards
- Hydronic Installation and piping
- Carbon Pipe and Fittings
- Plastic Pipe and Fittings
- Copper Pipe and Fittings
- Gas Heat
- Copper and Plastic Piping Practices
- Soldering and Brazing
- Basic Electricity
- Fundamentals of Refrigeration
- Refrigeration Processes and Piping
- Ferrous Metal Piping Practices
- Fundamentals of Heating
- Forced-Air Gas Furnaces
- Electric Heat
- Air Distribution Systems
- Air Conditioning
- Heat Pumps

Integrated Academics

- English
- Science

Work-Based Learning

CTE programs bring students into the workplace for real life experiences. Businesses that supports our HVAC/ Plumbing program:

- Colonial Fire Protection Systems, Inc.
- Culligan Water Treatment
- ES Systems
- Hi-Qual Heating and Cooling
- Isaac Heating & Air
- John W. Danforth Co.
- MCC Applied Technology Center
- Red Rochester
- Start Rooter
- Wolf Mechanical

Licensing / Industry- Based Certifications

- OSHA 10 Construction Industry
- EPA Refrigerant Handler Certification

College Credits

MCC Dual Enrollment:

- HVA 101: Basic Refrigeration Theory
- HVA 103: Heating Systems & Troubleshooting
- HVA 105: Electrical Foundations & Troubleshooting

Articulation Agreements

- Alfred State
- Monroe Community College
- University of Northwestern Ohio



Career Paths

All CTE programs correlate to many career paths.

↓ Start Here

- Plumber
- HVAC Technician

Go Here ↓

with more education & experience

- Foreman
- Energy Systems Control Technician
- Mechanical Engineer

Explore more:

<https://www.careerzone.ny.gov/>
<https://www.onetonline.org/find/>



WEMOCO Career & Technical Education Center
Monroe 2-Orleans Board of Cooperative Educational Services
Monroe2BOCES.org/cte 585-352-2471
3589 Big Ridge Road, Spencerport, New York 14559



HVAC/Plumbing

Employability Profile

Work-Related Skills

Productivity and Accountability	_____
Follows procedures to meet expectations and deadlines	_____
Displays consistent work performance and quality of work	_____
Flexibility and Adaptability	_____
Works effectively in varied roles and responsibilities	_____
Responds well to and implements feedback	_____
Initiative and Self-Direction	_____
Identifies, prioritizes, and completes tasks without direct oversight	_____
Seeks to learn and develop new knowledge and skills	_____
Leadership and Responsibility	_____
Leverages strengths of others to accomplish a goal	_____
Takes ownership of one's work, performance, behavior, and actions	_____
Communication	_____
Articulates thoughts and ideas clearly and effectively through speaking and writing	_____
Practices active listening skills	_____
Collaboration	_____
Works effectively with others	_____
Open and responsive to new and diverse perspectives	_____
Critical Thinking and Problem Solving	_____
Asks questions to lead to better solutions	_____
Identifies possible options and their outcomes	_____

Basic Safety

Proper use and care of personal protective equipment(PPE)	_____
Proper use of fire extinguishers to put out a fire	_____
Read and interpret a MSDS sheet	_____

Plumbing Math

Use common pipe-measuring techniques	_____
Use fitting dimensions tables to determine fitting allowances and thread make-up	_____
Calculate end-to-end measurements using fitting allowances and thread make-up	_____

Plumbing Tools

Proper use of plumbing tools	_____
Select the proper tools for the task	_____
Proper maintenance for caring for hand and power tools	_____

Blueprints & Plumbing Drawings

Use an architect's scale to draw lines to scale and to measure lines drawn to scale	_____
Make isometric sketches from other drawings and	_____
Prepare a material take-off for dwv, cold, and hot water piping from the sketches	_____

Drain Waste Vent

Develop a material takeoff of DWV piping from a given set of plans	_____
Installation of a DWV system using appropriate hangers and correct grade	_____
Pressure test a DWV system	_____

Water distribution

Develop a water supply piping material takeoff from a given set of plans	_____
Install a water distribution system using appropriate hangers	_____
Pressure test a water supply system	_____

Fixtures and Faucets

Install bathtubs, shower stalls, valves, and faucets	_____
Install lavatories, sinks, and pop-up drains	_____
Install water closets and urinals	_____

Installing Water Heaters

Install an electric water heater	_____
Install a gas water heater	_____

Carbon, Plastic, Copper Pipe

Select correct fitting for application	_____
Hang and supporting steel pipe	_____
Measure, cut, and join steel pipe	_____
Follow proper joining procedures	_____

Copper and Plastic Piping Practices

Measure the diameter of copper tubing	_____
Cut and ream copper tubing using a tubing cutter	_____
Bend copper tubing using bending tools	_____
Make a swage joint in a section of copper tubing	_____
Make and join flare connection	_____

Soldering and Brazing

Solder tubing and fitting	_____
Braze tubing and fitting	_____

Basic Electricity

Use a multimeter to measure voltage	_____
Use a multimeter to measure current	_____
Use a multimeter to measure resistance	_____
Use a multimeter to measure continuity	_____
Assemble and test series and parallel circuits	_____

Mechanical Refrigeration

Use cylinder colors to identify refrigerants	_____
Locate compressors, condensers, evaporators, metering devices	_____
Measure temperatures & pressures in an operating air conditioning system	_____
Calculate superheat & subcooling	_____

Refrigerant Processes

Pressure testing process	_____
Leak checking with leak detectors	_____
System evacuation	_____
System charging	_____
System recovery	_____

Refrigerant Accessories & Piping

Use service valves to gain access to an air conditioning system	_____
Locate accessories and piping within an air conditioning system	_____

Troubleshooting Cooling

Develop a checklist for troubleshooting cooling systems	_____
Isolate and correct malfunctions in a cooling system	_____

Ferrous Piping

Cut, ream, thread, and assemble steel pipe	_____
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Intro To Heating & Forced Air Gas Furnaces

Install a gas furnace completely	_____
Turn on and check a gas furnace	_____
Adjust the manifold pressure	_____
Perform preventative maintenance procedures on a gas furnace	_____

Air Distribution Systems

Read and interpret equivalent length charts and required air volume/duct size charts	_____
Measure static pressure in a duct system	_____
Measure the velocity of airflow	_____