HEATING, VENTILATION, & AIR CONDITIONING (HVAC) INSTALLER

Technical Diploma
Program Code: 30-401-4
Total Credits: 25

Mid-State's Heating, Ventilation, & Air Conditioning (HVAC) Installer program provides the hands-on foundation needed for an entry-level position in the heating, ventilation, air conditioning (HVAC) fields. Graduates will understand the various components of heating, ventilation, air conditioning, and refrigeration systems, including furnaces, ductwork, boilers, hydronic piping, HRVs (heat recovery ventilators), evaporators, condensers, circuits, and controls. Students will also explore geothermal, biomass, and solar heating systems. Through hands-on classroom lab activities, students will join various piping types, design and construct ductwork, and install a complete residential HVAC system. They will also learn the electrical skills necessary to read wiring diagrams and troubleshoot mechanical control systems. Graduates are prepared to take the EPA 608 Technician Certification exam for refrigerants.

To learn more about this program, visit **mstc.edu/programs**.

ACADEMIC ADVISOR

To schedule an appointment with an academic advisor, call 715-422-5300. Academic advisors will travel to other campuses as necessary to accommodate student needs. For more information about advising, visit **mstc.edu/advising.**

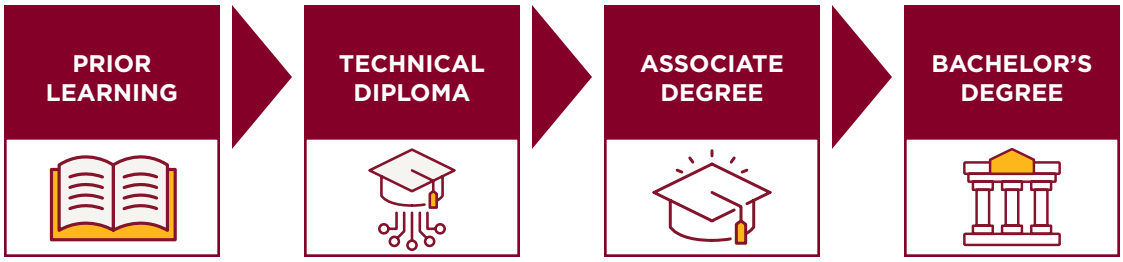
NEW STUDENT CHECKLIST

Complete the following steps to prepare for your New Student Advising appointment with your academic advisor:

- Submit a Mid-State application at **mstc.edu/apply**.
- Send official transcripts to:
  Mid-State Technical College
  Student Services
  500 32nd Street North
  Wisconsin Rapids, WI 54494
- Complete the Free Application for Federal Student Aid (FAFSA) at **fafsa.gov**. Mid-State's Financial Aid team is available to assist with your FAFSA application and to answer your financial aid questions. Contact Financial Aid or schedule an appointment at **mstc.edu/financial-aid**.
- Set up student MyCampus account at **mstc.edu/mycampus-assistance**.
- Schedule a New Student Advising appointment at **mstc.edu/advising**.

Mid-State does not discriminate on the basis of race, color, national origin, sex, disability, or age in its program, activity, or employment. The following person has been designated to handle inquiries regarding the nondiscrimination policies: Vice President – Human Resources; 500 32nd Street North, Wisconsin Rapids, WI 54494; 715-422-5325 • AAEO@mstc.edu. 3/2026-AC

CAREER PATHWAY



Career pathways help you build your education step by step. Each stage offers one or more credentials that are recognized by employers and lead to real jobs—and you can keep building toward your career goals as you go.

Begin at any point.

Prior Learning

Credit for Prior Learning

- Certifications and Licenses
- Military Experience
- National/Standardized Exams
- Transfer Credit
- Work and Life Experience

Learn about Credit for Prior Learning at **mstc.edu/cpl**.

High School Credit

- High School Dual Credit
- Mid-State Fast Track

Learn about High School Credit at **mstc.edu/dc**.

Technical Diploma

- Construction Trades (11 Credits)
  Start Your Career: Electrical Contracting Laborer, Carpentry Contracting Laborer, General Construction Laborer, Plumbing Contracting Laborer
- Heating, Ventilation, & Air Conditioning (HVAC) Installer (25 Credits)
  Start Your Career: Heating, Ventilation, and Air Conditioning Installer, Heating, Ventilation, and Air Conditioning Sales Representative, Residential Heating, Ventilation, and Air Conditioning Technician

Associate Degree

- Heating, Ventilation, Air Conditioning, & Refrigeration (HVAC-R) Technician (61 Credits)
  Start Your Career: Controls Technician, Installation and Service Technician, Refrigeration Technician, Steamfitter

Bachelor's Degree

For those interested in continuing their education, Mid-State offers transfer guides with various four-year colleges and universities. For more information, visit **mstc.edu/transfer**.

Other Options

Apprenticeship Opportunities: Carpenter, Construction Electrician (ABC), Construction Electrician (IBEW-NECA), Plumber, Steamfitter and Steamfitter Service

OUTCOMES

Employers will expect you, as a Heating, Ventilation, and Air Conditioning (HVAC) Installer graduate, to be able to:

- Maintain a safe and professional work environment when installing HVAC equipment.
- Plan the installation of a gas-fired furnace with a central air-conditioning system.
- Install forced air ductwork.
- Commission an HVAC system.

TECHNICAL SKILLS ATTAINMENT

The Wisconsin Technical College System (WTCS) has implemented a requirement that all technical colleges measure outcomes attained by students. This requirement is called Technical Skills Attainment (TSA). The main objective of TSA is to ensure graduates have the technical skills needed by employers. Faculty will let students know when and how the TSA is being assessed in the program.

STUDENT HANDBOOK

Visit **mstc.edu/studenthandbook** to view Mid-State's student handbook, which contains information about admissions, enrollment, appeals processes, services for people with disabilities, financial aid, graduation, privacy, Mid-State's Student Code of Conduct, and technology.

GRADUATION REQUIREMENT

The GPS for Student Success course is required for all Mid-State program students and is recommended to be completed before obtaining 12 credits. Some students are exempt from this requirement. Please see your academic advisor for more information.

ADDITIONAL COURSES AS NEEDED

The following courses may be recommended or required if the student does not achieve minimum placement scores.

College Reading and Writing 1
10831104
3 credits
Provides learners with opportunities to develop and expand reading and writing skills to prepare for college-level academic work. Students will employ critical reading strategies to improve comprehension, analysis, and retention of texts. Students will apply the writing process to produce well-developed, coherent, and unified written work.

Pre-Algebra
10834109
3 credits
Provides an introduction to algebra. Includes operations on real numbers, solving linear equations, percent and proportion, and an introduction to polynomials and statistics. Prepares students for elementary algebra and subsequent algebra-related courses.

MULTIPLE MEASURES

Students can place into courses using high school GPA and completed classes. Placement can be determined in the following ways:

- **Multiple Measures Writing (MMW)**
  High school GPA of 2.6 & successful completion of 2.0 credits of high school writing courses with a "C" or better
- **Multiple Measures Reading (MMR)**
  High school GPA of 2.6 & successful completion of 2.0 credits of high school literature courses with a "C" or better
- **Multiple Measures Math 1 (MMM_1)**
  High school GPA of 2.6 & successful completion of 1.0 credit of high school math (Algebra 1 or equivalent) with a "C" or better
- **Multiple Measures Math 2 (MMM_2)**
  High school GPA of 2.6 & successful completion of 2.0 credits of high school math including Algebra 1 and Algebra 2 with a "C" or better
- **Multiple Measures Science 1 (MMS_1)**
  High school GPA of 2.6 & successful completion of 1.0 credit of high school lab science course with a "C" or better
- **Multiple Measures Science 2 (MMS_2)**
  High school GPA of 2.6 & successful completion of 1.0 credit of high school chemistry with a "C" or better

Past high school and college transcripts are used in making course placement decisions.

SAMPLE FULL-TIME CURRICULUM OPTION

Heating, Ventilation, & Air Conditioning (HVAC) Installer • 25 Total Credits

Term 15 Credits

Course Number	Course Name	CPL	Credits
10476171	Safety for Construction Trades	Yes	1
10482107	Construction Fundamentals	No	2
10483123	Piping Installation	No	2
10601130	Blueprint Reading for Construction Trades	No	2
10601140	Electricity for the Construction Trades	No	2
10601150	Fundamentals of HVAC	No	2
31442320	Welding Foundations 1	No	1
10601110	HVAC Heating Fundamentals	No	2
10890102	GPS for Student Success	Yes	1

Term 10 Credits

Course Number	Course Name	CPL	Credits
10482103	Electrical Components & Control Circuits 1	No	2
10483113	Hydronics	No	3
10601121	Intro to HVAC Installation	No	2
10601123	Foundations of Air Conditioning & Refrigeration	No	3

Please Note

- Credit for Prior Learning (CPL) options are available for some courses. You can visit **mstc.edu/cpl** or contact your academic advisor for details.
- This curriculum sequence is only for student planning. Actual student schedules will vary depending on course availability.
- Program completion time may vary based on student scheduling and course availability. For details, go to **mstc.edu/schedule**.
- Get the latest updates online at **mstc.edu**.

SAMPLE PART-TIME CURRICULUM OPTION

Heating, Ventilation, & Air Conditioning (HVAC) Installer • 25 Total Credits

Term 9 Credits

Course Number	Course Name	CPL	Credits
10483123	Piping Installation	No	2
10601140	Electricity for the Construction Trades	No	2
10601150	Fundamentals of HVAC	No	2
10601110	HVAC Heating Fundamentals	No	2
10890102	GPS for Student Success	Yes	1

Term 6 Credits

Course Number	Course Name	CPL	Credits
10476171	Safety for Construction Trades	Yes	1
10482107	Construction Fundamentals	No	2
10601123	Foundations of Air Conditioning & Refrigeration	No	3

Term 3 Credits

Course Number	Course Name	CPL	Credits
10601130	Blueprint Reading for Construction Trades	No	2
31442320	Welding Foundations 1	No	1

Term 7 Credits

Course Number	Course Name	CPL	Credits
10482103	Electrical Components & Control Circuits 1	No	2
10483113	Hydronics	No	3
10601121	Intro to HVAC Installation	No	2

Blueprint Reading for Construction Trades
10601130
2 credits
Develops the ability to read blueprints for commercial and non-commercial structures. Emphasizes blueprints drawn by licensed architects, covering plumbing, electrical wiring, structural framing, millwork, interior and exterior details, and basic information.

Construction Fundamentals
10482107
2 credits
Studies the concepts associated with the theory, materials, and methods used in construction, including footings and foundations, walls, floors, roofs and roof materials, exterior finishes, interior walls, ceiling and floor finishes, insulation types, vapor and air infiltration, and sound protection. Students also become familiar with blueprint reading and examine all trades associated with construction, including, electrical, HVAC, and plumbing. Safe use of the appropriate tools for each trade is covered.

Electrical Components & Control Circuits 1
10482103
2 credits
Topics include a review of AC/DC electricity fundamentals and the physical laws that apply to electronic circuits. Direct current (DC) covers basic definitions of voltage, current, and resistance and analysis of series and parallel resistive circuits. Alternating current (AC) includes an introduction to AC generation, capacitors, inductors, and transformers and their applications in electronic circuits. Additional topics include control circuits, symbols, diagrams, protection devices, relays, thermostats, single-phase motors, control components, and troubleshooting ACR system wiring diagrams.
Prerequisite: Electrical Circuits I 10605105 or Electricity for the Construction Trades 10601140

Electricity for Construction Trades
10601140
2 credits
This course is an introduction to electrical theory and application for those in the construction and building trades. Content includes AC and DC circuits, schematics, Ohm's Law, multimeter use and circuit troubleshooting. This course will also provide an introduction to the contents of the National Electrical Code (NEC).

Foundations of Air Conditioning & Refrigeration
10601123
3 credits
Topics include air conditioning principles and terms, the refrigeration vapor and compression cycle, refrigerants and oils, and methods of conditioning air for comfort and health. Also covers the proper use of refrigeration gauges, dry bulb thermometers, hygrometers, and reading and interpretation of psychrometric charts and scales as well as EPA 608 refrigerant handling standards.

Fundamentals of HVAC
10601150
2 credits
Fundamentals of HVAC is an introductory course designed to provide an understanding of the core principles that govern heating, ventilation, and air conditioning systems. Students will explore essential topics such as heat, temperature, and pressure, the relationship between matter and energy, and the importance of general safety practices in the field. The course will also cover the proper use of tools, instrumentation, and equipment commonly used in the HVAC industry.

HVAC Heating Fundamentals
10601110
2 credits
Provides an introduction to how homes and buildings are heated. Topics include introduction to heat principles, temperature measurement, fuels and other sources of heat, combustion, basic heating systems, basic furnace design, boiler design and operation, venting of furnaces, chimney or exhaust gases, and system controls. (HVAC is a common industry reference to heating, ventilation, and air conditioning.)

Hydronics
10483113
3 credits
Students participate in the installation and design of a hydronic hot water and heat pump system. Topics include safety; system design and layout; component selection; mounting hydronic heat sources; installing distribution tubing; and installing heat emitters, air separator, circulation pumps, and other system components.
Prerequisite: Piping Installation 10483123

Intro to HVAC Installation
10601121
2 credits
Addresses residential and light commercial heating and cooling systems. Emphasizes the diversity of heating and cooling systems and how they operate. Students participate in the installation of a variety of HVAC systems and troubleshoot and service systems. (HVAC is a common industry reference to heating, ventilation, and air conditioning.)

Piping Installation
10483123
2 credits
This course introduces students to the fundamentals of measuring, fitting, joining, and installing piping common to the plumbing and HVAC industries.

Safety for Construction Trades
10476171
1 credit
The Safety for Construction Trades course teaches construction related workers about their rights, employer responsibilities and how to identify, abate, avoid and prevent job related hazards. Students will familiarize themselves with the proper selection and use of personal protective equipment and safety requirements on a construction site for various activities. Course outcomes align with the training outcomes recommended by OSHA. Upon successful completion, students will receive an OSHA 10 Card.

Welding Foundations 1
31442320
1 credit
An introduction to fundamental welding techniques with an emphasis on safe work habits that covers the processes of FCAW, GMAW, and OXY-Fuel cutting. Classroom instruction paired with lab activities are designed to provide fundamental skills in each of the welding processes covered in the class.