

# Environmental Service

A 5-year, 25.25-credit Apprenticeship

## About the Apprenticeship

WCTC is the only site in the state that offers apprentice-related instruction in environmental service. Environmental service repairpersons install and service heating and cooling equipment. In the apprentice training, students take courses on topics that include installation and maintenance of gas, oil and electric furnaces, maintenance of air conditioning equipment, related electricity, refrigeration principles, troubleshooting, pneumatic and digital controls, boiler maintenance and codes.

## How to Get Started

- Contact:  
Milwaukee Area Sheet Metal (JAC)  
5425 W. Vliet Street, Milwaukee, WI  
53208, 414-778-1444
- The State of Wisconsin oversees the apprenticeship system and will contact WCTC to set a class schedule.

Required Courses	Credits
<b>First Semester</b>	
401-530 Environmental Serv Tech-Rel I	4
401-571 EST Joining Processes	1
<b>Total semester credits</b>	<b>5</b>
<b>Second Semester</b>	
401-540 Environmental Serv Tech-Rel II	4
401-576 Test, Adjust/Balance I	1
<b>Total semester credits</b>	<b>5</b>
<b>Third Semester</b>	
401-550 Environmental Ser Tech-Rel III	4
401-573 Controller Theory I	1
<b>Total semester credits</b>	<b>5</b>
<b>Fourth Semester</b>	
401-560 Environmental Serv Tech-Rel IV	3.5
401-574 Controller Theory II	1
<b>Total semester credits</b>	<b>4.5</b>
<b>Fifth Semester</b>	
401-572 EST Sketch & Fab	1
<b>Total semester credits</b>	<b>1</b>
<b>Sixth Semester</b>	
401-580 EST Blueprint and Code	1
<b>Total semester credits</b>	<b>1</b>
<b>Seventh Semester</b>	
401-592 EST Blueprint Reading	1
<b>Total semester credits</b>	<b>1</b>
<b>Eighth Semester</b>	
401-575 Controller Theory III	1
<b>Total semester credits</b>	<b>1</b>
<b>Ninth Semester</b>	
401-577 Test, Adjust/Balance II	1
<b>Total semester credits</b>	<b>1</b>
<b>Tenth Semester</b>	
401-599 EST Seminar	.75
<b>Total semester credits</b>	<b>0.75</b>
<p><i>Curriculum is current as of catalog printing. The most current curriculum requirements for graduation will be provided upon admission to program, or review at <a href="http://www.wctc.edu">www.wctc.edu</a>.</i></p>	

<b>Environmental Service Required Courses</b>		<b>401-592 EST Blueprint Reading</b>	<b>1</b>
<b>401-530 Environmental Serv Tech-Rel I</b>	<b>4</b>	Become familiar with the basics of electricity, electrical components, and wiring diagrams. Complete a study of standard, high, and condensing efficiency gas furnaces, and examine the components and testing of oil furnaces. Explore humidifiers and their applications to furnaces and comfort. Study psychrometrics, filters, and fans. Learn the basics of air conditioning operation and heat pump design. Discuss work ethics and communication. This is the first of a four-part, 16-credit, 576-hour service apprenticeship course for the HVAC industry.	
<b>401-540 Environmental Serv Tech-Rel II</b>	<b>4</b>	Address the topics of motors, power, gas piping, start-ups, maintenance, fan laws, and chimneys. Prerequisites: 401-530 Environmental Serv Tech-Rel I	
<b>401-550 Environmental Ser Tech-Rel III</b>	<b>4</b>	Study electric and infrared furnaces, commercial damper systems, heat pumps, and cooling towers. Discuss field problems related to these topics. Prerequisites: 401-540 Environmental Serv Tech-Rel II	
<b>401-560 Environmental Serv Tech-Rel IV</b>	<b>3.5</b>	Discuss topics such as solid-state controls, variable speed drives, hydronics and absorption, fan and system curves, pneumatics, and customer relations. Explore desiccant wheels, quartz heaters, and the applications of the discussion topics during lab activities. Prerequisites: 401-550 Environmental Ser Tech-Rel III	
<b>401-571 EST Joining Processes</b>	<b>1</b>	Explore the joining process in this 36-hour course for the Environmental Service Technician apprentice. Prerequisites: 401-530 Environmental Serv Tech-Rel I (or concurrent)	
<b>401-572 EST Sketch &amp; Fab</b>	<b>1</b>	Develop skills in blueprint reading and freehand sketching, and study the principles and techniques of basic sheet metal fabrication. This is a 36-hour course for the Environmental Service Technician (EST) apprentice.	
<b>401-573 Controller Theory I</b>	<b>1</b>	Study the fundamentals of computer hardware, phone modems, and common software packages used by the Environmental Service Technician. Apply Direct Digital Controls (DDC) and pneumatics to EST functions. This is a 36-hour course for the EST apprentice.	
<b>401-574 Controller Theory II</b>	<b>1</b>	Apply the computer knowledge learned in Controller Theory I to the Environmental Service Technician applications of direct digital control systems used in commercial buildings. This is a 36-hour course for the EST apprentice. Prerequisites: 401-573 Controller Theory I	
<b>401-575 Controller Theory III</b>	<b>1</b>	Further understanding of applications related to commercial buildings that use direct digital systems during this third course in a series for EST apprentices.	
<b>401-576 Test, Adjust/Balance I</b>	<b>1</b>	Explore methods for ensuring a proper flow of heating and cooling in residential and commercial buildings during this first course of two in a progression for the EST apprentice.	
<b>401-577 Test, Adjust/Balance II</b>	<b>1</b>	Study advanced air balancing theory with applications to larger equipment. Prerequisites: 401-576 Test, Adjust/Balance I	
<b>401-580 EST Blueprint and Code</b>	<b>1</b>	Explore local, state, and national codes and standards for the installation and servicing of HVAC systems and associated controls, and study the near constant changes in these codes. This television network course is a combination of blueprint reading and code. Prerequisites: 401-572 EST Sketch & Fab	
		<b>401-599 EST Seminar</b>	<b>.75</b>
		Attend industry seminars, participate in a trade-related review, and take a trade exam during this final course of the Environmental Service Technician apprentice program. Prerequisites: 401-575 Controller Theory III and 401-577 Test, Adjust/Balance II	