



A DUAL ENROLLMENT CAREER PATHWAY FOR HEATING, VENTILATION & AIR CONDITIONING TECHNOLOGY

tctc.edu/careerpathways

About the Program

- Students studying this major learn to work on heating, ventilation, air conditioning, and refrigeration systems. The work environment is mostly homes, schools, hospitals, manufacturing sites, commercial businesses and office buildings.
- Commercial and residential building construction is expected to drive employment growth. The growing number of sophisticated climate-controlled systems is also expected to increase demand for qualified HVAC technicians (Bureau of Labor Statistics).
- This career field is expected to increase by 13% through 2028, much faster than the average for all other occupations (Bureau of Labor Statistics).
- Created with employer input, Tri-County's HVAC program produces graduates in high demand for great paying jobs in companies that are using the latest technologies for competing in the global marketplace.

About the Pathway

- HVAC Technology is a Technical Career Pathway in which courses and textbooks are at no cost to students planning to enter the career field after high school.
- High school students take dual enrollment classes at the TCTC Pendleton campus, Monday through Thursday, in the afternoon.
- After high school, students seamlessly transition into the Associate in Applied Science degree HVAC Technology program at the TCTC Pendleton campus.

Heating, Ventilation & Air Conditioning Technology CAREER PATHWAY

IN HIGH SCHOOL

11th* or 12th Grade:

(COURSES OFFERED IN AFTERNOON)

- ACR 1&05 (Fall)
- ACR 122 (Spring)

Students who begin this pathway in 11th grade may take courses in 12th grade with regular college students in morning classes.

**HIGH SCHOOL GRADUATION
WITH
11 HOURS OF COLLEGE CREDIT**

AFTER HIGH SCHOOL

**HVAC Technology Associate
in Applied Science Degree**

FALL

• ACR 106 • ACR 160 • ENG 165 • PSY 120

SPRING

• ACR 110 • MAT 170 • HSS 105 • General Education Course

SUMMER

• ACR 104 • ACR 221 • ACR 224 • ACR 250 • ACR 251

FALL

• ACR 111 • ACR 175 • ACR 201 • ACR 210

SPRING

• ACR 131 • ACR 140 • ACR 225

SC Mean Annual Wages
\$38,846-\$50,539



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HEATING, VENTILATION, & AIR CONDITIONING TECHNOLOGY COURSE DESCRIPTIONS

The HVAC program prepares students for careers as heating, cooling, ventilation, and refrigeration technicians and installers in residential, commercial, and industrial sectors. Students learn the fundamentals of heating and air systems from building and installing systems to repairing, maintaining and operating systems.

ACR 101 - FUNDAMENTALS OF REFRIGERATION SYSTEMS

Class Hours: 3 Lab Hours: 6 Credit Hours: 5

The course covers the refrigeration cycle, refrigerant, the pressure/ temperature relationship, and system components.

ACR 104 - PRINT READING FOR HVAC

Class Hours: 1 Lab Hours: 0 Credit Hours: 1

This course covers reading and interpreting prints used in HVAC installation and maintenance.

ACR 105 – TOOLS AND SERVICE TECHNIQUES I

Class Hours: 0 Lab Hours: 3 Credit Hours: 1

This course is an introduction to basic uses of tools and service equipment used in installation and repair of HVAC equipment.

ACR 106 - BASIC ELECTRICITY FOR HVAC/R

Class Hours: 3 Lab Hours: 3 Credit Hours: 4

This course includes a basic study of electricity, including Ohm's Law and series and parallel circuits as they relate to heating, ventilating, air conditioning and/or refrigeration systems.

ACR 110 - HEATING FUNDAMENTALS

Class Hours: 3 Lab Hours: 3 Credit Hours: 4

This course covers the basic concepts of oil, gas, and electric heat, their components and operations.

Prerequisites: ACR 106.

ACR 111 – GAS HEATING PRINCIPLES

Class Hours: 2 Lab Hours: 3 Credit Hours: 3

This course is a study of residential and commercial gas burners and their components.

ACR 122 – PRINCIPLES OF AIR CONDITIONING

Class Hours: 3 Lab Hours: 6 Credit Hours: 5

This course is a study of the air cycle, psychrometrics, load estimating and equipment selection.

ACR 131 – COMMERCIAL REFRIGERATION

Class Hours: 3 Lab Hours: 3 Credit Hours: 4

This course is a study of maintenance and repair of commercial refrigeration systems.

ACR 140 – AUTOMATIC CONTROLS

Class Hours: 2 Lab Hours: 3 Credit Hours: 3

This course is a study of the adjustment, repair and maintenance of a variety of pressure and temperature sensitive automatic controls.

ACR 160 – SERVICE CUSTOMER RELATIONS

Class Hours: 3 Lab Hours: 0 Credit Hours: 3

This course covers how to deal with different types of customers, selling techniques, and correct record keeping.

ACR 175 - EPA 608 CERTIFICATION PREPARATION

Class Hours: 1 Lab Hours: 0 Credit Hours: 1

This course covers EPA guidelines and procedures required by law for refrigerant recovery and recycling during the installation, service, and repair of all HVAC and refrigeration systems. A comprehensive review of essential material necessary to take the EPA 608 exam will be included.

Prerequisites: Approval needed by the Department Head, Program Coordinator, or Coordinator of Instructional Activities.

ACR 201 – TROUBLESHOOTING AND MAINTENANCE

Class Hours: 2 Lab Hours: 3 Credit Hours: 3

This course is a study of troubleshooting and maintenance of air conditioning equipment.

ACR 210 - HEAT PUMPS

Class Hours: 3 Lab Hours: 3 Credit Hours: 4

This course is a study of theory and operational principles of the heat pump.

Prerequisites: ACR 101, ACR 106.

ACR 221 - RESIDENTIAL LOAD CALCULATIONS

Class Hours: 2 Lab Hours: 0 Credit Hours: 2

This course is a study of heat/losses gains in residential structures.

Prerequisites: ACR 101 , ACR 122 .

ACR 224 - CODES AND ORDINANCES

Class Hours: 2 Lab Hours: 0 Credit Hours: 2

This course covers instruction on how to reference appropriate building codes and ordinances where they apply to installation of heating and air conditioning equipment.

Prerequisites: ACR 101.

ACR 225 – INDUSTRIAL AIR CONDITIONING

Class Hours: 2 Lab Hours: 3 Credit Hours: 3

This course is a study of compressors, motors, drives, controls heat exchangers, and other components involved in the operation and maintenance of industrial air conditioning equipment.

ACR 250 – DUCT FABRICATION

Class Hours: 2 Lab Hours: 3 Credit Hours: 3

This course covers the design, fabrication, and installation of air duct systems.

ACR 251 - SCWE IN HVAC

Class Hours: 0 Lab Hours: 12 Credit Hours: 4

This course includes supervised work experience at an approved work site in accordance with specific documented requirements.

ENG 165 - PROFESSIONAL COMMUNICATION

Class Hours: 3 Lab Hours: 0 Credit Hours: 3

This course develops practical written and oral communication skills.

Prerequisites: Satisfactory COMPASS placement scores in both Reading and Writing.

HSS 105 - TECHNOLOGY AND CULTURE

Class Hours: 3 Lab Hours: 0 Credit Hours: 3

This course provides a study of the impact of technological change on cultural values, society, and the individual.

Prerequisites: ENG 101, ENG 155 , or ENG 165 .

MAT 170 - ALGEBRA, GEOMETRY AND TRIGONOMETRY I

Class Hours: 3 Lab Hours: 0 Credit Hours: 3

This course includes the following topics: elementary algebra, geometry, trigonometry and applications.

Prerequisites: Satisfactory math placement scores, or MAT 032 with a grade of C or better.

PSY 120 - ORGANIZATIONAL PSYCHOLOGY

Class Hours: 3 Lab Hours: 0 Credit Hours: 3

This course is a study of basic psychological principles of supervision and organizational dynamics. Emphasis is placed on people skills and general human relation techniques in the workplace. This course will not satisfy any Associate of Arts or Associate of Science requirements.



TCTC
Tri-County Technical College