

CT.HVA Heating, Ventilation and Air Conditioning

Essential Discipline Goals

-Develop and apply the technical competency and related academic skills that allow for economic independence and career satisfaction.

-Acquire the essential learnings and values that foster continued education throughout life.

-Demonstrate the ability to communicate, solve problems, work individually and in teams and apply information effectively.

-Develop technological literacy and the ability to adapt to future change.

Standards **Indicators**

CT.HVA.05 Students will identify and apply basic safety rules.

CT.HVA.05.01 Students will follow general lab/worksite safety rules

CT.HVA.05.02 Students will demonstrate the safe use of tools and equipment

CT.HVA.10 Students will use basic math to solve trade-related problems and perform tasks.

CT.HVA.10.01 Students will calculate using addition, subtraction, multiplication and division to solve problems

CT.HVA.10.02 Students will use a calculator as needed to solve problems

CT.HVA.15 Students will measure linear, volume and mass as needed.

CT.HVA.15.01 Students will identify measuring tools

CT.HVA.15.02 Students will demonstrate the use of measuring tools

CT.HVA.15.03 Students will measure to the nearest 1/16" accuracy

CT.HVA.20 Students will demonstrate the proper care and use of trade-related hand and power tools.

CT.HVA.20.01 Students will identify basic tools

CT.HVA.20.02 Students will use the following tools : screwdriver, pliers, hammer, wrenches, utility knife, power and cordless drill, circular saw, sabre saw, reciprocating saw and grinders

CT.HVA.20.03 Students will demonstrate and provide the proper care of tools

CT.HVA.25 Students will fabricate and install ventilation system.

CT.HVA.25.01 Students will fabricate duct work

CT.HVA.25.02 Students will insulate duct work

CT.HVA.25.03 Students will install duct work

CT.HVA.25.04 Students will utilize the following: brake, shear, pittsburger, bar folder and box-pan brake

CT.HVA.30 Students will read and interpret blueprints.

CT.HVA.30.01 Students will identify the lines, symbols and HVAC systems down on drawings

CT.HVA.30.02 Students will use an architect's scale

CT.HVA.30.03 Students will construct a perspective drawing

CT.HVA.35 Students will set up and use basic rigging.

CT.HVA.35.01 Students will determine the size and weight of an object

CT.HVA.35.02 Students will determine how an object will be rigged

CT.HVA.35.03 Students will determine how an individual will be rigged

CT.HVA.35.04 Students will select appropriate rigging equipment

- CT.HVA.40** Students will define HVAC as a trade.
CT.HVA.40.01 Students will describe the role of a first-year trainee in HVAC
CT.HVA.40.02 Students will describe the relationship of HVAC to other construction trades
- CT.HVA.45** Students will demonstrate work maturity in the lab and on the job.
CT.HVA.45.01 Students will explain the relationship between pride and job success
CT.HVA.45.02 Students will evaluate their human relation skills
- CT.HVA.50** Students will demonstrate basic piping applications.
CT.HVA.50.01 Students will identify fittings and their sizes
CT.HVA.50.02 Students will identify fittings by color code and size
CT.HVA.50.03 Students will make flare and swage connections
CT.HVA.50.04 Students will install copper and plastic pipe/tubing
- CT.HVA.55** Students will solder and braze.
CT.HVA.55.01 Students will operate air acetylene and propane torch
CT.HVA.55.02 Students will solder copper connections
CT.HVA.55.03 Students will solder copper to brass
CT.HVA.55.04 Students will solder electrical connections
- CT.HVA.60** Students will assemble ferrous metal piping and fittings.
CT.HVA.60.01 Students will measure, cut and ream pipe to standards
CT.HVA.60.02 Students will thread pipe using die and stock to standards
CT.HVA.60.03 Students will thread pipe using power threading machine to standards
CT.HVA.60.04 Students will assemble pipe and fittings with thread sealant to standards
- CT.HVA.65** Students will utilize slings and chains.
CT.HVA.65.01 Select the best sling configuration for a state application
CT.HVA.65.02 Identify given wire rope slings
- CT.HVA.70** Students will use hand signals in directing and operating lifting equipment.
CT.HVA.70.01 Give the following hand signals; raise, lower, swing and stop
CT.HVA.70.02 Interpret hand signals
- CT.HVA.75** Students will apply principles of electricity as it applies to HVAC.
CT.HVA.01 Solve problems using ohm's law
CT.HVA.02 Replace a fuse
CT.HVA.03 Replace a capacitor
CT.HVA.04 Read and draw wiring diagrams
CT.HVA.05 Select and use electrical test instruments to conduct given tests
- CT.HVA.80** Students will install, test, repair and maintain heating systems.
CT.HVA.01 Identify basic component of a forced-air furnace
CT.HVA.02 Identify the basic components of an oil burner
CT.HVA.03 Test and replace a fuel pump
CT.HVA.04 Test and replace a transformer
CT.HVA.05 Test and replace an electrical motor
- CT.HVA.85** Students will install, test, repair and maintain cooling systems.
CT.HVA.85.01 Identify the basic components of an air conditioning system
CT.HVA.85.02 Trace the direction of flow and describe the refrigerant state at various points in the cycle
CT.HVA.85.03 Describe two methods of leak detection
CT.HVA.85.04 Identify and replace compressor
CT.HVA.85.05 Replace condensers and evaporators