LANCASTER COUNTY
CAREER & TECHNOLOGY
CENTER

HVAC

Available Certifications:

OSHA Certification
Tracpipee Certification
NCCER Credentials
EPA 608 Certification
Gastite Certification

Complete Task List:

Task Number	Description	Hours	Level
**State Approved Program of Study*			
100	Introduction to HVAC/R		
101	Identify HVAC/R systems.		
102	Describe career opportunities in the HVAC/R profession.		
103	Demonstrate awareness of the occupational requirements.		
104	RESERVED		
105	Use soft skills when interacting with customers.		
200	Basic Safety		
201	RESERVED		
202	RESERVED		
203	Identify and demonstrate the use of personal protection equipment.		
204	Apply OSHA regulations to identify hazards and measures to prevent job site accidents from occurring.		
205	Demonstrate the proper use of stepladders, extension ladders, and scaffolding.		
300	Tools for HVAC/R		
301	Identify, use, and maintain basic hand tools used in the trade.		
302	Identify, use, and maintain basic power tools used in the trade.		
400	Blueprint Reading		
401	Compare types of blueprint plans.		
402	Read and interpret blueprint plans.		
500	Piping Practices		
501	Identify piping materials.		
502	Select, measure, cut, ream, swage, and flare piping and tubing projects.		
503	Cut, ream, thread, and assemble steel piping projects and pressure test.		
504	Assemble non-metallic pipe and fittings and pressure test.		
505	Assemble copper tubing projects and pressure test.		
506	Solder copper tubing.		
507	Braze ACR tubing.		
508	RESERVED		
509	RESERVED		
510	Assemble corrugated stainless steel gas tubing (CSST) projects.		
511	RESERVED		
600	Basic Electricity		
601	Describe and explain the basic concepts of electricity.		

Task Number	Description	Hours	Level
602	Calculate basic electrical quantities using Ohm's law.		
603	Explain how magnetism is used in different HVAC components.		
604	Implement safe electrical practices.		
605	Interpret and draw various types of electrical schematics and symbols.		
606	Apply proper wiring techniques.		
607	Perform electrical testing to include mechanical/electronic relays on energized and de-energized circuits.		
608	Wire series circuit, parallel circuit, and series/parallel circuit.		
609	Install and size electric disconnects, circuit breakers, and fuses.		
610	Classify and test various types of capacitors.		
611	Identify electrical motors and their applications.		
612	Differentiate between motor control protection and start devices.		
613	Apply relevant electrical codes.		
614	Determine transformers ratings and their applications.		
615	RESERVED		
700	Introduction to Cooling		
701	Measure temperature and pressure of a cooling system.		
702	Calculate superheat and subcooling.		
703	Locate and describe components of the basic refrigeration cycle.		
704	Evaluate refrigerants using temperature and pressure charts for various refrigerants.		
705	Analyze and test the operations of various compressors.		
706	Analyze and test the operations of various condensers.		
707	Analyze and test the operations of various evaporators.		
708	Analyze, test, and adjust the operations of various metering devices.		
709	Identify secondary components used in the air conditioning and refrigeration industry.		
710	Evaluate effects of airflow on cooling system performance.		
711	Categorize and manipulate service valves.		
800	Introduction to Heating		
801	Describe the principles of combustion.		
802	Evaluate temperatures and pressures of various heating systems.		
803	Identify components and fuel properties of various heating systems.		
804	Perform maintenance on a gas furnace.		
805	RESERVED		
806	Identify oil heating equipment.		
807	Install and adjust oil, gas (condensing and non-condensing), and electric heating equipment.		
808	Perform maintenance on oil fired equipment.		
809	RESERVED		
810	Identify and size electric heating equipment.		
811	Install heating/air conditioning thermostats.		
812	RESERVED		

Task Number	Description	Hours	Level
813	Perform combustion analysis on oil and gas fired equipment.		
814	Identify the sequence of operations of various warm air furnaces.		
900	Air Distribution Systems		
901	Identify and design different types of duct systems.		
902	Identify and describe the different types of duct system components.		
903	Test velocity, static pressures, temperature, humidity, and volume in a duct system.		
904	RESERVED		
905	RESERVED		
906	Compare, identify, and fabricate using various duct materials.		
907	Perform basic installation practices, including duct sealing and leak testing.		
908	Identify and compare the application of air distribution secondary accessories to increase air quality and comfort.		
1000	Introduction to Hydronic Systems		
1001	Identify and compare various hot water heating system components, piping schemes, and their applications.		
1002	Service and maintain hydronic systems.		
1100	Leak Detection, Evacuation, Recovery, and Charging		
1101	Locate refrigerant leaks using common types of leak detectors.		
1102	Perform refrigerant recovery.		
1103	Perform system evacuation and dehydration.		
1104	Determine when to charge with liquid versus vapor.		
1105	Weigh in correct system charge when appropriate.		
1106	Charge systems using superheat method when appropriate, e.g., fixed restriction.		
1107	Charge systems using subcooling method when appropriate, e.g., TXV, AXV.		
1108	Apply knowledge of EPA Section 608 regulations.		
1109	Identify pump down applications and perform system pump down operations.		
1200	Troubleshooting Heating		
1201	Perform gas burner flame proving tests.		
1202	Troubleshoot gas heating equipment.		
1203	Troubleshoot oil fired equipment.		
1300	Troubleshooting Cooling		
1301	Identify control system components.		
1302	Troubleshoot and service cooling equipment.		
1303	Troubleshoot electrical components.		
1400	Heat Pumps		
1401	Explain heat pump modes of operation.		
1402	Identify and describe heat pump components.		
1403	Install heat pump systems.		
1500	Computer Fundamentals		
1501	RESERVED		

Task Number	Description	Hours	Level
1502	Utilize the Internet for research.		
1503	Use HVAC computer software.		
*Local Task List			
VA3513	13.2.11.A- Apply effective speaking and listening skills used in a job interview.		
VA3514	13.2.11.B- Apply research skills in searching for a job. (CareerLink, O-NET, Networking, Newspapers, Professional Associations, Reource Books (OOH), etc.		
VA3515	13.2.11.C-Develop and assemble, for career portfolio placement, career acquisition documents, such as, but not limited to: job application, letter of appreciation, Cover Letter, Resume, Post-Secondary Application, etc.		
VA3516	13.2.11.E- Demonstrate, in the career acquisition process, the application of essential workplace skills/knowledge, such as, but not limited to: Communication, Health and Safety, Resilience, Integrity, Problem Solving, Teamwork and Communication.		
VA3517	13.3.11.A- Evaluate personal attitudes and work habits that support career retention and advancement, with focus on Resilience, Integrity, Problem Solving, Communication, Teamwork.		
VA3518	13.3.11.B-Evaluate team member roles and describe and illustrate active listening techniques: clarifying, encouraging, reflecting, restating, and summarizing.		
VA3519	13.3.11.C- Evaluate conflict resolution skills as they related to the workplace.: constructive criticism, group dynamics, managing leaderships, mediation, negotiation, problem solving.		
VA3520	13.3.11.D- Develop a personal budget based on career choice, such as but not limited to : fixed/variable expenses, gross pay, net pay, saving, taxes.		