Clemson University
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Education & Training Plan
HVAC Technician Certification Program with Externship

Student Full Name: _____

Start Date: _____ End Date: _____

Program includes National Certification & an Externship Opportunity
Mentor Supported

Clemson University Program with Externship

Course Code:	CLEM-TRDE-HVAC
Program Duration:	6 Months
Course Contact Hours:	375
Student Tuition:	$3,750.00

Program Description

The increasing development of heating, ventilation, and air-conditioning (HVAC) systems technology creates a number of employment opportunities in this long-standing trade poised for even more growth in the coming years. An HVAC technician installs, maintains, and repairs heating, air conditioning, and refrigeration systems. Professionals who work in this occupation might specialize in installation, or in maintenance and repair.

This program focuses on broad, transferable skills, including an understanding of the heating, air-conditioning, refrigeration and ventilation industry, and demonstrates elements of the industry such as planning, management, finance, technical and production skills, the underlying principles of technology, and health, safety, and environmental issues. The purpose of this program is to prepare students to perform entry-level HVAC maintenance and repair tasks in residential and commercial environments. This course is designed to prepare students to pursue the Environmental Protection Agency (EPA) 608 Core and 608 Small Appliances (Type 1) Certification. Students are eligible for an optional externship with a local employer after successful course completion.

Education and National Certifications

- Students should have or be pursuing a high school diploma or GED
- National Certification exam available to students who successfully complete this program:
  - **Environmental Protection Agency (EPA) Section 608 Technician Certification**

Program Objectives

After completing this program, learners will be able to:

- Describe the building trades and technology industry and associated career paths
- Identify the professional skills required for success and career advancement in the industry
- Complete basic measuring tasks and math calculations required in the building trades workplace
- Explain the safety procedures and equipment commonly used in the building trades workplace
- Explain the proper use, care, maintenance, and safety considerations for using common hand tools
- Explain the proper use, care, maintenance, and safety considerations for using common power tools
- Identify common rigging equipment and procedures used on a construction site
- Read common construction drawings and plans
- Apply principles of heating, ventilation, air conditioning, and refrigeration to the installation, maintenance and repair of HVACR systems
- Apply safety practices to HVACR installation, maintenance, and repair practices
- Identify and safely use hand and power tools
- Understand and read construction drawings
- Describe trade licensing, certification, career paths, and responsibilities and characteristics available in the HVACR trade in residential, commercial and industrial areas
- Perform basic math and measuring tasks required in the HVAC trade
- Apply knowledge of electricity and electrical safety to HVACR installation, maintenance and repair
- Apply knowledge of heating, cooling, and air distribution systems and individual components to the HVACR installation, maintenance and repair
- Apply knowledge of different types of copper, plastic, and carbon steel piping in HVACR tasks
- Prepare, soldering, and brazing copper tubing safety
- Measure, cut, ream, thread, install, and join steep pipe in HVACR projects
- Understand Environmental Protection Agency (EPA) rules and regulations related to HVAC practices
- Understand EPA requirements for small appliances, refrigerants and hazardous chemicals

National Certification

Students who complete the Clemson University HVAC Technician program will be prepared to sit for the Environmental Protection Agency (EPA) Section 608 Technician Certification national certification exam(s). In order to work as a HVAC Technician, many states nationwide are requiring that learners achieve national certification prior to working in that state. Students who complete this program are encouraged to complete the practical/clinical externship option with their program. This comprehensive program is designed to prepare students to sit for Environmental Protection Agency (EPA) Section 608 Technician Certification exam(s). Students who complete this program can and do sit for the Environmental Protection Agency (EPA) Section 608 Technician Certification national certification exam(s) and are qualified, eligible and prepared to do so.

Externship / Hands on Training / Practicum

Although not a requirement, once students complete the program, they have the ability to participate in an externship and/or hands on practicum so as to practice the skills necessary to perform the job requirements of a professional in this field. Students will be assisted with completing a resume and/or other requirements necessary to work in this field. All students who complete this program are eligible to participate in an externship and will be placed with a participating organization near their location. The institution works with national organizations and has the ability to place students in externship opportunities nationwide.

Clemson University contact: If students have any questions regarding this program including national certification and externships **, they should call Salley Ouellette of Clemson University at | (864) 656-2200 or via email at palmer4@clemson.edu**

Note : No refunds can be issued after the start date published in your Financial Award document.

About Clemson University!

Clemson Online, a unit reporting directly to the Provost, works closely with leadership teams across the University to develop, market, and deliver top-quality courses and programs in blended and online formats. The office provides vision, leadership, coordination, and expertise in support of faculty design, delivery, and evaluation of technology-enhanced, blended, and fully online courses and instructional materials. Dynamic, transformative, and unique eLearning opportunities characterize Clemson's approach to online teaching and learning.

Our Mission: Clemson Online provides strategic leadership for online education, emphasizing innovative teaching and superior learning outcomes to maximize student success in 21st-century academic and professional contexts.

Our Vision: Clemson Online will define the public web-grant university through measurable achievements in online education, research, and service. The office is committed to pursuing strategic opportunities, providing supportive resources, promoting superior educational quality, and ensuring faculty involvement and responsibility in shaping Clemson's online future.

Clemson University and Pearson Education

Clemson University's eLearning programs were developed in partnership with Pearson Education to produce the highest quality, best-in-class content and delivery necessary to enhance the overall student learning experience, boost understanding and ensure retention. Pearson Education is the premier content and learning company in North America offering solutions to the higher education and career training divisions of colleges and universities across the country aimed at driving quality education programs to ensure student success. Please visit us at **www.pearson.com** .

About Pearson Education

Welcome to Pearson. We have a simple mission: to help people make more of their lives through learning. We are the world's leading learning company, with 40,000 employees in more than 80 countries helping people of all ages to make measurable progress in their lives. We provide a range of education products and services to institutions, governments and direct to individual learners, that help people everywhere aim higher and fulfil their true potential. Our commitment to them requires a holistic approach to education. It begins by using research to understand what sort of learning works best, it continues by bringing together people and organizations to develop ideas, and it comes back round by measuring the outcomes of our products.

Core Trades Curriculum Detailed Objectives:

AN ORIENTATION TO BUILDING TRADES

- Describe the building trades industry.
- Explain the concept of green building.
- Describe a residential and commercial construction site.
- Identify various career options within the building trades.
- Identify the required professional skills in the building trades industry

SAFETY IN BUILDING TRADES

- Explain why safety is important in the workplace, the causes of incidents and accidents, the associated costs, and the process of hazard recognition and control, including HAZCOM and SDSs.
- Explain requirements for working safely in elevated working using ladders, stairs, and scaffolds, including fall prevention, arrest, and protection guidelines
- Explain struck-by hazards and caught-in-between, including how to avoid them
- Explain energy-related hazards, including how to avoid them and lockout/tagout procedures
- Explain proper use of personal protective equipment used in construction worksites
- Explain specific job-site safety hazards including exposure hazards, environmental extremes, hot work and firefighting procedures, and confined spaces.

MATH AND MEASUREMENT IN BUILDING TRADES

- Use whole numbers in basic math problems related tasks in the trades
- Use various tools to make accurate linear measurements
- Use fractions in basic math problems related tasks in the trades
- Use decimals in basic math problems related to tasks in the trades
- Convert units of length, weight, volume, and temperature between the U.S. customary scale and the metric system
- Apply basic geometry concepts to trade-related problems
- Calculate area and volume of two-dimensional and three-dimensional shapes
- Perform basic business math problems related to the trades
- Correctly solve trades-related math problems

HAND TOOLS – SAFETY, USE, AND CARE

- Explain and apply general and tool safety, care, and storage practices.
- Identify and explain how to use various types of measurement and layout tools.
- Identify and explain how to use a variety of hammers and nail pullers.
- Identify and explain how to use various types of pliers, screwdrivers, and wrenches.
- Identify and explain how to use various cutting tools.
- Identify and explain how to use various digging tools.
- Identify and explain how to use various holding, securing, and moving tools.
- Identify and explain how to use various fitting tools.
- Explain procedures and concepts related to handling materials safely.
- Identify and explain the use of non-motorized material handling equipment.

POWER TOOLS – SAFETY, USE, AND CARE

- Identify and explain how to use selected power tools.
- Identify and explain how to use various types of power saws.
- Identify and explain how to use various types grinder and grinder attachments
- Identify and explain how to use a variety of other selected power tools.

FASTENERS, ADHESIVES, AND SEALANTS

- Select the appropriate fastener type and size for common construction jobs.
- Explain how to use common fastener types correctly.
- Describe different types and uses of common adhesives.
- Describe common sealants and their uses.

RIGGING EQUIPMENT AND CONCEPTS

- Identify and describe the types of rigging equipment
- Explain how to inspect common rigging equipment for safety
- Use the Emergency Stop hand signal.

INTRODUCTION TO DRAWINGS AND PLANS

- Identify the types of construction drawings, including their fundamental components and features.
- Properly an engineer's and architect's scale.

MICROSOFT OFFICE

- Module Use an integrated software package, specifically the applications included in the Microsoft Office suite
- Demonstrate marketable skills for enhanced employment opportunities
- Describe proper computer techniques for designing and producing various types of documents
- Demonstrate the common commands & techniques used in Windows desktop
- List the meaning of basic PC acronyms like MHz, MB, KB, HD and RAM
- Use WordPad and MSWord to create various types of documents
- Create headings and titles with Word Art
- Create and format spreadsheets, including the use of mathematical formulas
- Demonstrate a working knowledge of computer database functions, including putting, processing, querying and outputting data
- Define computer terminology in definition matching quizzes
- Use the Windows Paint program to alter graphics
- Use a presentation application to create a presentation with both text and graphics
- Copy data from one MS Office application to another application in the suite
- Use e-mail and the Internet to send Word and Excel file attachments
- Demonstrate how to use the Windows Taskbar and Windows Tooltips
- Explain how copyright laws pertain to data and graphics posted on the Internet
- Take the college computer competency test after course completion
- Follow oral and written directions and complete assignments when working under time limitations

Note: Although the Microsoft Office Module is not required to successfully complete this program, students interested in pursuing free Microsoft MOS certification may want to consider completing this Microsoft Office Module at no additional cost.

System Requirements:

Windows Users:

- Windows 8, 7, XP or Vista
- 56K modem or higher
- Soundcard & Speakers
- Firefox, Chrome or Microsoft Internet Explorer

Mac OS User:

- Mac OS X or higher (in classic mode)
- 56K modem or higher
- Soundcard & Speakers
- Apple Safari

iPad Users:

- Due to Flash limitations, eLearning programs are NOT compatible with iPads

Screen Resolution:

- We recommend setting your screen resolution to 1024 x 768 pixels.

Browser Requirements:

- System will support the two latest releases of each browser. When using older versions of a browser, users risk running into problems with the course software.
- Windows Users: Mozilla Firefox, Google Chrome, Microsoft Internet Explorer
- Mac OS Users: Safari, Google Chrome, Mozilla Firefox

Suggested Plug-ins:

- Flash Player
- Real Player
- Adobe Reader
- Java