CENTER for APPRENTICESHIP & ADULT TRAINING
520 Butler Farm Rd, Hampton VA 23666
757-766-1101
www.nhrec.org/cfaat

Course Name: HVAC Level IV (NCCER)

Contact Hours: 144

Number of Sessions: 48

Number of Hrs./Session: 3

Mode of Instruction: Classroom

Course Description:
Course is designed based on the NCCER curriculum. Students must take all four levels of electrical and Core Curriculum in order to receive a diploma/certificate from New Horizons.
Text: HVAC Level 4, ISBN: 978-0135185063

Course Outline and Modules:

1. Water Treatment (12.5 Hours) Explains water problems encountered in heating and cooling systems and identifies water treatment methods and equipment. Covers basic water testing procedures and chemistry. (Module ID 03308)
2. Indoor Air Quality (10 Hours) Defines the issues associated with indoor air quality and its effect on the health and comfort of building occupants. Provides guidelines for performing an IAQ survey and covers the equipment and methods used to monitor and control indoor air quality. (Module ID 03403)
3. Energy Conservation Equipment (7.5 Hours)Covers heat recovery/reclaim devices, as well as other energy recovery equipment used to reduce energy consumption in HVAC systems. (Module ID 03404)
4. Building Management Systems (12.5 Hours) Explains how computers and microprocessors are used to manage zoned HVAC systems. Provides coverage of various network protocols and systems controllers, and introduces trainees to the various means of connection and system interface. (Module ID 03405-13)
5. System Air Balancing (15 Hours) Covers air properties and gas laws, as well as the use of psychrometric charts. Describes the tools, instruments, and procedures used to balance an air distribution system. (Module ID 03402)
6. System Startup and Shutdown (15 Hours) Presents the procedures for the startup and shutdown of hot water, steam heating, chilled water, and air handling systems. Also covers the start-up and shutdown of typical cooling towers and packaged HVAC units. The procedures for both short- and long-term shutdowns are included. (Module ID 03406)
7. Construction Drawings and Specifications (12.5 Hours)Teaches how to interpret drawings used in commercial construction, including mechanical drawings, specifications, shop drawings, and as-builts.

Explains how to perform takeoff procedures for equipment, fittings, ductwork, and other components. (Module ID 03401)

8. Heating and Cooling System Design (25 Hours) Identifies factors that affect heating and cooling loads. Explains the process by which heating and cooling loads are calculated, and how load calculations are used in the selection of heating and cooling equipment. Covers basic types of duct systems and their selection, sizing, and installation requirements. (Module ID 03407)
9. Commercial and Industrial Refrigeration Systems (20 Hours)
   Expands on the study of product and process refrigeration equipment by describing systems used in cold storage and food processing applications, as well as transportation refrigeration. Various types of defrost systems are covered in detail. (Module ID 03408)
10. Alternative and Specialized Heating and Cooling Systems (10 Hours)
    Describes alternative devices used to reduce energy consumption, including wood, coal, and pelletfired systems, waste-oil heaters, geothermal heat pumps, solar heating, in-floor radiant heating, and direct-fired makeup units. Also introduces application-specific computer room environmental and air turnover systems. (Module ID 03409)
11. Fundamentals of Crew Leadership (20 Hours) Teaches skills needed to become an effective crew leader, as well as knowledge and abilities required to transition from craftworker to crew leader. The module also covers workforce diversity and organization, basic leadership skills, safety, and project control. (Module ID 46101)