



American
SCHOOL of
TECHNOLOGY

Heating, Ventilation & Air Conditioning/Refrigeration

Catalog Course Description

Effective ; /40/2011



Heating, Ventilation & Air Conditioning/Refrigeration Course Description

Course Description

The American School of Technology is an approved training sponsor for the National Center for Construction Education and Research (NCCER). Our Heating Ventilation and Air Conditioning/Refrigeration program utilizes the (ContrenConnect) curriculum developed by NCCER. ContrenConnect is an interactive web-based tool that partners textbooks and internet driven materials to give the student a multi-dimensional learning experience. Our HVAC/R environment is task oriented, so every student undergoes written and performance-based learning. This hands-on approach successfully prepares our students for employment in various HVAC/R positions in the field. Our instructors are NCCER Craft certified in the HVAC/R field and our facility is designed with technology including overhead projectors, an HVAC/R lab containing various HVAC/R equipment and components, a student-assisted tool crib and web based learning and research work stations for students.

Educational Objectives

This program is designed for women and men regardless of previous training in heating, Ventilation, and Air Conditioning. The objective of the program is to provide the student with an understanding of HVAC/R systems, their operation, and diagnosis to obtain job entry skills or advancement within the heating and refrigeration industry. The graduate may have opportunities in many facets of the industry including but not limited to Heating/Cooling Technician, Refrigeration Technician, industrial Maintenance Technician or Parts and Service Staff.

Program Outline:

Daytime Program: 1155 clock hours; 30 credit hours, 50 weeks

Evening Program: 1155 clock hours; 30 credit hours, 50 weeks

Course Outline:

<u>Course Number</u>	<u>Course Name</u>	<u>Clock Hours</u>	<u>Credit Hours</u>
H100-1	Core & Basic HVAC/R Skills	225	6
H110-1	Advanced Heating	225	6
H120-2	Advanced Cooling & Refrigeration	225	6
H130-1	Advanced Associated Skills	225	6
CD100	Career Development	37.5	1
H140	Tools for Success for the Construction Industry	37.5	1
H160	Externship	180	4
Totals		1155	30

Please note that there will be outside work required for the HVAC/R program, as detailed on class syllabi.



Course Outline:

H100 Core & Basic HVAC/R Skills

6 Credit Hours

In this course students will be introduced to the HVAC/R profession and learn Basic Safety. They will be introduced to construction math, trade math, hand tools, power tools and construction drawings. Students will be introduced to cooling and heating, basic electricity and refrigerants and oils. Material handling is also covered and copper and plastic piping practices. This course also touches on basic employability skills and communication skills.

H110 Advanced Heating

6 Credit Hours

In this course, students will learn to make basic temperature, air pressure, and velocity measurements in an air distribution system. Students learn how to properly install and service air quality equipment. They will learn how to properly vent different types of furnaces and chimneys, vents and flues. Students also learn the proper instruments and tools used to troubleshoot gas and oil furnaces. Students are introduced to Hydronic and steam systems and will demonstrate how to operate selected hot-water, and steam systems.

H120 Advanced Cooling & Refrigeration

6 Credit Hours

In this course, students practice soldering and brazing. They learn basic service procedures and equipment to troubleshoot repair and/or maintain correct operation of the mechanical refrigeration system including leak detection, evaluation and dehydration, recovery and charging. Students demonstrate the procedures used to remove and install a compressor. Students will be able to explain the function of metering devices and troubleshoot cooling systems and components. Students will also demonstrate heat pump installation and service procedures and troubleshoot heat pumps. Students learn the mechanical operation of refrigeration apparatus in the retail refrigeration industry.

H130 Advanced Associated Skills

6 Credit Hours

In this course, student will learn alternating and direct current related to the HVAC trade. The student will be trained to use wiring diagrams to troubleshoot electrical and electronic circuits. The installation, maintenance and troubleshooting of air quality equipment will be taught.

CD100 Career Development

1 Credit Hour

Career Development takes an in-depth look at the ways to achieve and maximize each student's success in building a future with their newly obtained skills. Through multiple workshops and coursework the Career Development course covers topics such setting and managing goals and personal finances, defining quality of performance in the workplace, recognizing the importance of relational communication and knowing when/where to use it for the most effective outcome, reviewing and understanding steps in the employment process from an employer's point of view, developing successful tools for networking and job searching in today's tough economy, understanding the concepts behind

interviewing, answering those tough interview questions, recognizing several aspects of skill sets and building critical marketing documents such as cover letter, resume and thank you letter for landing and securing your future career.

H140 Tools for Success for the Construction Industry

1 Credit Hour

This class is designed specifically for students who have chosen a career in the construction trades. Students will cover various topics including fundamental and advanced skills necessary for success in the HVAC/R industry. Being a competently-skilled technician is important but in today's competitive workplace, skills that deal in handling human relations, or so-called "soft skills", have become equally important to obtaining employment in the field.

Topics covered include:

- Essential workplace skills
- Building team relationships
- Teamwork
- Effective Communication skills
- Written and Verbal skills
- Resolving Conflict
- Stress Management
- Critical Thinking and Problem Solving
- Giving and Receiving Criticism
- Sexual Harassment
- Drug and Alcohol Abuse on the Job

H160 Externship

4 Credit Hours

Upon successful completion of prerequisite course work the students participate in a 180 hour externship at an approved facility. The externship provides the student with an opportunity to apply the principles and practices learned in the classroom and utilize entry level HVAC/R skills. HVAC/R externs work under the direct supervision of qualified personnel at the participating extern sites, and under general supervision of the school staff.

Externs are evaluated by supervisory personnel at the site after completion of 180 hours. Completed evaluation forms are placed in the students' permanent records. Students must successfully complete their externship experience in order to fulfill requirements for graduation.