HVAC 101

● ○ ○ Foundation 75 hours 5 modules · 35 lessons

HVAC Foundations: Safety, Psychrometrics, Refrigeration, Air & Hazardous-Space Ventilation

Everything you need to understand how plant HVAC works: codes, heat and moisture, the refrigeration cycle, air distribution and ventilation of classified spaces.

75	5	35	5,000	175	15
HOURS OF TRAINING	MODULES	LESSONS	STUDY CARDS	SCENARIOS	3D SIMULATORS

COURSE OBJECTIVES

By the end of this course you will be able to:

1. Work safely on HVAC equipment: LOTO, refrigerant release, wet-well and chemical-room atmospheres.
2. Navigate the 2021 Virginia USBC (IMC/IFGC/IECC) and NFPA 820 requirements for plant HVAC.
3. Use sensible and latent heat equations and plot processes on the psychrometric chart.
4. Explain the vapor-compression cycle, superheat and subcooling and diagnose refrigeration faults from nine readings.
5. Handle refrigerants legally and safely (EPA Section 608, AIM Act concepts).
6. Apply the fan laws, read fan and system curves and balance airflow and space pressure.
7. Size and verify ventilation for wet wells, chlorine rooms, digester buildings and MCC rooms.

WHAT YOU WILL LEARN

Safety & codes
USBC, NFPA 820, OSHA/VOSH and refrigerant safety.

Heat & moisture
Psychrometrics, load estimates, condensation and dew point.

Refrigeration
Cycle, components, charging, superheat/subcooling and diagnosis.

Air handling
Fans, ducts, make-up air, filters and pressure relationships.

Ventilation of classified spaces
ACH, airflow proof, fail-safe operation and odor control.

Refrigerant compliance
Recovery, leak repair and record-keeping.

MAJOR TOPICS COVERED

Module 1	HVAC Safety, Codes & the Plant HVAC Trade	7 lessons
Module 2	HVAC Fundamentals & Psychrometrics	7 lessons
Module 3	Refrigeration Cycle & Refrigerants	7 lessons
Module 4	Air Handling, Fans & Ductwork	7 lessons
Module 5	Ventilation of Hazardous & Process Spaces	7 lessons

COURSE HIGHLIGHTS

- **75 hours** of structured, self-paced instruction with active-time tracking.
- **15 interactive 3D simulators** — rotate, explode and cut away real equipment, then change the controls and watch the numbers respond.
- **175 field scenarios** with background, decision points and worked answers.
- **5,000 study cards**, 35 printable checklists and hands-on calculators.
- **Module quizzes** and a completion certificate with a verification code.

WHO IT'S FOR

HVAC-R technicians, building-systems and maintenance staff, and electricians working with heating, ventilation and cooling equipment at water and wastewater plants.

BEFORE YOU START

None. Take this course first in the HVAC track (ELEC 101 recommended for electrical safety).

WHERE TO NEXT

HVAC 102 — Heating, Hydronics, Controls & Maintenance

Start learning Create a free account at tryetech.com, open **HVAC for Water & Wastewater Plants** and begin with Module 1.