

**COURSE NAME** HVAC Fundamentals Course

**FORMAT** Self-paced, online presentation with PDF workbook

**DURATION** 10 modules, 5-30 minutes each, plus additional reading

**SCHEDULE** Self-Paced

**ASSESSMENT** A comprehensive, online examination follows

## **AUDIENCE**

This self-paced, online training is designed for building automation and control system technicians, installers, engineers, programmers, and sales persons new to the industry. Alerton has assembled this course as an introduction to the HVAC field for newly hired employees with limited HVAC knowledge and experience.

## **OVERVIEW**

These HVAC Fundamentals e-learning modules introduce the student to the basics of HVAC theory and equipment. Students learn the essential functions of HVAC with presentations and workbook reading assignments

## **OBJECTIVES**

After completion of this course students will be able to:

- Explain basic terms and concepts used in the HVAC industry including thermodynamics, temperature, heat, pressure, and latent and sensible heats.
- Identify the parameters presented on a psychometric chart and plot basic heating and cooling process including calculating total heat (enthalpy) changes.
- Identify pump types and identify typical applications.
- Explain basic combustion heating equipment using natural gas and oil as fuel.
- Identify common boilers types, convertors, warm air and preheat coil piping.
- Explain the equipment found in packaged DX air handling units and air & water source heat pumps.
- Describe the operation and control of centrifugal chillers and reciprocating chillers.
- Explain the operation of cooling towers, evaporative condensers and other water source condensers.
- Describe the operation and control of absorption chillers.
- Identify the main categories of valves, the valve action, port arrangements and trim components.
- Draw and explain a variable volume air delivery system with reheat and without reheat.
- Explain the various sources of heat used in a hydronic system, draw direct and reverse return piping layouts, explain temperature reset controls, and draw 2, 3, and 4 pipe coils.
- Identify a single duct air delivery system and make the distinction between a constant volume single zone and multi zone reheat systems.

## **PREREQUISITES**

- A working knowledge of computers and current Microsoft operating systems.

## **RESOURCES**

The primary documentation for this course is the *Heating Ventilation Air Conditioning* PDF available with the e-learning module.

This online course requires Adobe Flash Player 10 or later.