

# Understanding HVAC Systems (Canada)



1 hour narrated instruction, 2 to 5 hours to complete with review of content, downloadable materials and quizzes.

Quizzes plus practice exercises

## COURSE DESCRIPTION

Understanding HVAC Systems (HVAC1) covers the fundamentals of how fuel is converted into energy, the types of space heating and cooling systems typically found in North American homes, and current ventilation system requirements for new construction.

Each module includes a downloadable study guide to accompany the online learning program. There is a review and quiz at the end of each module to help you gauge your understanding of the topics covered.

## Objectives

After completing this course, you will be able to:

- Explain how mechanical systems are used to maintain comfort levels in a house
- Describe the most common fuel and energy sources in houses
- Describe the factors involved in carrying out heat loss and heat gain calculations
- Describe the most common space heating and cooling equipment options for new construction
- Describe common delivery systems and controls for space heating and cooling
- Explain the need for mechanical ventilation in new and existing houses
- Describe the requirements of the CSA F-326 Ventilation Standard
- Distinguish between types of mechanical ventilation systems

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## COURSE OUTLINE

### Module 1: Fundamentals of Energy

#### Occupant Comfort

- Degree Days
- Mechanical Systems
- F-280 Standard

#### Fuel & Energy Sources

- Energy Terms
- Combustion Fuels
- Electricity

#### Heat Loss/Heat Gain

- F-280 Requirements
- Winter Design Conditions
- Heat Loss Calculation
- Sensible & Latent Heat Gain
- Summer Design Conditions

### Module 2: Mechanical Systems Overview

#### Space Heating

- Furnaces
- Boilers
- Electric Resistance
- Heat Pumps
- Integrated Mechanical Systems
- Efficiency & Performance

#### Space Cooling

- Types of Air Conditioners
- Efficiency and Performance

#### Delivery Systems

- Forced Air
- Hydronic
- Controls

### Module 3: Ventilation Requirements

#### Why Ventilate?

- Controlling Air Flow
- Air Filtration
- Occupant Impacts

#### F-326 Standard

- Room Count
- Ventilation Capacity
- Depressurization

#### Systems

- Exhaust Only
- Supply Only
- Balanced Whole House