# Heating, Ventilation, Air Conditioning, And Refrigeration

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| **Credential Awarded** | **Diploma** |
| **Contact Hours** | **960** |
| **Program Quarter Credits** | **50** |
| **Instructional Weeks** | **48** |
| **Total Clock Hours** | **including Out-of-Class Work Hours: 1213** |
| **Mode of Delivery** | **Residential** |

**Objective**

The objective of the program is to provide the student with the skills and knowledge required for entry-level employment in the Heating, Ventilation, Air Conditioning and Refrigeration industry. The program is designed to be comprehensive in nature, including extensive hands-on training, covering service for residential and commercial refrigeration, gas and oil furnaces, heat pumps, electric furnaces and air conditioning equipment.

**Description**

The Heating, Ventilation, Air Conditioning & Refrigeration program is designed for people interested in a career in the field of climate control systems, focusing on learning objectives identified as the key knowledge points for an HVACR Technician. The student will be adept at using a variety of tools to work with refrigerant lines and air ducts. They use voltmeters, thermometers, pressure gauges, manometers, and other testing devices to check airflow, refrigerant pressure, electrical circuits, burners, and other components. Students will be required to take and pass the EPA certification exam. Students are trained to work as heating, air conditioning and/or refrigeration service technicians in both residential and commercial sites.

**Credentialing Exams**

Students in their final quarter are eligible to take the EPA Universal Certification Exam.

**Career Opportunities**

The graduate is prepared to seek entry-level employment in HVACR including but not limited to, service technician, installation technician, and apprentice heating technician.

## Plan of Study

| Course Code | Name | Clock Hours | Credits | Quarter Credits |
|---|---|---|---|---|
| HV123 | Mechanical Controls | 120 | 0 | 6 |
| HV126 | Commercial Refrigeration | 120 | 0 | 6 |
| HV132 | Fundamentals and Electricity | 120 | 0 | 7 |
| HV147 | E.P.A. Duct Design, Load Calculation | 120 | 0 | 6 |
| HV151 | Basic Refrigeration & Hemetics | 120 | 0 | 6 |
| HV171 | Air Conditioning | 120 | 0 | 6 |
| HV177 | Heating Systems | 120 | 0 | 7 |
| HV185 | Heat Pump Systems | 120 | 0 | 6 |

**Schedule**

*Morning: Monday through Thursday 8:00 a.m. - 1:00 p.m.*
*Evening: Monday through Thursday 6:00 p.m. - 11:00 p.m.*

# Course Descriptions

## HV123 : Mechanical Controls

Theory and relevant lab exercises reviewing hydronic and forced air systems including component parts, temperature, and ambient controls.

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|---|---|
| **Quarter Credits** | **6** |
| **Clock Hours** | **120** |
| **Lab Hours** | **60** |
| **Lecture Hours** | **60** |
| **Prerequisites** | **HV 132 & HV 151** |

## HV126 : Commercial Refrigeration

The combination of theory and lab exercises will review the required additional components not normally found in A/C Systems. Additionally, the various types of refrigeration Systems are taught with reference to specific applications.

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| **Quarter Credits** | **6** |
| **Clock Hours** | **120** |
| **Lab Hours** | **60** |
| **Lecture Hours** | **60** |
| **Prerequisites** | **HV 132 & HV 151** |

## HV132 : Fundamentals and Electricity

The content of the course will provide a student, with no prior background, an introduction to the HVACR field. In addition, the student will gain a basic understanding of the principles and theory, safety and regulatory codes of electricity as it applies to the HVACR industry, along with a basic understanding of the basic components

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|---|---|
| **Quarter Credits** | **7** |
| **Clock Hours** | **120** |
| **Lab Hours** | **30** |
| **Lecture Hours** | **90** |

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| **Prerequisites** | **None** |

## HV147 : E.P.A. Duct Design, Load Calculation

Preparation for E.P.A. certification begins in the first week of the course. Through a combination of theory and lab exercises the material covered will include airflow requirements, indoor air quality, duct design, load calculation, and sheet metal fabrication. The student will also be prepared to take the Industry Competency Exam (I.C.E.).

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|---|---|
| **Quarter Credits** | **6** |
| **Clock Hours** | **120** |
| **Lab Hours** | **60** |
| **Lecture Hours** | **60** |
| **Prerequisites** | **HV 132 & HV 151** |

## HV151 : Basic Refrigeration & Hemetics

This course is an introduction to refrigeration Systems and the refrigeration process. Providing the student with instruction on refrigerants and hermetically sealed compressors.

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| **Quarter Credits** | **6** |
| **Clock Hours** | **120** |
| **Lab Hours** | **60** |
| **Lecture Hours** | **60** |
| **Prerequisites** | **None** |

## HV171 : Air Conditioning

Theory and relevant lab exercises reviewing the major components of the Air Conditioning. Component parts include: condenser, compressor, accumulator, suction line, evaporator, metering devices, receivers, and condensate and liquid lines.

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|---|---|
| **Quarter Credits** | **6** |
| **Clock Hours** | **120** |
| **Lab Hours** | **60** |
| **Lecture Hours** | **60** |
| **Prerequisites** | **HV 132 & HV 151** |

## HV177 : Heating Systems

Theory and relevant lab exercises in the areas of gas, electric, oil heating Systems. Principles of combustion, combustion efficiency, troubleshooting and servicing of electrical and mechanical Systems are stressed.

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| **Quarter Credits** | **7** |
| **Clock Hours** | **120** |
| **Lab Hours** | **30** |
| **Lecture Hours** | **90** |
| **Prerequisites** | **HV 132 & HV 151** |

## HV185 : Heat Pump Systems

Theory and relevant lab exercises reviewing the major components of the Heat Pump Systems. Component parts include: condenser, compressor, accumulator, suction line, evaporator, metering devices, receivers, and condensate and liquid lines.

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|---|---|
| **Quarter Credits** | **6** |
| **Clock Hours** | **120** |
| **Lab Hours** | **60** |
| **Lecture Hours** | **60** |
| **Prerequisites** | **HV 132 & HV 151** |