

Heating, Ventilation, Air-Conditioning and Refrigeration, AAS



School of Technology

This program provides students with an in-depth background of the heating, ventilation, air-conditioning and refrigeration industry. By combining theory and practical shop experiences, students will develop the skills needed for design, installation, maintenance and troubleshooting HVACR systems for residential and commercial applications. The heating, ventilation and air-conditioning diploma is designed to prepare students for entry level positions in the HVACR field. Students learn the refrigerants used in the industry, the basic refrigeration cycle, calculate design load and duct sizing to ACCA standards, fabricate ductwork, and control circuitry. The skills to install and service gas and oil furnaces are stressed. Students will install and service water based heating and cooling systems, air conditioners and heat pumps, basic wiring, and learn refrigerant recovery techniques. Successful completion of this program leads to the associate of applied science degree.

Career Opportunities

Recent graduates of the HVACR program have obtained jobs with the following titles: HVAC instructor, HVAC system designer, service technician, installer, inside salesperson, maintenance technician, contractor and troubleshooter.

Program Learning Outcomes

This curriculum is designed to prepare students to:

- Demonstrate the skills, professional values, and ethics necessary to be employed in the heating, ventilation, and air conditioning field.
- Demonstrate effective oral and written communication skills with customers, salesman, and fellow employees.
- Describe the general principles and terminology of HVAC systems.
- Become certified in EPA Refrigerant Handling by preparing to pass the EPA Refrigeration Exam.
- Understand basic electrical and control circuitry.
- Demonstrate the ability to utilize direct digital controls.
- Design, install and maintain hydronic heating and cooling equipment.
- Use computers and the internet to calculate HVAC loads, design ducts and hydronic systems.
- Build and maintain heating, air conditioning, ventilation, and heat pump equipment.
- Understand the operation of gas and oil furnaces.
- Understand and implement heating and air conditioning systems that utilize natural technologies.
- Demonstrate the ability to read and understand blueprints for residential and commercial structures.

| Seq # | Course | Course Title | Credits | Type | Term Offered | Pre-Req | Options Available |
|-------|----------|--|---------|--------|--------------|------------------------------|-----------------------|
| 1 | ELC 106 | Circuit Analysis I | 4 | Other | F | | |
| 2 | HAC 101 | Introduction to Refrigeration/AC | 4 | Major | F | | |
| 3 | HAC 240 | HVAC Duct Fabrication | 2 | Major | F | | |
| 4 | HAC 175 | Direct Digital Controls | 2 | Major | F | | |
| 5 | HAC 280 | Residential Wiring | 3 | Other | F | | |
| 6 | HAC 105 | Blueprint Reading for HVAC Technicians | 2 | Major | Sp | | |
| 7 | HAC 170 | HVACR Control Systems | 2 | Major | Sp | | |
| 8 | HAC 255 | Air Conditioning/Heat Pumps | 4 | Major | Sp | | |
| 9 | HAC 150 | ACCA Man J and Man D Load Est. | 4 | Major | Sp | | |
| 10 | HAC 290 | EPA Refrigerant Exam Prep. | 3 | Major | Sp | | |
| 11 | ENG 161 | College Writing | 3 | Gen Ed | F, Sp, Su | TEST | |
| 12 | HAC 250 | Gas and Oil Heating Technology | 4 | Major | F | | |
| 13 | HAC 256 | Geothermal and Solar Technology | 3 | Major | F | | |
| 14 | MTH 108 | Mathematics for the Technologies I | 4 | Gen Ed | F, Sp, Su | TEST | |
| 15 | Elective | Drafting (DFT Course) | 3/4 | Other | F, Sp, Su | | Advisor |
| 16 | DFT 258 | AutoCAD | 4 | Gen Ed | F, Sp, Su | | |
| 17 | ENG 162 | Technical Communications | 3 | Gen Ed | F, Sp, Su | ENG 161 ENG 163 or 164 | |
| 18 | HAC 260 | Hydronics | 4 | Other | Sp | | |
| 19 | Elective | Science | 3/4 | Gen Ed | F, Sp, Su | Page 40 COLUMN V | |
| 20 | Elective | Social Science | 3 | Gen Ed | F, Sp, Su | | Page 40 COLUMN III |

Total Program Credits
Total Pathway Credits

64/66
64/66

PDV 101 - First-Year Seminar is required for all first-time credential-seeking students.