

REFRIGERATION AND AIR CONDITIONING TECHNOLOGY (AAS)

Manufacturing and Construction

Program website (<https://www.harpercollege.edu/academics/manufacturing/hvac/refrigeration-ac-technology-degree.php>)

Program Overview

The courses in this curriculum are theory- designed and service-oriented. Theory courses study heat laws, gas laws, pressures and thermodynamics for energy conservation. Service courses are designed around a strong hands-on philosophy. Emphasis is placed on operation maintenance, service and repairs of heating, air-conditioning and refrigeration systems.

Graduates from this 61 credit-hour program may be employed as service technicians, technical consultants, equipment installers, facility operation engineers, property managers, project managers, insurance adjusters and sales personnel.

Program Requirements

First Semester		Hours
ELT 110	Introductory Electronics	4
HVA 101	Refrigeration Fundamentals	3
HVA 103	Heating Principles	3
HVA 104	Residential Comfort Systems	3
MTH 100	Applied Math for Technical Careers	3
Hours		16
Second Semester		Hours
ENG 101	Composition I	3
HVA 102	Refrigeration Systems	3
HVA 105	Heating and Cooling Controls	3
HVA 108	Domestic Refrigeration Appliances	3
Natural Science ²		3
Hours		15
Third Semester		Hours
ELT 144	AC and DC Motors	2
ENG 103	Technical and Report Writing	3
HVA 106	Pneumatic Controls Systems	3
HVA 107	Commercial Air Conditioning Systems	3
HVA 109	Commercial Heating Systems	3
HVA 110	Blueprints and Plans for HVAC	2
Hours		16
Fourth Semester		Hours
ELT 145	Variable Frequency Drives	2
Humanities or Social and Behavioral Science ⁺		3
HVA 200	HVAC/R Mechanical Codes and Standards	2
HVA 201	Refrigeration System Design	2
HVA 203	Load Calculations	2
HVA 204	Air Distribution	2

HVA 205	Customer Service and Support	1
Hours		14
Total Hours		61

¹ Students may take MTH 100, MTH 101 or higher.

² See full list of AAS General Education Electives (<https://catalog.harpercollege.edu/catalog/programs/aas-general-education-electives/>).

⁺ The Humanities or Social and Behavioral Science course must meet the World Cultures and Diversity graduation requirement. See full list of AAS General Education Electives (<https://catalog.harpercollege.edu/catalog/programs/aas-general-education-electives/>).

Program Learning Outcomes

Students who successfully complete this program will be able to:

- use tools of the trade to properly cut, bend, form, flare, solder and braze refrigeration copper tubing.
- utilize several techniques for locating refrigerant leaks and make repairs on a refrigeration system.
- operate a recovery machine to properly recover refrigerant from a refrigeration system to a recovery cylinder.
- properly charge refrigeration and air-conditioning system.
- troubleshoot refrigeration and air conditioning systems.
- read, interpret and draw electrical schematic diagrams of HVAC equipment.
- electrically test and determine the conditions of controls and components of HVAC equipment with a multi-meter.
- take pressure temperature readings, graph linear measurements and perform mathematical calculations.
- gather data and information on HVAC equipment, components and controls.
- recognize tool / instruments of the HVAC trade and know how to properly use them with HVAC equipment.