SHEET METAL & HVAC INSTALLATION (HEATSM), CERTIFICATE

Overview

At Dunwoody College of Technology, the Sheet Metal & HVAC Installation certificate provides graduates with the entry-level skills and theoretical knowledge needed to install residential and light commercial heating, ventilation and air conditioning systems. Graduates typically secure jobs as residential, commercial or industrial installers, shop workers, erectors, working for existing and new construction HVAC companies.

Students learn blueprint reading, load calculations, warm air systems design, mechanical and fuel gas code knowledge, installation techniques, pattern development, and fabrication skills. In addition to field-related skills, students gain oral and written communication skills, advanced computation skills, customer relations, and critical thinking skills through Arts & Sciences and technical course work.

Credits earned in the Sheet Metal & HVAC Installation certificate directly transfer into Dunwoody's HVAC Installation & Residential Service (https://catalog.dunwoody.edu/catalog-student-handbook/academic-programs/construction-sciences-building-technology/hvac-installation-residential-service-heat-aas/) associate's degree program.

Credential Earned: Certificate
Length of Program: 1 year (2 semesters)
Classes Offered: Day
Available Starts: Fall Semester
Accreditation: HVAC Excellence

Program Outcomes

- Fabricate industry's most commonly used fittings.
- Generate HVAC systems on residential and commercial working plans.
- Install industries most commonly used equipment.
- Apply effective safety practices while installing HVAC equipment.
- Complete installation of HVAC equipment according to national, state, and local codes.
- Demonstrate effective customer relation skills.

Degree Requirements

Code	Title	Credits
General Requirements		
MATH1010	Algebra I	3
Technical Requirements		
HEAT1110	HVAC Ducts & Fittings	2
HEAT1120	Transitional Fittings	3
HEAT1130	HVAC Trunk-line Construction	2
HEAT1140	Fundamentals of Pattern Development	3
HEAT1150	Advanced Pattern Development	3
HEAT2210	Welding Fundamentals	3
HEAT2220	HVAC Design	2
HEAT2230	Residential HVAC Installation	6
HEAT2240	Commercial Blueprint Reading	2
Total Credits		**29**

Courses

Descriptions

HEAT1110 | HVAC Ducts & Fittings | Lecture/Laboratory (2 Credits)
Development and fabrication of ducts and fittings common to the heating, ventilation, and air conditioning industry, with emphasis on uniform and state code requirements. Methods of connecting ducts and fittings in an air system. Principles of geometric pattern development as it applies to duct construction and application. Multiple uses and care of hand tools common to the industry.

HEAT1120 | Transitional Fittings | Lecture/Laboratory (3 Credits)
Focus on transitional fittings where the triangulation method of pattern development is required. Use of direct triangulation, as a short-cut method of layout, is emphasized. Identification, care, adjustment, and maintenance of floor equipment common to the sheet metal industry.
Prerequisite(s): HEAT1110

HEAT1130 | HVAC Trunk-line Construction | Lecture/Laboratory (2 Credits)
Pattern development, and the fabrication of a scaled-down trunk-line, emphasizing the quality and quantity of work. Usage, construction methods, and installation of various types of dampers.
Prerequisite(s): HEAT1120

HEAT1140 | Fundamentals of Pattern Development | Lecture/Laboratory (3 Credits)
Principles of pattern development as they apply to the layout of round fittings requiring parallel, or radial line methods of pattern development. Fabrication procedures for round fittings, including use of rotary machines for fabricating purposes, riveting, and spot welding. Use, safety, and proper procedures for soldering sheet metal are incorporated.
Prerequisite(s): HEAT1110, HEAT1120, And HEAT1130

HEAT1150 | Advanced Pattern Development | Lecture/Laboratory (3 Credits)
Advanced theory and application of single, and double-line triangulation in the development of irregular patterns. Use of plan and elevation views in the visualization, and development of irregular objects as well as the procedure for the development of true-length lines seen in the foreshortened mode.
Prerequisite(s): HEAT1110, HEAT1120, HEAT1130, And HEAT1140

HEAT2210 | Welding Fundamentals | Lecture/Laboratory (3 Credits)
Applications, safety, and procedures for oxyacetylene, stick, GMAW, and TIG welding. Light and heavy-metal welding in flat position, freehand-cutting procedures, types of weld joints, and joint preparation. Vulcan software for CNC plasma table controllers.

HEAT2220 | HVAC Design | Lecture/Laboratory (2 Credits)
Heat loss and heat gain energy calculation based upon Manual J: Calculation. Development of the requirements for selecting and designing heating and cooling systems for residential construction. Operating characteristics, proper application, cost, advantages/disadvantages, and specific requirements for designing systems to meet specific needs.

HEAT2230 | Residential HVAC Installation | Lecture/Laboratory (6 Credits)
Installation procedures of residential and small commercial heating, ventilation, and air conditioning systems. Emphasis on the Uniform Mechanical code, and Minnesota State Mechanical, Fuel Gas, and Plumbing code, pertaining to heating, ventilation, and air conditioning installation procedures. Air-handling ducts, venting, combustion and fresh-air ducts requirements. Use of available standard-type fittings; sizing, cutting, and threading of gas pipe as well as installation and code requirement of residential-style gas systems. Installation, setup, and maintenance, of industries most common indoor air quality accessories is included.

HEAT2240 | Commercial Blueprint Reading | Lecture/Laboratory (2 Credits)
Architectural, structural, civil, electrical and mechanical blueprint reading with a major emphasis on heating, ventilation, and air conditioning systems contained within these plans. Duct construction, hangers and dampers evaluated according to specification and SMACNA requirements. Make drawings using AutoCAD: 2-D drafting commands for HVAC drafting.

MATH1010 | Algebra I | Lecture (3 Credits)
Foundational algebra is applied the in the context of geometry and trigonometry. Topics include rules of exponents, simplifying expressions, solving equations, computing measurements of two and three dimensional shapes, solving right triangles, and solving oblique triangles.
General Education: Mathematics