HEATING & AIR CONDITIONING ENGINEERING TECHNOLOGY

Program Description
The Heating & Air Conditioning Engineering Technology program prepares graduates for employment in design positions with mechanical engineering firms and mechanical contractors or in sales positions with heating and air conditioning contractors, suppliers and equipment manufacturers. Students learn the mechanical engineering skills and theoretical knowledge to design and generate construction drawings and supporting documents for energy efficient residential and commercial heating and air conditioning systems. Courses in commercial and residential piping and plumbing design are also taught.

In addition to industry-related skills, students gain oral and written communication skills through Arts & Sciences electives.

Dunwoody College of Technology: a non-profit, private technical college since 1914.

Credential Earned | AAS Degree
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Classes Offered | Day
Length of Program | 2 years (4 semesters)
Available Starts | Fall Semester; Spring Semester
Accreditation | HVAC Excellence
Further Study | Bachelor’s Completion Degree in Construction Management

Degree Requirements
- HASD1110 Refrigeration & Air Conditioning Systems
- HASD1120 Electrical Principles for HVAC
- HASD1130 Heating & Environmental Systems
- HASD1140 HVAC Installation & Duct Fabrication
- HASD1150 HVAC Ducted Systems, Testing & Balancing
- HASD1210 Building Sciences & Construction Methods
- HASD1220 Designing for Indoor Comfort
- HASD1230 Radiant Systems Design
- HASD1240 HVAC Layout & Systems Design
- HASD2110 Commercial Heating & Piping Systems
- HASD2120 Packaged Air Conditioning Systems Design
- HASD2210 Geothermal & Heat Pump Systems Design
- HASD2220 HVAC Systems Integration & Controls
- MATH1050 Algebra, Trigonometry & Geometry
- Humanities Elective
- Natural Sciences Elective
- Social Sciences Elective
- Communications Elective
- COMM1150 Interpersonal Communication
- Diversity Elective

Common Job Titles
- HVAC Mechanical Designer
- HVAC Project Manager
- Plumbing Designer
- Fire Protection Designer
- Building Inspector

Recent Employers
- Auer Steel & Heating Supply Co.
- HGA Architects and Engineers
- Horwitz NSI
- Modern Heating and Air Conditioning
- Metropolitan Mechanical Contractors, Inc.

Salary Data
- $50,420*
  Annual Average Salary

Placement Rate
- 88%**

** Data reflects placement for AY2013-14 graduates indicating employment in their field of study within 6 months following graduation. Full data calculations are available for review during College open hours Monday through Friday 8 a.m. to 4 p.m. CT at Career Services or contact careerservices@dunwoody.edu.

AY2016-17 Revised: 11.25.15

How to Apply
- dunwoody.edu
- 612.374.5800
- info@dunwoody.edu
Course Descriptions

HASD1110 Refrigeration & Air Conditioning Systems
Introduction to the mechanical refrigeration cycle and related HVAC equipment, includes the cyclic nature of the refrigeration systems, individual components and the correlation of service practice and integration of controls. Explore servicing mechanical refrigeration equipment, components of the system, and basic systemic servicing techniques.

HASD1120 Electrical Principles for HVAC
Basic electrical terminology and theory. Introduction to simple-circuit construction. Basic electrical properties and their effects on circuits. Simple-circuit diagramming and the theory of electrical generation through magnetism and electromagnetism. Analyze and test circuits with various test equipment. Examine the principles, applications, and wiring of series, parallel and series-parallel circuits.

HASD1130 Heating & Environmental Systems
Heat generation as it pertains to residential furnaces. Topics include: principles of Natural and LP gases, furnace types, sequence of operation, component identification, ignition types, test equipment and safety. Perform troubleshooting of the mechanical operation and the electrical control functions of gas furnaces, incorporating wiring diagrams and schematics. Introduction to sequence of operation for oil-burning and forced-air electric furnaces.

HASD1140 HVAC Installation & Duct Fabrication
Proper installation techniques for HVAC equipment and related materials, such as diffusers, dampers, flex connectors, grilles, plenums and ducts. Fabricate ductwork and fittings common to the HVAC industry; trunk-line fabrication with emphasis on quality and quantity of work.

HASD1150 HVAC Ducted Systems, Testing & Balancing
Principles of sizing duct systems, grilles, registers and related equipment for residential and commercial applications. Theory and practice of testing, adjusting, and balancing HVAC systems to specific thermal loads.

HASD1210 Building Sciences & Construction Methods
Laws of thermodynamics with major emphasis on environmental control. Apply thermodynamic principles to air-conditioning processes. Fundamental theory of the design and layout of residential and light commercial HVAC systems. Produce sketches of working mechanical drawings; analyze friction and dynamic losses within HVAC systems utilizing fitting loss coefficients and duct-sizing methods.

HASD1220 Designing for Indoor Comfort
Step-by-step procedures for industry-based energy calculations, including load profiles, equipment modeling, performance, and control modeling to ensure maximum energy efficiencies. Thermal performances of exterior envelopes with varying parameters, including above- and below-grade earth-bermed, earth-sheltered and on-grade constructions. Apply industry-based energy calculations of various constructions; related computer programs, including load estimating, operating cost analysis, and equipment selection.

HASD1230 Radiant Systems Design
Principles of design and layout of residential and light commercial hydronic heating systems with emphasis on hydronic equipment, location, and selection. Coordinate hydronic systems with architectural, structural, electrical, and civil disciplines. Examine zone controls and wiring of hydronic systems.

HASD1240 HVAC Layout & Systems Design
Principles of design and layout of residential and light commercial HVAC systems with emphasis on HVAC equipment, location, and selection. Coordinate HVAC systems with architectural and electrical disciplines. Examine national and local code compliances for HVAC systems. Explore energy conserving practices.

HASD2110 Commercial Heating & Piping Systems
Principles of design, layout and energy analysis of commercial building piping systems in conjunction with local and state codes. Development of working drawings reflecting coordination of plumbing, hot water and steam heating systems with architectural, electrical and civil disciplines. Procedures for calculating commercial space design heating and cooling loads manually and with the use of computer software programs. Examination of individual heating and cooling load sources including roofs, walls, glass, air infiltration, partitions, lights, people and space equipment. Calculations of how different building components and various sources of energy affect total building energy use.

HASD2120 Packaged Air Conditioning Systems Design
Developing requirements for selection, layout, design and drafting of various packaged heating and cooling equipment for commercial buildings. Operating characteristics of packaged air systems. Outdoor air ventilation requirements and calculations. Characteristics of air (psychrometrics) used in heating, cooling, humidification and dehumidification processes. Procedures to determine the packaged equipment cooling coil and heating capacities. Air distribution methods for designing, laying out and sizing supply, return and exhaust ductwork. Calculation of air flow resistance in duct systems. Analysis of building air balance.

HASD2210 Geothermal & Heat Pump Systems Design
Developing requirements for selection, layout, design and drafting of geothermal (ground source/water source) and air to air heat pump equipment for commercial buildings. Operating characteristics of heat pump systems. Analysis of exhaust and ventilation requirements for special space applications. Commercial building life safety systems. Smoke and fire control in duct systems and fire protection sprinkling systems. Proper application considerations. Costs, advantages and disadvantages of equipment selections and specific requirements to design for the best energy efficiency.

HASD2220 HVAC Systems Integration & Controls
Preparation of working construction documents of large split system HVAC piping and variable air volume systems for commercial buildings. Alternate air handling and ventilation systems that use less energy and provide higher indoor air quality. Use of Building Information Modeling (BIM) to analyze how HVAC requirements can be integrated to work with architectural, structural, electrical, interiors and civil disciplines. Pneumatic, electric and electronic HVAC controls used in commercial air handling and piping systems. Control sequences analyzed and validated to meet specific building needs. Identify the building mechanical systems concerns and problems; select the best possible alternative as the final solution.

MATH1050 Algebra, Trigonometry & Geometry
Principles of algebra, geometry and trigonometry used in the context of a technical setting. Problem-solving strategies are developed and applied to technology.

COMM1150 Interpersonal Communication
Analyze the process of interpersonal communication as a dynamic and complex system of interactions. Integrate interpersonal communication theory into work, family and social relationships. Apply fundamental tools needed to provide quality customer service. Decision making, problem solving, and managing customer service processes are emphasized.