

# AIR CONDITIONING TECH (HART)

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## **HART 1401 Basic Electricity for HVAC 4 Credits (2 Lec, 4 Lab)**

This course focuses on principles of electricity as required by HVAC, including proper use of test equipment, electrical circuits, and component theory and operation.

Course Type: Technical

## **HART 1407 Refrigeration Principles 4 Credits (2 Lec, 4 Lab)**

This course is an introduction to the refrigeration cycle, heat transfer theory, temperature/pressure relationship, refrigerant handling, and refrigeration components and safety.

Course Type: Technical

## **HART 1441 Residential Air Conditioning 4 Credits (2 Lec, 4 Lab)**

This is a study of components, applications, and installation of mechanical air conditioning systems including operating conditions, troubleshooting, repair, and charging of air conditioning systems.

Prerequisite with concurrency: HART 1401

Course Type: Technical

## **HART 1445 Gas and Electrical Heating 4 Credits (2 Lec, 4 Lab)**

This is a study of the procedures and principles used in servicing heating systems including gas-fired furnaces and electric heating systems.

Prerequisite with concurrency: HART 1401

Course Type: Technical

## **HART 2301 Air Conditioning and Refrigeration Codes 3 Credits (3 Lec, 0 Lab)**

This course focuses on HVAC standards and concepts, with emphasis on understanding and documenting the codes and regulations required for a state mechanical contractors license and compliance with local codes.

Prerequisite(s): HART 1441 or HART 2441 or Department Chair approval

Course Type: Technical

## **HART 2302 Commercial Air Conditioning System Design 3 Credits (3 Lec, 0 Lab)**

This course is an advanced study in essential elements of commercial air conditioning contracting, including duct systems design and/or material takeoff, weight estimating, equipment selection, using manufacturer's catalog data, job cost estimating, scheduling preparation of shop drawings, and submittals.

Prerequisite(s): HART 2441 or Department Chair approval

Course Type: Technical

## **HART 2331 Advanced Electricity for HVAC 3 Credits (2 Lec, 4 Lab)**

This course provides advanced electrical instruction and skill building in installation and servicing of air conditioning and refrigeration equipment, including detailed instruction in motors and power distribution motors, motor controls, and applications of solid state devices.

Prerequisite(s): HART 1441 or HART 2441, and HART 1445 or Department Chair approval

Course Type: Technical

## **HART 2334 Advanced A/C Controls 3 Credits (2 Lec, 4 Lab)**

This course focuses on the theory and use of electrical control devices, electromechanical controls, and/or pneumatic controls.

Prerequisite with concurrency: HART 2331

Course Type: Technical

## **HART 2336 Air Conditioning Troubleshooting 3 Credits (2 Lec, 4 Lab)**

This is an advanced course in the application of troubleshooting principles and use of test instruments to diagnose air conditioning and refrigeration component and system problems, including conducting performance tests.

Prerequisite(s): HART 2331

Course Type: Technical

## **HART 2338 Air Conditioning Installation and Startup 3 Credits (2 Lec, 4 Lab)**

A study of air conditioning system installation, refrigerant piping, condensate disposal, and air cleaning equipment with emphasis on startup and performance testing.

Prerequisite(s): HART 1441 or HART 2441, and HART 1445 or Department Chair approval

Course Type: Technical

## **HART 2343 Industrial Air Conditioning 3 Credits (2 Lec, 2 Lab)**

This course is a study of components, accessories, applications, and installation of air conditioning systems above a 25-ton capacity.

Prerequisite(s): HART 2331, HART 2441, or Department Chair approval

Course Type: Technical

## **HART 2345 Residential A/C System Design 3 Credits (2 Lec, 2 Lab)**

This course is a study the properties of air and results of cooling, heating, humidifying or dehumidifying. Other topics include analyzing and calculating heat gain or heat loss necessary for equipment selection and balancing air systems.

Prerequisite(s): HART 1441, HART 1445 or Department Chair approval

Course Type: Technical

## **HART 2349 Heat Pumps 3 Credits (2 Lec, 2 Lab)**

This course is a study of heat pumps, heat pump control circuits, defrost controls, auxiliary heat, air flow, and other topics related to heat pump systems.

Prerequisite(s): HART 1441, HART 1445 or Department Chair approval

Course Type: Technical

## **HART 2357 Specialized Commercial Refrigeration 3 Credits (2 Lec, 4 Lab)**

This advanced course covers the components, accessories, and service of specialized refrigeration units, such as ice machines, soft-serve machines, cryogenics, and cascade systems.

Prerequisite(s): HART 1401, HART 1407, or Department Chair approval

Course Type: Technical

**HART 2368 Practicum (or Field Experience) - HVAC/R Technology/Technician 3 Credits (0 Lec, 21 Lab)**

This course offers practical general workplace training through individualized learning plans developed by the employer, the college, and the student. The student must have a HVAC/R related workplace experience to participate in this course. This workplace experience can be either a paid or unpaid. While the College can assist the student in locating a potential workplace experience, it is the student's responsibility to have this in place by the beginning of class.

Prerequisite(s): Completion of at least 16 semester hours of HVAC/R (HART) courses, an acceptable workplace experience, and an interview with a HVAC/R faculty

Course Type: Technical

**HART 2441 Commercial Air Conditioning 4 Credits (2 Lec, 4 Lab)**

This course is a study of components, applications, and installation of air conditioning systems with capacities of 25 tons or less.

Prerequisite with concurrency: HART 1401, HART 1407

Course Type: Technical

**HART 2442 Commercial Refrigeration 4 Credits (2 Lec, 4 Lab)**

This course focuses on both the theory and practice in the maintenance of commercial refrigeration at both medium and low temperature applications, and ice machines.

Prerequisite with concurrency: HART 2331

Course Type: Technical