

Air Conditioning & Refrigeration

AAS (62 Credit Hours)

First Semester	Second Semester
HART 1401* HART 1403* HART 1407* HART 1441	HART 1445 HART 2449 HART 2441
Third Semester	Fourth Semester
HART 2436 HART 2438 HART 2445	MATH 1314 GOVT 2306 COSC 1401
Fifth Semester	
HART 1391* SPCH 1321 ENGL 1301 Visual/Fine Arts Elective	

* Tech Prep courses, which may have been completed in high school.

CERTIFICATE IN AIR CONDITIONING & REFRIGERATION

40 credit hours

First Semester

HART 1401Electricity Principles*

HART 1403 Control Principles*

HART 1407 Refrigeration Principles*

HART 1441 Residential Air Conditioning & Refrigeration

Second Semester

HART 1445 Gas and Electric Heating

HART 2449 Heat Pumps

HART 2441 Commercial Air Conditioning & Refrigeration

Third Semester

HART 2436 Troubleshooting

HART 2438 Installation & Service

HART 2445 Air Conditioning System Design

* Tech Prep courses, which may have been completed in high school.

- HART 1391 Special Topics in Heating & Air** 3.1.4
Topics address recently identified current events, skills, knowledge, and/or attitudes and behaviors pertinent to the technology or occupation and relevant to the professional development of the student. This course was designed to be repeated multiple times to improve student proficiency.
- HART 1401 Electricity Principles** 4.2.8
Principles of electricity including proper use of test equipment, A/C circuits, and air conditioning and refrigeration control component theory and operation, single phase and three phase motors and controls. Fee charged. Prerequisite: instructor approval.
- HART 1403 Control Principles** 4.2.8
A basic study of electrical, pressure and temperature controls including motor starting devices, operating relays, troubleshooting safety controls and devices. Emphasis on use of wiring diagrams to analyze high and low voltage circuits. A review of Ohm's law as applied to A/C controls and circuits. Fee charged. Prerequisite: instructor approval.
- HART 1407 Refrigeration Principles** 4.2.8
An introduction to the refrigeration cycle, basic thermodynamics, heat transfer, temperature/pressure relationship, safety, refrigeration containment and refrigeration components. Fee charged. Prerequisite: instructor approval.
- HART 1441 Residential Air Conditioning & Refrigeration** 4.2.8
A study of components, applications and installation of mechanical air conditioning systems including operating conditions, troubleshooting, repair and charging of air conditioning systems. Fee charged. Prerequisite: instructor approval.
- HART 1445 Gas and Electric Heating** 4.2.8
A study of the procedures and principles used in servicing heating systems including gas fired and electric furnaces. Fee charged. Prerequisite: instructor approval.
- HART 2436 Troubleshooting** 4.2.8
An advanced course in application of troubleshooting principles and use of test instruments to diagnose air conditioning and refrigeration components and system problems including conducting performance tests. Fee charged. Prerequisite: instructor approval.
- HART 2438 Installation & Service** 4.2.8
A study of air conditioning system installation, refrigerant piping, condensate disposal and air cleaning equipment with emphasis on service, troubleshooting, performance testing and repair techniques. Fee charged. Prerequisite: instructor approval.

- HART 2441 Commercial Air Conditioning & Refrigeration** 4.2.8
The student will demonstrate knowledge of systems components; diagnose and troubleshoot systems; describe system application and demonstrate system installation procedures. Fee charged. Prerequisite: instructor approval.
- HART 2445 Air Conditioning System Design** 4.2.8
A study of the properties of air and results of cooling, heating, humidifying or dehumidifying; ACCA Manual J heat gain and heat loss calculations including equipment selection, ACCA Manual D duct design and balancing the air system. Fee charged. Prerequisite: instructor approval.
- HART 2449 Heat Pumps** 4.2.8
A study of heat pumps, heat pump control circuits, defrost controls, auxiliary heat, air flow and other topics related to heat pump systems. Fee charged. Prerequisite: instructor approval.

Art

Suggested Course of Study for University Transfer Students (62-73 Credit Hours)

Freshman Year	Sophomore Year
ARTS 1301	ARTS 1303
ARTS 1311	ARTS 2323 or ARTS 2324
ARTS 1312	ARTS Electives 22xx or 23xx
ARTS 1316 or ARTS 2323	(2-6 Credit Hours)*
ENGL 1301	Computer (3-4 Credit Hours)
ENGL 1302	GOVT 2305
HIST 1301	GOVT 2306
HIST 1302	Humanities (3 Credit Hours)
Lab Science (8 Credit Hours)	PHED 1134
MATH 1314	Social/Behavioral Science
PHED Activity (1 Credit Hour)	(3 Credit Hours)
	SPCH 1315 or 1321

*Studio Courses in the sophomore year should be selected according to the degree requirements of the university to which the student plans to transfer.

- ARTS 1301 Art Appreciation (50.0703.51 26)** 3.3.0
A general education course open to all; the subject matter is designed to give the layman an overview of how to look at art and a basic understanding of what is involved in the analysis and appreciation of any particular work of art. Core Curriculum satisfied for Visual and Performing Arts.