HEATING, VENTILATING, AIR CONDITIONING (HVAC) & REFRIGERATION

Pathway: Construction, Maintenance & Utilities
Office: E2 - Room 122
Email: cdm@lattc.edu
Phone: (213) 763-3700

Award Title	Academic Plan	Award Type	GE Units	Required Course Units	Major Elective Units	Major Units
Heating, Ventilating, Air Conditioning (HVAC) & Refrigeration *(formerly Refrigeration & Air Conditioning Mechanics)*	T002904C	A.S.	21*	42	6	48
Heating, Ventilating, Air Conditioning (HVAC) & Refrigeration *(formerly Refrigeration & Air Conditioning Mechanics)*	T021842D	C		42	6	48

At least 60 degree applicable units are required to earn an Associate degree.
*GE Units requirements may be fulfilled by completing any General Education Pattern; please consult with a counselor for more details.
These programs are Financial Aid Eligible.

PROGRAM OVERVIEW

Cooling and heating devices help regulate the temperature, humidity, and air quality in residential homes, commercial locations, and industrial facilities. Critical items like food and medicine require refrigeration to keep them from spoiling. Technicians repair, maintain, and install heating, air-conditioning, and refrigeration systems. Our program trains these technicians.

The Heating, Ventilating, Air Conditioning (HVAC) & Refrigeration Degree and Certificate are designed to prepare students for employment in the Maintenance & Operations industry.

Career opportunities for students completing this program of study include, but are not limited to:

- Heating, Air Conditioning, and Refrigeration Mechanics and Installers

By fulfilling the program requirements, students will have the necessary knowledge and skills for a career in residential, commercial, and Industrial service and repair of air conditioning, heating and refrigeration systems. Electrical controls, piping installation, compressor installation and repair are just some of the skills that would be mastered during this program.

Note: Optional North American Technician Excellence (NATE) and Environmental Protection Agency (EPA) Section 608 refrigerant testing and certification preparation are available.

PROGRAM LEARNING OUTCOMES (PLOs)

Upon completion of the **Degree/Certificate** program, students are able to:

- Students will maintain and repair air conditioning and refrigeration systems using appropriate test instruments and tools effectively and safely.
- Students will analyze the proper operation of air conditioning and refrigeration systems by applying the principles of thermodynamics and electrical theory.
- Students will certify the proper and efficient operation of air conditioning and refrigeration systems by measuring temperatures, pressures, combustion gasses, and air flow.

HEATING, VENTILATING, AIR CONDITIONING (HVAC) & REFRIGERATION

Associate in Science Degree

Major Units: 48

Requirements for the Associate in Science degree in Heating, Ventilating, Air Conditioning (HVAC) & Refrigeration may be met by completing 42 units of Required Courses and 6 unit of Major Electives with a "C" or better along with General Education units. Information on the General Education unit requirements may be found in the catalog under Graduation Requirements.

Courses from the day or evening programs should not be mixed in an attempt to meet the degree requirements.

OPTION 1: DAY PROGRAM

REQUIRED COURSES

SEMESTER I		UNITS
ECONMT 119	Applied Calculations and Measurements	3
REF A/C 101	Air Conditioning & Refrigeration Principles & Practices-First Semester	9
SEMESTER II		**UNITS**
REF A/C 123	Pipe and Tube Joining Processes	1
REF A/C 124	Refrigeration Electrical Circuits and Controls	5
REF A/C 125	Refrigeration System Components	3
ECONMT 174	Electrical Mathematics II	3
SEMESTER III		**UNITS**
REF A/C 301	Air Conditioning and Refrigeration Principles and Practices-Third Semester	9
Elective		*(3)*
SEMESTER IV		**UNITS**
REF A/C 141	Applied Refrigeration and Air Conditioning Principles	3
REF A/C 143	Refrigeration Servicing Procedures II	3
REF A/C 145	Air Conditioning and Refrigeration Mechanics	3
Elective		*(3)*

HEATING, VENTILATING, AIR CONDITIONING (HVAC) & REFRIGERATION

Certificate of Achievement

Major Units: 48

A Certificate of Achievement in Heating, Ventilating, Air Conditioning (HVAC) & Refrigeration may be earned by completing 42 units of Required Courses and 6 unit of Major Electives listed under the Associates degree in Heating, Ventilating, Air Conditioning (HVAC) & Refrigeration with a "C" or better in each course.

Courses from the day or evening programs should not be mixed in an attempt to meet the degree requirements.

REQUIRED COURSES

LEVEL I		UNITS
REF A/C 202	Refrigeration Fundamentals	3
REF A/C 250	Indoor Air Quality	3
ECONMT 115	Fundamentals of D.C. Electricity	3
ECONMT 173	Electrical Mathematics I	3

LEVEL II		UNITS
REF A/C 159	Principles and Practices of Electrical Circuits and Controls	4
REF A/C 203	Compression Systems of Refrigeration	3
REF A/C 204	Technical Aspects of Refrigeration System Components	3
ECONMT 129	Fundamentals of Alternating Current	3

LEVEL III		UNITS
REF A/C 187	Servicing I	3
REF A/C 188	Servicing II	3
REF A/C 208	Refrigerant Management-EPA Section 608 Certification	4

LEVEL IV		UNITS
REF A/C 160	Refrigeration System Principles and Practices	4
REF A/C 164	Gas Heating Systems	4

MAJOR ELECTIVES

DAY PROGRAM: **Select at least 6 units from the courses below**
EVENING PROGRAM: **Select at least 5 units from the courses below**

		UNITS
BLDGCTQ 101	Contract's License Law	3
ECONMT 100	(O.S.H.A.) Safety Standards: Construction and Industry	2
PHYSICS 012	Physics Fundamentals	3
REF A/C 100	Air Conditioning Project Management	3
REF A/C 161	Air Conditioning System Principles and Practices	4
REF A/C 162	Piping Principles and Practices	4
REF A/C 164	Gas Heating Systems	4
REF A/C 165	Ice Storage Air Conditioning	4
REF A/C 176	Heating and Air Conditioning I	3
REF A/C 177	Heating and Air Conditioning II	3
REF A/C 187	Servicing I	3
REF A/C 188	Servicing II	3
REF A/C 199	Mechanical Code I - HVACR	3
REF A/C 208	Refrigerant Management-EPA Section 608 Certification	4
REF A/C 209	North American Technician Excellence (Nate) - Air Conditioning Specialist Certification Preparation	4
REF A/C 210	Refrigeration System Efficiency Factors	3
REF A/C 250	Indoor Air Quality	3
REF A/C 941	Cooperative Education-Refrigeration & Air Conditioning Mech	4

USEFUL LATTC LINKS:

College Catalog, Class Schedule & more:
http://www.lattc.edu/academics
Financial Aid Office: http://www.lattc.edu/services/financial-aid
Counseling Services & Support: http://www.lattc.edu/services/support
Construction, Maintenance & Utilities Pathway:
http://pathways.lattc.edu/catalog-programs/cmu/

To register: http://www.lattc.edu/student-guides/new-student-guide
For additional information consult a LATTC college counselor.