



## AIR CONDITIONING REFRIGERATION TECHNICIAN PROGRAM SOC Code 49-9020



### 720 HOURS

#### Objective:

To give the student the basic skills, knowledge and experience necessary to become employable in the air conditioning and refrigeration trade at an entry level position. The training experience of students together with after graduation experience will allow the student to grow and expand in his/her prospective position.

#### Course Description:

The school covers in the Air Conditioning and Refrigeration Program a variety of tasks and duties associated with the field of Air Conditioning and Refrigeration. The teaching methods, theories and lecture, and a supervised laboratory. Graduates of this program would qualify for the following entry level positions: Cooling Mechanic, Heating Mechanic, Refrigeration Mechanic, Energy Consultant, Heating and Cooling Service and New System Sales and Installation. The school also administers EPA Certificate Exams for Type I, II, III and universal certification.

#### Requirements:

Must be 17 years of age and have a High School Diploma, GED.

### PROGRAM INFORMATION

#### Completion Time:

20 hours a week = 36 weeks (180 Days)  
Maximum Time Frame = 54 weeks

#### GRADUATION REQUIREMENTS:

Students must complete 720 hours of theory, and lab/shop training with a minimum cumulative grade point average of a 2.0.

#### Cost of Program:

Tuition \$ 5,400.00  
Registration Fee 100.00  
Books/Supplies Included

#### Total \$ 5,500.00

Futura Career Institute is a non-degree quarter credit hour institution. The credits earned at our institution do not articulate to a degree. Any decision on the comparability of credits is at the sole discretion of the receiving institution. Students should not assume that any credits of any course maybe transferred to another institution.



## PROGRAM DESCRIPTION

- AC001 BASIC PRINCIPLES OF REFRIGERATION, FREON AND TEMPERATURE-PRESSURE RELATIONSHIPS**  
(2 credit lecture, 3 credit lab= 80 clock hours)  
At the end of this chapter the student will have learned: Law I (Cold), Law II(Heat), Law III (Heat in vapor), basic refrigeration cycle, flow of heat, compressors, evaporators, condensers, the capillary tube, temperature pressure Chart, and using service gauges. The student will have also learned about balanced system, the thermostatic expansion valve, different types of units, commercial refrigeration (Open Type Case; Service Valves), converting refrigerant temperature to pressure, and operating pressures of various types of equipment.
- AC002 CHARGING WINDOW UNITS AND REFRIGERATORS, SERVICING COMMERCIAL EQUIPMENT**  
(2 credit lecture, 3 credit lab= 80 clock hours)  
At the end of this chapter the student will have learned condenser pressures, super heat, external equalizer line, understanding different temperatures of a system, charging the capillary tube system, making a pig tail, charging the home refrigerator/freezer, and charging the window the window unit. The student will also have learned about commercial refrigeration diagnosis, mounting service gauges, checking for leaks, amount of charge, the receiver tank, pumping the system down, Charging rules for all systems, setting pressure controls for temperature, commercial units operating pressure chart, and troubleshooting guide.
- AC003 BASIC PRINCIPLES OF ELECTRICITY**  
(2 credit lecture, 3 credit lab= 80 clock hours)  
At the end of this chapter the student will have learned about electrical knowledge, servicing home electrical (single phase), the high leg circuit, the 208 volt circuit, service voltage to homes and buildings, and electrical trouble shooting.
- AC004 ELECTRIC MOTORS, MOTOR STARTING DEVICES**  
(2 credit lecture, 3 credit lab= 80 clock hours)  
At the end of this chapter the student will have learned about motor classification, motor problems, single phase motors, shaded pole motors, washing machine type motors, capacitor start motors, and the hermetic compressor. The student will have also learned about run capacitors, permanent split capacitors (PSC), start capacitor, capacitor check, substituting capacitors, line starters, start devices, and service diagnosis chart.
- AC005 ELECTRICAL TROUBLESHOOTING OF HERMETIC COMPRESSORS**  
(2 credit lecture, 3 credit lab= 80 clock hours)  
At the end of this chapter the student will have learned about the simplicity of hermetic compressors, manual starting of hermetics, types of relays, and ohming of compressor terminals.
- AC006 TROUBLE SHOOTING WINDOW UNITS, HOUSEHOLD REFRIGERATORS AND AUTO AIR CONDITIONING**  
(2 credit lecture, 3 credit lab= 80 clock hours)  
At the end of this chapter the student will have learned about dealing with the customer, fan motors, general service problems (refrigeration), general service problems (electrical), and expansion valve system. The student also have learned about air in system, moisture in system (household), refrigerant leaks, evacuating the refrigerator, vacuum pumps, general trouble shooting (auto), mounting gauges (auto air), and charging (auto air).
- AC007 CENTRAL SYSTEM**  
(2 credit lecture, 3 credit lab= 80 clock hours)  
At the end of this chapter the student will have learned about condensing unit (Air cooled), charging the central system, low and high pressure controls, and starting devices.
- AC008 GAS AND ELECTRIC HEATING, HEAT PUMPS**  
(2 credit lecture, 3 credit lab= 80 clock hours)  
At the end of this chapter the student will have learned about furnace ratings, thermocouples, gas valve, the thermostat, the anticipator, pilot generator, the hearing cycle, central heating service check list and service pointers, electrical trouble shooting guide, high efficiency furnaces, the pulse furnace, induced combustion gas-fired furnace, and electric heat. The student will have also learned about computing EER and COP, the refrigeration circuit, charging with refrigerants, electrical, defrost termination by temperature and time, trouble shooting guide for the heat pump, defrost trouble shooting, two speed compressors, and electrical trouble shooting guide.
- AC009 ICE MACHINES, REFRIGERATION RECOVERY AND NEW REFRIGERANTS**  
(2 credit lecture, 3 credit lab= 80 clock hours)  
At the end of this chapter the student will have learned about types of ice, how cubes and flakes are formed, the refrigeration cycle, metering devices, leak checking and charging, system pressure, system trouble shooting, refrigeration trouble shooting guide, electrical, brand specific wiring diagrams, and electrical trouble shooting guide. The student will have also learned about categories of refrigerants, alternative refrigerants, refrigerant management options, alternate refrigerant blends, pressure temperature chart, lubricants, system components, procedures in making the retrofit, recovery units, removing liquid refrigerant, draining compressor, and cylinder types and sizes.