

AIR CONDITIONING AND REFRIGERATION  
COURSE DESCRIPTIONS

**HVAC Introduction (HACR1150, 3 credits, 100 clock)** - Produces information needed to prepare individuals to enter the Air Conditioning and Refrigeration Industry. Includes basic safety and health, inventory control, stock management, vehicle maintenance, licensure, certification requirements, and basic business management practices. **PREREQUISITES:** None

**Principles of Refrigeration I (HACR1160, 3 credits, 115 clock)** - Presents the proper and safe use of hand tools including power tools and materials in the HVAC Industry. This course also provides for a review of HVAC and refrigeration processes and applications. **PREREQUISITES:** HACR1150

**Principles of Refrigeration II (HACR1170, 3 credits, 115 clock)** - Provides the student with the skills and knowledge to install, repair, and service major components of a refrigeration system. Topics include: compressors, evaporators, condensers, metering devices, service procedures, refrigeration systems, and safety. **PREREQUISITES:** HACR1150, HACR1160

**Principles of Refrigeration III (HACR1180, 3 credits, 120 clock)** - Provides the student with the skills and knowledge to install, repair, and service major components of a refrigeration system. Topics include: EPA Section 608 Certification, Refrigerant recovery, recycle & reclamation, System charging (using superheat, subcool, weigh-in and/or manufacturer's procedures), Evacuation & dehydration procedures **PREREQUISITES:** HACR1150, HACR1160, HACR1170

**Electrical Fundamentals (HACR1210, 3 credits, 100 clock)** - Introduction to fundamental electrical concepts and theories as applied to the air conditioning industry. Topics include: AC and DC theory, ohms law, electric meters, electric diagrams, distribution systems, electrical panels, voltage circuits, code requirements, and safety. **PREREQUISITES:** None

**Electrical Components (HACR1220, 3 credits, 115 clock)** - Provides instruction in identifying, installing and testing commonly used components in an air conditioning system. Topics include: pressure switches, overload devices, transformers, magnetic starters, other commonly used controls, diagnostic techniques, installation procedures, and safety. **PREREQUISITES:** HACR1210

**Electric Motors (HACR1230, 3 credits, 115 clock)** - Continues the development of skills and knowledge necessary for application and service of electric motors commonly used by the refrigeration and air conditioning industry. Topics include: diagnostic techniques, capacitors, installation procedures, types of electric motors, electric motor service, and safety. **PREREQUISITES:** HACR1210, HACR1220

**Applied Electricity and Troubleshooting (HACR1240, 3 credits, 120 clock)** - Provides instruction on wiring various types of air conditioning systems. Topics include: servicing procedures, troubleshooting procedures, solid state controls, system wiring, control circuits, and safety. **PREREQUISITES:** HACR1210, HACR1220, HACR1230

**Domestic Refrigeration (HACR1410, 2 Credits, 75 clock)** - Presents the proper procedures to diagnose and repair domestic refrigerators and freezers. **PREREQUISITES:** HACR1150, HACR1160, HACR1170, HACR1180, HACR1210, HACR1220, HACR1230 & HACR1240

**Room Air Conditioners (HACR1420, 2 credits, 75 clock)** - The operation, diagnosis and science of room air conditioning. Emphasis is devoted to diagnosis and repair. **PREREQUISITES:** HACR1150, HACR1160, HACR1170, HACR1180, HACR1210, HACR1220, HACR1230 & HACR1240

**Residential Air Conditioning I (HACR2510, 3 credits, 95 clock)** - The study and theory of the major components and functions of central air conditioning systems. Includes the study of Air Conditioning systems types and the proper and safe use of instruments and safety. **PREREQUISITES:** HACR1150, HACR1160, HACR1170, HACR1180, HACR1210, HACR1220, HACR1230 & HACR1240

**Residential Air Conditioning II (HACR2520, 2 credits, 95 clock)** - The operation, diagnosis and service of central air conditioning systems and the care of associated instruments. Topics include the various types of A/C systems, and safety principles. **PREREQUISITES:** HACR1150, HACR1160, HACR1170, HACR1180, HACR1210, HACR1220, HACR1230, HACR1240 & HACR2510

**Residential System Design (HACR2530, 2 credits, 75 clock)** - Theory and practice of different types of residential air conditioning systems heat loads. Topics include calculations, duct design, air filtration, and safety practices. **PREREQUISITES:** HACR1150, HACR1160, HACR1170, HACR1180, HACR1210, HACR1220, HACR1230 & HACR1240

**Residential Heating I (HACR2540, 3 credits, 115 clock)** - Theory and study of the principles and practices for the operation, diagnosis and service of residential and small commercial heating systems. Topics covered will include electrical controls, gas valves, piping, venting, code requirements, principles of combustion and safety for gas and electrical heating. **PREREQUISITES:** HACR1150, HACR1160, HACR1170, HACR1180, HACR1210, HACR1220, HACR1230 & HACR1240

**Residential Heating II (HACR2550, 3 Credits, 115 clock)** - The application of service procedures, controls (electrical & gas), gas valves, piping, ventilation, code requirements and safety for gas and electrical heating systems for residential and small commercial uses. **PREREQUISITES:** HACR1150, HACR1160, HACR1170, HACR1180, HACR1210, HACR1220, HACR1230 & HACR1240

**Residential Heat Pumps (HACR2560, 2 Credits, 75 clock)** - Theory and study of heat pumps and related systems. Provides for the fundamentals of heat pump operation and diagnosis. Installation procedures, diagnosis, servicing procedures, valves, electrical components and geothermal ground source applications, dual fuel systems, and safety are topics included. **PREREQUISITES:** HACR1150, HACR1160, HACR1170, HACR1180, HACR1210, HACR1220, HACR1230 & HACR1240

**Job Seeking Skills (JOBS2450, 2 Credits, 75 clock)** - This course is required of all Technical Diploma and Associate Degree students and should be taken during their last semester of enrollment prior to completion of diploma/degree requirements. This course assists students in making immediate and future decisions concerning job choices and educational growth by compiling résumés, evaluating job offers, and outlining information essential to finding, applying for, and terminating a job. It also includes personal/career assessments including foundational Work Keys assessments, application for the Louisiana Work Ready! (National Career Ready) Certificate. **PREREQUISITES:** This course to be taken in the last semester of enrollment

**Solar Fundamentals (SOLR1000, 3 credits, 45 clock)** – This course’s objective is to provide fundamental knowledge of solar energy conversion systems for generating electricity by solid state devices. Additionally, thermal energy and hybrid energy (electricity and heat) systems will also be covered.

**PREREQUISITES:** Consent of Instructor

**PV Solar Applications (SOLR1010, 3 credits, 75 clock)** - This course teaches how photovoltaic (PV) systems operate, how to determine the size of a PV system needed for a certain application, how to install and connect the PV system to the electrical grid. **PREREQUISITES:** HACR1210, HACR1220, HACR1230, HACR1240 & consent of instructor

**Industrial Solar Applications (SOLR1020, 3 credits, 75 clock)** – This course will focus on fundamentals of solar energy conversion, solar cells, optical engineering, photoelectrochemical cells, thermoelectric generators, and energy storage and distribution systems. The course covers solar energy insolation and global energy needs, current trends in photovoltaic energy engineering, solar cell material science, design and installation of solar panels for residential and industrial applications and connections to the national grid and cost analysis of the overall system. **PREREQUISITES:** Consent of Instructor

**Solar Thermal Applications (SOLR1030, 3 credits, 75 clock)** - This course will train interested participants on the various and most common solar thermal system installations. The course will review the different components and the respective functions of a solar thermal system. The course also covers the financial aspects of installing different solar thermal systems such as cost, energy savings, and return of investments. The course will involve the inspection and installation of various types of solar thermal systems. Individual components are discussed and multiple labs will be performed. Emphasis will be placed on hands-on training. **PREREQUISITES:** Consent of Instructor

**Commercial Air Conditioning I (HACR2810, 6 Credits, 210 clock)** – Theory and study of commercial systems. Includes refrigeration, evaporators, condensers, compressors, metering devices and accessories used in the commercial application. **PREREQUISITES:** Consent of Instructor

**Commercial Air Conditioning Controls (HACR2820, 7 Credits, 210 clock)** - Theory and study of commercial systems. Includes controls and accessories used in the commercial industry.

**PREREQUISITES:** Consent of Instructor

**Commercial Air Conditioning II (HACR2830, 6 Credits, 180 clock)** - Theory and study of commercial systems. This course builds on Commercial Air Conditioning I and includes troubleshooting procedures.

**PREREQUISITES:** Consent of Instructor

**Special Projects I (SPPR 2991, 1 credit, 30 clock)** - A course designed for the student who has demonstrated specific special needs. **PREREQUISITES:** Consent of Instructor

**Special Projects II (SPPR 2993, 2 credits, 60 clock)** - A course designed for the student who has demonstrated specific special needs. **PREREQUISITES:** Consent of Instructor

**Special Projects III (SPPR 2995, 3 credits, 90 clock)** - A course designed for the student who has demonstrated specific special needs. **PREREQUISITES:** Consent of Instructor

**Special Projects IV (SPPR 2996, 3 credits, 45 clock)** - A course designed for the student who has demonstrated specific special needs. **PREREQUISITES:** Consent of Instructor

**Special Projects V (SPPR 2998, 1 credit, 15 clock)** - A course designed for the student who has demonstrated specific special needs. **PREREQUISITES:** Consent of Instructor

**Practicum (SPPR2997, 3 credits, 135 clock)** - A Practicum provides supervised on-the-job work experience related to the student's education objectives. Students participating in Practicum do not receive compensation. **PREREQUISITES:** Consent of Instructor

**Cooperative Education (SPPR2999, 3 credits, 135 clock)** - Cooperative Education provides supervised on-the-job work experience related to the student's educational objectives. Students participating in Cooperative Education receive compensation for their work. **PREREQUISITES:** Consent of Instructor