AC - AIR CONDITIONING

AC 102 - Refrigeration Theory **Units: 3**
An introductory course to present the fundamental principles of mechanical refrigeration. The course is designed for persons interested in pursuing a career in servicing, repairing and/or installing refrigeration and air conditioning equipment as well as building maintenance persons. Topics covered: basic physics, thermodynamics, the basic refrigeration cycle and common components used in mechanical refrigeration. This course is a prerequisite for all other courses in the Refrigeration and Air Conditioning and Building Maintenance core.
Transferability: May not transfer towards an NSHE bachelor's degree

AC 106 - Residential Gas Heating **Units: 6**
Application of principles and skills in the troubleshooting, repair and maintenance of air conditioning, heating and ventilation equipment. Topics covered are the refrigeration cycle, gas furnace, oil furnaces, heat pump, chilled water systems, hot water systems and cooling. The student must complete all content for the following 12 areas in order to meet degree or certificate requirements. This course satisfies 10 hours of instruction toward completing the embedded Mathematics curriculum requirements, in accordance with Embedded Curriculum Guidelines Option A. This course satisfies 10 hours of instruction toward completing the embedded Human Relations curriculum requirements, in accordance with Embedded Curriculum Guidelines Option A. 1. Sequence of Operation Gas Furnace 2. Thermostat Operation and setting 3. Low Voltage Wiring practice 4. Furnace Controls Identification 5. Furnace Operation 80% and 90% 6. Furnace Troubleshooting 7. Air Conditioning Operation 8. Air Conditioning Controls and Safety's 9. Air Conditioning Evacuation and Charging 10. Package Units Operation, Identification, and Location 11. Package Unit Controls 12. Troubleshooting.
Transferability: May not transfer towards an NSHE bachelor's degree
Enrollment Requirements: Prerequisite: AC 102 and AC 107.

AC 107 - Electrical and Controls for HVAC **Units: 6**
This course will familiarize students with electrical applications and controls used in HVAC/R. Topics include basic electricity, wiring, schematics and controls found in heating, ventilation, air conditioning and refrigeration. This course satisfies 5 hours of instruction toward completing the embedded human relations curriculum requirements, in accordance with Embedded Curriculum Guidelines Option A. This course satisfies 10 hours of instruction toward completing the embedded Math curriculum requirements, in accordance with Embedded Curriculum Guidelines Option A. The Student must complete all content for the following 12 areas in order to meet degree or certificate requirements. 1. Electrical Safety 2. Basic Concepts of Electricity 3. Introduction to the Training System 4. Switches 5. Voltage, Current, and Measuring Instruments 6. Resistance and Ohm's Law 7. Solving Series Circuits and Kirchhoff's Voltage Law 8. Solving Parallel and Mix Circuits 9. Capacitors and Electromagnetism and Inductors 10. Transformers, Relays, and Contactors 11. Electrical Distribution 12. Troubleshooting Methods.
Transferability: May not transfer towards an NSHE bachelor's degree

AC 108 - Motors for HVACR **Units: 3**
This is an introductory course into ECM (Electronically Commutated Motors) motors and their applications in HVACR (heating, ventilation, air conditioning and refrigeration). The course will provide an overview of ECM efficiency, basic ECM technology, proper installation, diagnostics, and replacement of variable speed motors found in the HVACR industry.
Transferability: May not transfer towards an NSHE bachelor's degree
Enrollment Requirements: Prerequisite: AC 107

AC 111 - Heat Pumps **Units: 3**
An introductory course in the principles of mechanical refrigeration found in heat pumps. Students will learn fundamentals in servicing, repairing and/or installation of refrigeration and air conditioning equipment. Topics include basic physics, thermodynamics, the refrigeration cycle and common components used in heat pump systems.
Transferability: May not transfer towards an NSHE bachelor's degree

AC 113 - Schematic Reading for HVAC/R **Units: 3**
Application of principles and skills in reading schematics seen in HVAC/R. Followed by the operation of air conditioning, heading and Refrigeration equipment. Topics covered are the cooling cycle, gas furnaces, Ice-Machines and Refrigeration systems both residential and commercial. The students must complete all content for the following 6 areas in order to meet degree or certificate requirements. 1. Ladder Schematics 2. Combination Ladder and Pictorial 3. Wire to Wire Components and Sequence of Operation 4. Symbols and Power Identification 5. Wiring Location Exercise 6. Troubleshooting Schematic.
Transferability: May not transfer towards an NSHE bachelor's degree

AC 150 - Basic Refrigeration Servicing **Units: 6**
This course is designed for persons interested in entering the refrigeration service, installation or building maintenance fields. This course is oriented toward development of basic skills required in troubleshooting, repair and maintenance of refrigeration systems. Topics covered are soldering, silver soldering, service and troubleshooting tools and systems construction. This course satisfies 5 hours of instruction toward completing the embedded Human Relations curriculum requirements, in accordance with Embedded Curriculum Guidelines Option A. This course satisfies 10 hours of instruction toward completing the embedded Mathematics curriculum requirements, in accordance with Embedded Curriculum Guidelines Option A.
Transferability: May not transfer towards an NSHE bachelor's degree
Enrollment Requirements: Prerequisite: AC 102 and AC 107

AC 198 - Special Topics in HVAC **Units: 0.5-6**
Various short courses and experimental classes covering a variety of subjects. The course will be a variable credit of one-half to six credits depending on the course content and number of hours required. The course may be repeated up to six credits.
Transferability: May not transfer towards an NSHE bachelor's degree

AC 200 - Commercial Refrigeration I **Units: 6**
Application of basic principles and skills in the troubleshooting, repair and installation of commercial refrigeration equipment and built-up systems. Topics covered are consistent with up-to-date designs and practices as applied in the supermarket, convenience store, bar and restaurant and fast food areas of the commercial refrigeration market. This course satisfies 10 hours of instruction toward completing the embedded Mathematics curriculum requirements, in accordance with Embedded Curriculum Guidelines Option A. This course satisfies 10 hours of instruction toward completing the embedded Human Relations curriculum requirements, in accordance with Embedded Curriculum Guidelines Option A.
Transferability: May not transfer towards an NSHE bachelor's degree
Enrollment Requirements: Prerequisite: AC 150 or approval of instructor.
Term Offered: Spring

AC 201 - HVAC Automatic Controls **Units: 3**
This course will familiarize the student with commercial HVAC systems. Including but not limited to design considerations, installation, system types, and system operation. Commercial building will be introduced with the emphasis of building system management. This is the first class of a 3 part series that will allow students to gain the knowledge needed to comprehend commercial HVAC.
Transferability: May not transfer towards an NSHE bachelor's degree

AC 205 - Commercial HVAC 2 **Units: 3**
Course is designed to familiarize advanced students and others now working in the H.V.A.C. industry with the various control systems used in large H.V.A.C. systems. Subjects to be covered include pneumatic control systems and components, electronic control systems, interfacing of pneumatic and electronic controls, energy management systems, etc., with emphasis on operation, maintenance and troubleshooting.
Transferability: May not transfer towards an NSHE bachelor's degree
Enrollment Requirements: AC 201 Automatic Controls

AC 206 - Commercial HVAC Systems 3 **Units: 3**
This course will familiarize the student with navigating the WebCTRL interface, ALC system architectures, alarms, trends, reports, logic programs, and graphics.
Transferability: May not transfer towards an NSHE bachelor's degree
Enrollment Requirements: Prerequisites: AC 201 HVAC Automatic Controls & AC 205 Commercial HVAC Systems 2

AC 210 - Boiler Operation and Maintenance **Units: 3**
Subjects to be covered include operation, safety, water treatment, control devices used with hot water boilers, low pressure boilers and power boiler systems.
Transferability: May not transfer towards an NSHE bachelor's degree

AC 295 - Internship HVAC Career **Units: 1-16**
A course designed wherein students will apply knowledge to real on-the-job situations in a program designed by a company official and a faculty advisor to maximize learning experiences. Available to students who have completed all core and major requirements and have a 2.5 GPA. Contact the appropriate chairperson for an application, screening and required skills evaluation. Up to 16 semester hour credits may be earned on the basis of 75 hours of internship for one credit. May be repeated for up to 16 credits.
Transferability: May not transfer towards an NSHE bachelor's degree