Course Descriptions for all HVAC/R courses
(in order by semester)

CISC 101 Introduction to Computers (Cr3) (3:0)
This course introduces computer concepts including hardware and software, an overview of application software, networking and the Internet, and current issues with respect to computers and society. Hands-on instruction in the productivity tools of word-processing, spreadsheets and presentation software.

EMEC 101 Electrical Fundamentals (Cr3) (2:2)
Provides a foundation of knowledge in electricity. Covers fundamental electrical concepts, EMF, current, resistance, power, AC and DC series and parallel circuit operation and analysis, inductance, capacitance, meter usage, schematics, and circuit component operation. Industrial safety stressed and math applications are reviewed. Practical lab application of concepts.

EMEC 118 Hand and Power Tools (Cr1) (1:0)
This course covers proper selection, safe use, care and maintenance of both hand and power tools.

ENGL 101 English I (Cr3) (3:0)
A writing-intensive course giving close attention to the process of writing through networked workshops and conferences involved in preparation and revision of drafts. The course develops skills in logical and focused writing, through development of a main point by means of supporting ideas and evidence. In addition, students learn to integrate information from secondary sources through the use of summary, paraphrase, and direct quotation in various forms of thesis-based writing. Prereq. - Competence in reading and writing as determined by English Department through testing and/or course work. Approved for the Honors Program.

HVAC 101 Fundamentals of HVAC/R I (Cr4) (3:2)
This is an introductory course in heating, ventilation, air conditioning and refrigeration (HVAC/R) technology. Topics will include heat transfer, refrigerant properties, the vapor-compression refrigeration cycle, service and piping techniques, EPA refrigerant handling regulations, dehydration and charging of systems, control components, basic residential control wiring, domestic refrigerator/freezers, and room air conditioners. Formerly HVAC 801. Pre or coreq.- EMEC 101 or instructor permission.

MATH 103 Applications in Mathematics (Cr3) (3:0)
Applications of mathematics emphasizing problem solving and reasoning. Core: QL (A.A.S. only).

CMTH 102 Speech Communication (Cr3) (3:0)
Basic principles of communication theory and practice, including speech preparation and delivery, and the effective use of critical thinking and listening in relation to intrapersonal, interpersonal, intercultural, and group communication.

EMEC 135 Electrical Motors and Controls (Cr4) (3:2)
Concepts of electricity, electronics and controls related to industrial applications; industrial control devices and sensors; relays and electromechanical control; electrical diagrams; transformers and power distribution; solid state power devices; motors, starters and drives; AC/DC motor control; process control fundamentals. Prereq. - EMEC 101.
ENGL 151 English II (Cr3) (3:0)
Students continue to develop the academic writing and critical reading skills begun in English I. Students may elect to work on introduction to literature (L), report writing (R), or technical writing (T). Prereq.- ENGL 101. ENGL 151L (literature option) is approved for the Honors Program and has a designated as a Diversity (D) core course.

HVAC 102 Fundamentals of HVAC/R II (Cr3) (2:2)
This course is designed to provide a deeper understanding of the components and more rigorous application of the skills of heating, ventilation, air conditioning, and refrigeration (HV/C/R) technology. Topic of lab exercise and study include commercial refrigeration, residential and commercial building systems, building automation, motor applications, and service/troubleshooting principles. Formerly HVAC 802. Prereq.- HVAC 101 and EMEC 101.

HVAC 110 Print Reading for HVAC/R (Cr1) (1:0)
Interpretation of electrical and mechanical drawings commonly used in the field of heating, ventilating, air conditioning, and refrigeration. Formerly HVAC 810. Offered spring semester only.

PHYS 152 Physical Science II (Cr3) (2:2)
A study of basic physics and chemistry including properties of matter, force and motion, work and machines, heat and combustion, electricity and magnetism, mechanics of liquids and gases, basic chemical reactions, atomic energy and radiation. Core: SCI.

ELTC 107 Electrical Wiring I (Cr3) (3:1)
This course provides an introduction to the practices of electrical wiring with a focus on residential single and multi-family dwellings. Covers project planning, materials calculation, and National Electrical Code based installation and wiring practices. Formerly ELTC 807. Prereq.- EMEC 101.

EMEC 117 Industrial Rigging (Cr1) (1:1)
The course provides basic rigging skills required for installation, setting or moving of industrial equipment and the use of ladders and scaffolding. This introduction stresses safe application of rigging techniques, the use of various devices in equipment installation, alignment, lifting and the calculation of load, center of gravity and proper material handling.

HVAC 124 Heating: Gas, Oil, Solar Thermal, Air and Hydronic Systems (Cr4) (3:2)
This course covers the installation and maintenance of the key components of oil- and gas-fired hot air furnaces, hydronic systems, and Solar thermal heating. Topics covered include the principles of combustion, sequence of operation, traditional and alternative heat sources, energy efficiency testing, and equipment sizing. Lab exercises are designed to reinforce the practical knowledge of troubleshooting and service in residential and light commercial applications. Prereq. - EMEC101.

HVAC 140 Heat Pump Systems (Cr2) (1.5:1.5)
Practical study of the principles and applications of the heat pump used in heating and cooling systems; focus on heating and cooling cycle theory, control systems, and hands-on troubleshooting procedures. Formerly HVAC 840. Prereq. - EMEC 101 and HVAC 101.

HVAC 104 Refrigeration System Troubleshooting (Cr3) (2:2)
Operation and servicing of commercial refrigeration and display cases; electrical and pressure operated devices, control adjustment, unitary refrigeration units, and component repair; heat loading, piping
calculations, and system capacity analysis. Formerly HVAC 804. Prereq. - HVAC 102. Offered spring semester only.

**HVAC 142 Geothermal Heat Pump System Design and Installation (Cr2) (2:0)**
This course focuses on the design and installation of ground source heat pump systems based on the current IGSHPA (International Ground Source Heath Pump Association) standards. Upon successful completion of this course the student may take the IGSHPA Accredited Installers Examination. Topics covered include: selecting and designing a GSHP system for residential and light commercial buildings, ground construction techniques, pipe joining techniques, loop purging, pump and fluid selection, and commissioning/troubleshooting. Pre - or Coreq.- HVAC 140.

**HVAC 150 HVAC Airflow and Distribution (Cr3) (3:1)**
Practical study of the principles of airflow and psychometrics and how to achieve proper ventilation and distribution of air; basic duct design, psychometric calculations, fan installation and troubleshooting. Formerly HVAC 850. Prereq. - EMEC 101. Offered spring semester only.

**HVAC 260G HVAC/R Technology Practicum (Cr2) (0:0) (Practicum 8)**
This course is intended to provide actual work "shadowing" experience in the Heating, Ventilation, Air Conditioning, and Refrigeration (HVAC/R) industry with focused exposure to technical problems found in the field; preventative maintenance procedures; installation techniques; and general activities typically encountered. Capstone of this experience is to be presented in written and oral format and will include industry evaluation of student performance. Prereq.- ENGL101 and completion of 3 semesters of the HVAC/R Technology AAS degree program, or with instructor permission.

**OSAH 100 Industry Outreach Safety Education (Cr1) (1:0)**
This course is based upon the 10-hour Occupational Safety and Health Administration's General Industry and Construction Industry Outreach Training Program. The intention is to provide entry level general industry and construction industry workers a broad awareness as it relates to recognizing and preventing hazards within their respective workplaces. The discussion and information cover a variety of safety and health hazards which an employee may encounter in either workplace. This course is intended to be an orientation to the general safety practices along with introductory concepts of occupational safety and health.