COURSE INFORMATION FORM

DISCIPLINE: HVAC
COURSE TITLE: Residential Heating & Air Conditioning I
CR.HR: 4  LECT HR: 2  LAB HR: 4  CLIN/INTERN HR: 0  CLOCK HR: 0

CATALOG DESCRIPTION
Students will develop a basic understanding of residential heating and cooling systems, operation and maintenance.

PREREQUISITES
HVAC 111 & 120; HVAC 109 or concurrent enrollment

EXPECTED STUDENT OUTCOMES IN THE COURSE (ESO)
Upon completion of this course, the student will be able to:
1. Demonstrate an understanding of the sequences of gas furnaces and cooling system operation.
2. Demonstrate a basic knowledge and operation of manifold gauge sets.
3. Replace split system compressor.
4. Demonstrate a basic understanding of motor controls.
5. Clean air handling units.
6. Safely and correctly use torches when brazing.
7. Correctly evacuate a refrigeration system using a vacuum pump, refrigerant gages, and micron gage and to explain the purpose and correct use of each item on a working refrigeration system.
8. Correctly take a superheat and sub-cooling reading on a working refrigeration system.
9. Correctly recover refrigerant using refrigerant gages, refrigerant recovery machine, and recovery bottle.
10. Demonstrate an understanding of the business community.
GENERAL EDUCATION OUTCOMES (ESO)
Specify which general education outcomes, if any, are substantially addressed by the course. Numbers in parentheses identify the Expected Student Outcomes linked to the specific General Education Outcome.

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<tr>
<th>Outcomes</th>
<th>ESO</th>
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PROGRAM-LEVEL OUTCOMES

CAREER AND TECHNICAL EDUCATION PROGRAM OUTCOMES
Specify which Career and Technical program outcomes, if any, are substantially addressed by the course by completing the “Career and Technical Education template” to show the relationship between course and program outcomes to assessment measures.

1. Student will demonstrate the ability to apply foundational skills in an industrial setting safely, and to industry guidelines.
2. Student will demonstrate professional oral and written communication skills.
3. Student will think critically and apply problem-solving skills.

CLASS-LEVEL ASSESSMENT MEASURES
Student accomplishment of expected student outcomes may be assessed using the following measures. (Identify which measures are used to assess which outcomes.)

1. Quizzes and written exams (1-9)
2. Homework and classroom exercises (1-9)
3. Student participation in class discussions (1-10)
4. Lab assignments (1-9)
Individual instructors may order this outline as fits the needs of their individual courses. In addition, they may place more emphasis on some areas than on others. What is assured is that this particular list is covered in the course. Other topics may be added to a course as the instructor sees fit, and as time and interest allow. An *asterisk can be used to mark an item as optional.

I. Introduction to basic maintenance and analysis
   A. Basic controls
   B. General Safety practices

II. Systems Controls
   A. Motor controls
   B. Application of motors

III. Pressure and temperature controls
   A. High pressure
   B. Low Pressure
   C. Space temperature
   D. Compressor control

IV. Gas heat
   A. Gas combustion
   B. Ignition systems
   C. Circulation air control
   D. Wiring diagrams

V. Air conditioning systems
   A. Compressors
   B. Evaporators
   C. Metering Devices
   D. Condensers

VI. Typical Operating conditions
   A. Mechanical operating conditions
   B. Evaporator operating conditions
   C. Condenser operating conditions
   D. Compressor and current draw