Residential Air Conditioning (HART 1441)

Credit: 4 semester credit hours (2 hours lecture, 6 hours lab)

Prerequisite/Co-requisite: N/A

Course Description
A study of components, applications, and installation of mechanical air conditioning systems including operating conditions, troubleshooting, repair, and charging of air conditioning systems.

Required Textbook and Materials
   a. ISBN number is 10: 1-285-17998-6
   a. ISBN number is 978-1-63126-354-4

Course Objectives
Upon completion of this course, the student will be able to:

1. Identify systems applications.
2. Implement and perform industry accepted refrigerant charging procedures.
3. Perform air conditioning system installation procedures.
4. Perform component and part diagnostics and replacement.

Course Outline
A. Safety
   1. Accessing equipment in attics
   2. Safety in confide space
   3. Ladder climbing safety
B. Applications of residential cooling systems
   1. Sizing of system to condition space
   2. Determining tonnage for maximum system performance
   3. Affect of Entergy rated building materials
   4. Affect of housing structure type
C. Mechanical components and their function
   1. Duct systems
   2. Affect of duct sizing on air flow
   3. Types of duct material
D. Electrical components and their function
   1. Identify electrical components in residential systems
   2. Troubleshooting techniques for basic electrical components

Approved 2/2013
HART 1441
Course Syllabus

E. Installation techniques of residential systems
   1. Field install piping techniques
   2. Use of performed copper fittings and piping lay out
   3. Brazing techniques
   4. Proper insulation of field piping

F. Troubleshooting of residential cooling systems
   1. Electrical troubleshooting techniques
   2. Gas side troubleshooting techniques
   3. Condensate service procedures

Grade Scale
   A = 90-100
   B = 80-89
   C = 70-79
   D = 60-69
   F = 0-59

Course Evaluation
   1. 4 Objective Test 34%
   2. Comprehensive Final 33%
   3. Homework/Lab work 33%

Course Requirements
   1. Homework assignments
   2. Hands on lab activities
   3. Complete comprehensive final

Course Policies
   1. There will be no horseplay tolerated.
   2. No open foot shoes, sandals, or flip-flops: closed foot shoes only.
   3. No smoking, eating, or sleeping will be tolerated during class.
   4. If an assignment is late, there will be 5 points deducted per day.
   5. No hanging jewelry or rings in lab.

Disabilities Statement
The Americans with Disabilities Act of 1992 and Section 504 of the Rehabilitation Act of 1973 are federal anti-discrimination statutes that provide comprehensive civil rights for persons with disabilities. Among other things, these statutes require that all students with documented disabilities be guaranteed a learning environment that provides for reasonable accommodations for their
disabilities. If you believe you have a disability requiring an accommodation, please contact the Special Populations Coordinator at (409) 880-1737 or visit the online resource:
http://www.lit.edu/depts/stuserv/special/defaults.aspx

**Student Code of Conduct Statement**

It is the responsibility of all registered Lamar Institute of Technology students to access, read, understand and abide by all published policies, regulations, and procedures listed in the *LIT Catalog and Student Handbook*. The *LIT Catalog and Student Handbook* may be accessed at www.lit.edu or obtained in print upon request at the Student Services Office.

<table>
<thead>
<tr>
<th>Week</th>
<th>Topic</th>
<th>Reference</th>
</tr>
</thead>
<tbody>
<tr>
<td>1&amp;2</td>
<td>Introduction to basic A/C systems and Principles</td>
<td>Chapter 12</td>
</tr>
<tr>
<td>3,4, &amp;5</td>
<td>Study of refrigerants and environmental Requirements</td>
<td>Chapter 9 &amp; 10</td>
</tr>
<tr>
<td>6</td>
<td>Preparation for EPA section 608 universal Technician exam</td>
<td>Handouts</td>
</tr>
<tr>
<td>7</td>
<td>Administer EPA exam</td>
<td>ESCO Institute study guide</td>
</tr>
<tr>
<td>8</td>
<td>Serve and install small hermetic systems</td>
<td>Lab components</td>
</tr>
<tr>
<td>9</td>
<td>Leak detection and repair</td>
<td>Use of lab equipment</td>
</tr>
<tr>
<td>10&amp;11</td>
<td>Soldering techniques</td>
<td>Use of lab equipment</td>
</tr>
<tr>
<td>12 &amp; 13</td>
<td>Discussion of SEER ratings effective on Entergy consumption and residential energy</td>
<td>Guess lecture</td>
</tr>
<tr>
<td>14</td>
<td>Installation of residential Air Conditioning Equipment</td>
<td>lab</td>
</tr>
<tr>
<td>15</td>
<td>Review and prepare for comprehensive finals</td>
<td></td>
</tr>
<tr>
<td>16</td>
<td>Comprehensive final</td>
<td></td>
</tr>
</tbody>
</table>