Refrigeration Principles (HART 1407)

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

Prerequisite/Co-requisite: None

Course Description
An introduction to the refrigeration cycle, basic thermodynamics, heat transfer, temperature/pressure relationship, safety, refrigeration containment, and refrigeration components.

Required Textbook and Materials
   a. ISBN number is 10: 1-285-17998-6
2. Modern Refrigeration and Air Conditioning by Althouse, Turnquist, and Bracciano, 19th edition
   a. ISBN number is 978-1-63126-354-5

Course Objectives
Upon completion of this course, the student will be able to
1. Identify refrigeration components.
2. Explain operation of the basic refrigeration cycle and heat transfer.
3. Demonstrate proper application and/or use of tools, test equipment, and safety procedures.

Course Outline
A. Safety
   1. Safety equipment required for working on pressurized equipment
   2. Proper use of safety equipment
B. Refrigeration cycle and basic components
   1. Basic compression components
   2. Basic cycle lay out
C. Principles of heat transfer
   1. Affect of pressure on temperature
   2. Study of latent heat
   3. Study of sensible heat
D. Psychometrics and applications
   1. Moisture in air
   2. Discussion of relative humidity
   3. Removal of humidity from condition air
   4. Affect from humidity removal on the human body
E. Air Flow

Approved 1/2013
HART 1407  
Course Syllabus  

1. Rating of evaporator blower capacity  
2. Effect of duct sizing on air flow  
3. CFM requirements per square foot  

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

Course Evaluation  
1. Objective Tests 33%  
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.

Course Schedule

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<tr>
<th>Week</th>
<th>Topic</th>
<th>Reference</th>
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<tbody>
<tr>
<td>1, 2, &amp; 3</td>
<td>Study of basic history and fundamental of refrigeration</td>
<td>Chapter 1</td>
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<td>4</td>
<td>Study of temperature, pressure measurements</td>
<td>Chapter 1</td>
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<td>Pgs 26-50</td>
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<td>5</td>
<td>Study of refrigeration tools and materials and Basic refrigeration systems</td>
<td>Chapter 2 &amp; 3</td>
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<tr>
<td>6</td>
<td>Basic refrigeration cycle test</td>
<td>Chapter 2 &amp; 3</td>
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<td>7</td>
<td>Compression systems and compressors</td>
<td>Chapter 4</td>
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<td>8</td>
<td>Test on compression systems, and study of refrigerant controls</td>
<td>Chapter 5</td>
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<td>9</td>
<td>Electric motors</td>
<td>Chapter 7</td>
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<td>10</td>
<td>Electric circuits and controls, Test on electric Motors</td>
<td>Chapter 8</td>
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<tr>
<td>11 &amp; 12</td>
<td>Study of electric circuits and controls</td>
<td>Chapter 8</td>
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<td>13</td>
<td>Field activities, proper charging techniques</td>
<td>outside lab</td>
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<tr>
<td>14 &amp; 15</td>
<td>Proper superheat and sub cool measurements</td>
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<td></td>
<td>And preparation for comprehensive final</td>
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<tr>
<td>16</td>
<td>Comprehensive final</td>
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