A/C Installation & Service (HART 2438)

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

Prerequisite/Co-requisite: N/A

Course Description
A study of air conditioning system installation, refrigerant piping, condensate disposal, and air cleaning equipment with emphasis on startup and performance testing.

Required Textbook and Materials
   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 978-1-61960-199-4

Course Objectives
Upon completion of this course, the student will be able to:
1. Install air conditioning system competently, run refrigerant piping, install condensate disposal piping, evaluate air equipment needs, startup systems, and perform performance test.

Course Outline
A. Introduction
   1. Introduction of faculty and students
   2. Review Syllabus
   3. Review Class Policies
   4. Review Lab Assignments

B. Review of Installation Codes
   1. Electrical
   2. Plumbing/Piping
   3. Gas/Fuel/Ventilation
   4. Duct System

C. Piping
   1. Plumbing
   2. Refrigeration
   3. Fuel

D. Electrical
   1. Line Voltage Circuits
   2. Control Voltage Circuits

E. Evacuation, Leak Testing & Charging
   1. Deep Vacuum Evacuation
   2. Triple Evacuation
   3. Electronic Leak Detectors
   4. Ultrasonic Leak Detectors
   5. Black Light Leak Detectors
   6. Suds Agent Leak Detector
   7. Charging by Super Heat & Subcool Method
   8. Charging by Weight
   9. Charging by Charging Charts

F. Thermostats
   1. Installing
   2. Programming
   3. Troubleshooting

Approved 12/2013
Grade Scale
A = 90-100
B = 80-89
C = 70-79
D = 60-69
F = 0-59

Course Evaluation
1. 4 Objective Test  25%
2. Lab Projects/test  25%
3. Comprehensive Final  25%
4. Homework   25%

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 office in Student Services, Cecil Beeson Building.

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.
Please note that the online version of the *LIT Catalog and Student Handbook* supersedes all other versions of the same document.

**Course Schedule**

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<th>Topic</th>
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<td>Introduction &amp; Safety Orientation</td>
<td>Lecturer Notes</td>
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<td>2</td>
<td>Review of Codes Governing HVAC Installation</td>
<td>IRC Book</td>
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<td>3</td>
<td>Review Basic Electrical &amp; Refrigeration for HVAC</td>
<td>Chapter 1, 2 &amp; 6</td>
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<td>4</td>
<td>Demonstrate Installation of Refrigeration &amp; Plumbing Piping</td>
<td>Lecturer Notes, Chapter 2 &amp; Lab</td>
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<td>Installation of Refrigeration &amp; Plumbing Piping for HVAC System</td>
<td>Lab Procedure</td>
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<td>6</td>
<td>Demonstrate Installation of Line Voltage &amp; Control Voltage Electrical</td>
<td>Lecturer Notes, Hand-Outs, Chapter 8 &amp; Lab</td>
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<td>Installation of Line Voltage &amp; Control Voltage Electrical for HVAC System</td>
<td>Lab Procedure</td>
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<td>8</td>
<td>Demonstrate Evacuation &amp; Leak Testing Procedures</td>
<td>Lecturer Notes, Hand-Outs, Chapter 12 &amp; Lab</td>
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<td>Evacuate and Leak Test HVAC System</td>
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<td>10</td>
<td>Demonstrate Charging HVAC by Super Heat/Subcool, Charging Chart &amp; Weight Method</td>
<td>Lecturer Notes, Hand-Outs, Chapter 30 &amp; Lab</td>
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<td>11</td>
<td>Charging HVAC System by Superheat/Subcool, Charging Chart and Weight Methods</td>
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<td>12</td>
<td>Demonstrate Programming Digital/Programmable Thermostats</td>
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<td>13</td>
<td>Programming Digital/Programmable Thermostats</td>
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<td>Review for Final Exam</td>
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**Contact Information:**

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