Basic Electricity for HVAC (HART 1401)

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

Prerequisite/Co-requisite: N/A

Course Description
Principles of electricity as required by HVAC, including proper use of test equipment, electrical circuits, and component theory and operation.

Required Textbook and Materials
   a. ISBN number is 10: 1-285-17998-6
   a. ISBN number is 978-1-63126-354-5

Course Objectives
Upon completion of this course, the student will be able to
1. Demonstrate knowledge of basic principles of electricity, electrical current, circuitry, and air conditioning devices.
2. Apply Ohm’s law to electrical calculations.
3. Perform electrical continuity, voltage, and current test with appropriate meters.
4. Demonstrate electrical safety.

Course Outline
A. Electrical Safety:
   1. Measuring and troubleshooting of energized electrical circuits.
   2. Knowledge of using electrical testing meters & tools, such as DMM.
   3. Proper techniques using safety equipment.
   4. Proper use of lock-outs and tag-outs.
B. Electrical Principles
   1. Calculating Ohm’s Law
   2. Knowledge of electrical theory.
   3. Measuring electrical power, pressure, current & resistance.
   4. Knowledge of electrical symbols.
   5. Analyzing electrical cost efficiency, such as S.E.E.R. & E.E.R.
C. Series Circuits
   1. Uses for series circuits
   2. Examples of series circuits

Approved 12/2013
D. Parallel Circuits
   1. Uses for parallel circuits
   2. Examples of parallel circuits
   3. Calculation of electrical pressure, pressure drop & current flow through all electrical loads.

E. Series – Parallel Circuits
   1. Uses for parallel circuits
   2. Examples of parallel circuits
   3. Calculation of electrical pressure, pressure drop & current flow through all electrical loads.

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

Course Evaluation
   1. 4 Objective Test 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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<th>Week</th>
<th>Topic</th>
<th>Reference</th>
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<tr>
<td>1 &amp; 2</td>
<td>Electrical safety</td>
<td>Chapter 1</td>
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<td>3</td>
<td>Basic electricity</td>
<td>Chapter 2</td>
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<td>4</td>
<td>Electric circuits</td>
<td>Chapter 3</td>
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<tr>
<td>5 &amp;6</td>
<td>Electrical symbols</td>
<td>Chapter 5</td>
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<tr>
<td>7 &amp; 8</td>
<td>Reading electric diagrams</td>
<td>Chapter 6</td>
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<td>9</td>
<td>A/C Power and D/C Power</td>
<td>Chapter 7</td>
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<td>10 &amp;11</td>
<td>Installation of HVAC systems</td>
<td>Chapter 8</td>
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<tr>
<td>12</td>
<td>Basic electric motors</td>
<td>Chapter 9</td>
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<tr>
<td>13</td>
<td>Hands on electric meter evaluation</td>
<td>Chapter 10</td>
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<tr>
<td>14 &amp; 15</td>
<td>General electric meter use, amp meter, Volt meter, and ohm meter</td>
<td>Chapter 10</td>
</tr>
<tr>
<td>16</td>
<td>General overview and comprehensive final</td>
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