

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

1. Electricity for Refrigeration, Heating and Air Conditioning by Russell E. Smith, 9th edition.

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

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| <p>A. Introduction</p> <ol style="list-style-type: none">1. Introduction of faculty and students2. Review Syllabus3. Review Class Policies4. Review Lab Assignments <p>B. Review of Installation Codes</p> <ol style="list-style-type: none">1. Electrical2. Plumbing/Piping3. Gas/Fuel/Ventilation4. Duct System <p>C. Piping</p> <ol style="list-style-type: none">1. Plumbing2. Refrigeration3. Fuel <p>D. Electrical</p> <ol style="list-style-type: none">1. Line Voltage Circuits | <ol style="list-style-type: none">2. Control Voltage Circuits <p>E. Evacuation, Leak Testing & Charging</p> <ol style="list-style-type: none">1. Deep Vacuum Evacuation2. Triple Evacuation3. Electronic Leak Detectors4. Ultrasonic Leak Detectors5. Black Light Leak Detectors6. Suds Agent Leak Detector7. Charging by Super Heat & Subcool Method8. Charging by Weight9. Charging by Charging Charts <p>F. Thermostats</p> <ol style="list-style-type: none">1. Installing2. Programming3. Troubleshooting |
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Grade Scale

A = 90-100

B = 80-89

C = 70-79

D = 60-69

F = 0-59

Course Evaluation

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| 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

Week	Topic	Reference
1	Introduction & Safety Orientation	Lecturer Notes
2	Review of Codes Governing HVAC Installation	IRC Book
3	Review Basic Electrical & Refrigeration for HVAC	Chapter 1, 2 & 6
4	Demonstrate Installation of Refrigeration & Plumbing Piping	Lecturer Notes, Chapter 2 & Lab
5	Installation of Refrigeration & Plumbing Piping for HVAC System	Lab Procedure
6	Demonstrate Installation of Line Voltage & Control Voltage Electrical	Lecturer Notes, Hand-Outs, Chapter 8 & Lab
7	Installation of Line Voltage & Control Voltage Electrical for HVAC System	Lab Procedure
8	Demonstrate Evacuation & Leak Testing Procedures	Lecturer Notes, Hand-Outs, Chapter 12 & Lab
9	Evacuate and Leak Test HVAC System	Lab Procedure
10	Demonstrate Charging HVAC by Super Heat/Subcool, Charging Chart & Weight Method	Lecturer Notes, Hand-Outs, Chapter 30 & Lab
11	Charging HVAC System by Superheat/Subcool, Charging Chart and Weight Methods	Lab Procedure
12	Demonstrate Programming Digital/Programmable Thermostats	Lecturer Notes, Hand-Outs & Lab
13	Programming Digital/Programmable Thermostats	Lab Procedure
14	Commissioning the System	Lecturer Notes & Lab Procedure
15	Review for Final Exam	Lecturer Notes
16	Final Exam	

Contact Information:

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Office Hours: 5:00p.m.-5:30p.m. M-TH