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

1. Electricity for Refrigeration, Heating and Air Conditioning by Russell E. Smith, 9th edition.
   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 978-1-61960-199-4

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

1. Rating of evaporator blower capacity
2. Affect 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 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, Rebecca Cole, at (409)880-1737 or visit her office located in the Cecil Beeson Building, room 120.

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
1,2, & 3	Study of basic history and fundamental of refrigeration	Chapter 1 pgs 1-25
4	Study of temperature, pressure measurements	Chapter 1 Pgs 26-50
5	Study of refrigeration tools and materials and Basic refrigeration systems	Chapter 2 & 3
6	Basic refrigeration cycle test	
7	Compression systems and compressors	Chapter 4
8	Test on compression systems, and study of refrigerant controls	Chapter 5
9	Electric motors	Chapter 7
10	Electric circuits and controls, Test on electric Motors	
11 & 12	Study of electric circuits and controls	Chapter 8
13	Field activities, proper charging techniques	outside lab
14 & 15	Proper superheat and sub cool measurements And preparation for comprehensive final	
16	Comprehensive final	