

LANEY COLLEGE
Environmental Control Technology
Spring Semester

Course: Fundamentals of Refrigeration

Course Number/code: ECT 013 L20434

Time: Monday - Wednesday 7:00 PM – 10:00 PM

Instructor: Nick Kyriakopedi

Office: B151

Office Hours: 4:30-5:30 M -Th

Phone: (510) 464-3292

Units: 4 units.

Course Description: Principles and processes of refrigeration systems: Thermodynamics, heat transfer, refrigeration cycle, type of systems and piping, energy efficiency, safety, electrical and mechanical components, tools and instruments, brazing and soldering, methods for charging, recovering, and evacuating refrigerants. We will also cover EPA laws and regulations and safe handling of refrigerants.

Student Outcomes:

1. Explain the basic physical, chemical and engineering principles of refrigeration.
2. Identify and explain the basic refrigeration cycle and components.
3. Construct and troubleshoot a functional refrigeration system.
4. Demonstrate proper and safe use of tools, equipment and the handling of refrigerants.

Prerequisites: ECT 01 or teacher's consent.

Text: Modern Refrigeration and Air Conditioning , Althouse,Turnquist and Bracciano Pub. Goodheart Wilcox Ed. 2004.

Supplies Needed: Pencils, colored felt tip pens, graph paper with 1/4" squares, circle template, line paper, safety glasses, leather gloves, medium flat blade and philips screwdrivers, two nut drivers 1/4" and 5/16", one socket set up to 1", two adjustable wrenches one 8" or 10" and one 12", combination wire cutter, stripper and crimper, one roll of electrical tape, wire connectors, fuse puller, multi-meter and tool box or tool pouch.

Recommended Tools: Charging Manifold Gauges, Swaging Tool, Tubing Cutter, Service Valve Wrench, Tubing Bender 180 deg., Flaring Tool and Block, and Pocket Thermometer

Topics: Chapters 1,2,3,4,5,9,10,11,

1. Fundamentals of refrigeration
2. Refrigeration tools and materials
3. Basic refrigeration systems

4. Compression systems and compressors
5. Refrigerant controls
6. Refrigerants

Evaluation: The following classroom work and projects will be evaluated and graded.

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| 1. Mechanical and Electrical projects | 200 |
| 2. Brazing and Soldering projects | 150 |
| 3. Charging, Evacuating and Recovering projects | 100 |
| 4. Home work | 100 |
| 5. Mid term examination | 100 |
| 6. Class Participation | 200 |
| 7. Final examination | 150 |
| Total points: | 1000 |

Safety Test: Students taking this course are required to take the safety test the first day of instruction.

Attendance: Students may be dropped from the course if the number of absences exceeds two days worth of class meetings. However, extenuating circumstances may warrant consideration.

Note: During class please shut off all cell phones, also no eating or drinking. You will be given two breaks of ten minutes each between classes.

Note: It is student's responsibility to drop the classes.