

LANEY COLLEGE
Environmental Control Technology
Spring Semester

Course: Fundamentals of Heating and Air Conditioning

Course Number/code: ECT 016 L20440

Time: Tuesdays 6:00 PM – 9:00 PM

Instructor: Nick Kyriakopedi

Office: B151

Office Hour: Tuesday 5:30 to 6:00PM

Phone: (510) 464-3292

Units: 2 units.

Course Description: Introduction to residential and light commercial heating and air conditioning systems: Includes natural gas furnaces, hydronic heating systems, heat pumps, split air conditioning systems, duct less and built-up systems. Emphasis will be on, reading electrical diagrams, understanding the sequences of operation of different systems, overview of mechanical and electrical components, working relationships of individual components to form complete systems, applications and safety procedures.

Student Outcomes:

1. Describe the theory and operation of an air conditioning system.
2. Demonstrate safe practices for proper use of tools and equipment.
4. Explain the different types of ignition systems and burners.
5. Explain the sequence of operation of a direct spark ignition system with induced fan motor.
6. Demonstrate good safety practices when working with electricity, refrigerants and combustible gasses.

Prerequisites: ECT 014

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

Supplies Needed: Safety glasses, gloves, medium flat blade and philips screwdrivers, two adjustable wrenches one 10" and one 12", combination wire cutter, stripper and crimper, one roll of electrical tape, wire connectors, fuse puller, multi-meter, pocket thermometer and tool box or 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 19 through 27	Weeks
1. Fundamentals of heating and air conditioning	1, 2
2. Basic Heating and Air Conditioning Systems	3, 4
3. Heating and Humidification Systems	5, 6

4. Cooling De-humidification Systems	7, 8
5. Air Distribution, Measurement, and Cleaning	9, 10
6. Central Air Conditioning and Heat pumps	11, 12
7. Air Conditioning and Heating Control Systems	13, 14
8. Air Conditioning Systems- Heating and Cooling Loads	15, 16

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

1. Heating and Air Conditioning lab projects	300	91% -100%	A
2. Homework assignments	150	81% - 90%	B
3. Midterm Exam	200	71% - 80%	C
4. Class Participation	100	61% - 70%	D
5. Final Exam	300	50% - 60%	F

Total: 1000 points

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 no cell phones, eating, drinking or talking allowed. There will be two ten Minute breaks.

Note: Students are required to wear safety glasses in the lab work area.

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