



Air Conditioning, Refrigeration and Heating – Mechanical

Produced by Palomar College
32, 45-minute programs
Closed Captioned

Textbook:

Modern Refrigeration and Air Conditioning

by Althouse, Turnquist, Bracciano, The Goodheart – Wilcox Publishing Company

This video series is an introduction to basic mechanical theory of air conditioning, heating, and refrigeration. Topics included are application of principles and techniques to include system components and their interrelated functions, safety procedures, tools and equipment.

PROGRAM DESCRIPTIONS

- | | |
|---|-----------------------|
| 1: Introduction and Safety | TIME: 43:15.00 |
| Overview of what this video series addresses: how refrigeration works, what it takes to make refrigeration work, heat theory, thermal dynamics, EPA certification, job opportunities, safety procedures, and terminology. | |
| 2: Defining Refrigeration | TIME: 37:39.00 |
| This lesson discusses the history of how refrigeration evolved. Terminology that is covered: heat transfer, latent heat, sensible heat, superheat, specific heat, vaporization, conduction, pressure, IME, PSIA, PSIG. A demonstration is given to show heat transfer that leads to the definition of refrigeration: transfer of heat from a place where its not wanted to a place where its unobjectionable. | |
| 3: What is Heat? | TIME: 42:51.00 |
| This video discusses how heat affects a substance and where it comes from; how heat affects molecules – the speed of which they vibrate or move; discusses solid, liquid and gas heat. Defines heat : a form of energy. | |
| 4: Measuring Heat / Temperature and Heat Transfer | TIME: 43:36.00 |
| This video gives an in depth look at the standard unit of temperature measurement and the different scales of temperature: mainly the Fahrenheit scale. Topics discussed are heat transfer, thermal contact, conduction, convection and radiation, fans and air flow; materials that keep heat from transferring; transfer rate; and specific heat. | |
| 5: Measuring Pressure and Vacuum | TIME: 44:03.00 |
| 6: Pressure and Temperature Relationship | TIME: 42:59.00 |
| 7: Refrigeration Cycle - Part 1 | TIME: 40:12.00 |
| This video explains how to use refrigeration components to transfer heat. Topics covered are: absolute refrigeration cycle, open refrigeration circuit, controlling refrigerant flow, super heat; presentation of refrigerant piping, tubing and cyclinder. Equipment demonstration of the refrigeration cycle. | |
| 8: Refrigeration Cycle - Part 2 | TIME: 44:11.00 |
| This video discusses pressure and temperature gauges, and shows the cycle of fan coils, evaporator, compressor, condenser, heat transfer metering device and cross section of a mixed orifice metering device. Charts will show how to convert pressure to saturated temperature. Explains the importance of drawing the circuit. | |
| 9: The Gage and Manifold Set | TIME: 43:30.00 |
| 10: Taking Superheat and Sub cooling | TIME: 41:34.00 |
| 11: Evaporators | TIME: 42:55.15 |
| 12: Compressors | TIME: 44:21.27 |
| 13: Condensers | TIME: 41:41.03 |
| 14: Metering Devices and Expansion Valves | TIME: 43:43.13 |
| 15: Refrigerant Recovery - Part 1 | TIME: 44:02.06 |
| 16: Refrigerant Recovery - Part 2 | TIME: 44:00.05 |

17: System Evacuation	TIME: 41:56.02
18: Cleaning the Refrigerant System	TIME: 38:09.05
19: Dehydrating the Refrigerant System	TIME: 42:48.08
20.Charging Systems	TIME: 39:42.02
21: Heat Pumps - Part 1	TIME: 38:06.21
22: Heat Pumps - Part 2	TIME: 44:49.00
23: Troubleshooting - Part 1	TIME: 43:32.00
24: Troubleshooting - Part 2	TIME: 44:30.00
25: Troubleshooting - Part 3	TIME: 43:42.00
26: Changing a Compressor	TIME: 46:22.00
27: Leak Testing	TIME: 34:42.00
28: Silver soldering	TIME: 44:57.00
29: Flattening & Swaging Copper Tubing	TIME: 29:49.24
30: Preventing Compressor Failures	TIME: 42:08.16
31: Routine Maintenance	TIME: 42:23.02
32: Job Search and Preparation 7676	TIME: 44:09.29