

# REFRIGERATION TECHNICIAN (FUNDAMENTALS) (120 Hours)

Course No.: 79-10-60

## COMPETENCY CHECKLIST

Student Name \_\_\_\_\_

Teacher Name \_\_\_\_\_ School Site \_\_\_\_\_

Start Date \_\_\_\_\_ Completion Date \_\_\_\_\_ Certificate Date \_\_\_\_\_

Teacher Signature \_\_\_\_\_ Student Signature \_\_\_\_\_

(Signatures verify completion of course competencies)

**A. ORIENTATION, EMPLOYABILITY SKILLS, AND SAFETY (6 hrs)**

- \_\_\_\_\_ 1. Skills/knowledge for entry level technician
- \_\_\_\_\_ 2. Job classifications/wage scales
- \_\_\_\_\_ 3. Issues/concerns for a/c industry today
- \_\_\_\_\_ 4. Trade related organizations/publications
- \_\_\_\_\_ 5. Specific safety principles for trade
- \_\_\_\_\_ 6. Emergency procedures/practices in class/lab
- \_\_\_\_\_ 7. Pass safety test with 100% accuracy

**B. PRINCIPLES OF HEAT TRANSFER AND INTRODUCTION TO REFRIGERATION (12 hrs)**

- \_\_\_\_\_ 1. History of refrigeration
- \_\_\_\_\_ 2. Define matter and heat
- \_\_\_\_\_ 3. Three states of matter
- \_\_\_\_\_ 4. Three methods of heat transfer
- \_\_\_\_\_ 5. Three reference points of temperature
- \_\_\_\_\_ 6. Difference between heat & temperature
- \_\_\_\_\_ 7. Latent heat vs. sensible heat
- \_\_\_\_\_ 8. Pressure & fluids at different temperatures
- \_\_\_\_\_ 9. Classifications of refrigerants
- \_\_\_\_\_ 10. Proper transfer & storage of refrigerants
- \_\_\_\_\_ 11. Uses of different refrigerants

**C. REFRIGERATION CYCLE/DIAGRAMS (30 hrs)**

- \_\_\_\_\_ 1. Four parts of refrigeration cycle
- \_\_\_\_\_ 2. Metering devices
- \_\_\_\_\_ 3. Evaporators
- \_\_\_\_\_ 4. Compressors
- \_\_\_\_\_ 5. Methods of compression
- \_\_\_\_\_ 6. Types of condensers
- \_\_\_\_\_ 7. Operation performance of a condenser
- \_\_\_\_\_ 8. Proper location for listed accessories
- \_\_\_\_\_ 9. Operation of the above listed accessories

**D. CENTRAL STATION AIR CONDITIONING SYSTEMS (15 hrs)**

- \_\_\_\_\_ 1. Components of central station systems

**E. ELECTRICAL CONTROLS/COMPONENTS (40 hrs)**

- \_\_\_\_\_ 1. Watts/ohms/volts/amps
- \_\_\_\_\_ 2. Single & multi-phase voltage and current
- \_\_\_\_\_ 3. Ohmmeter/ammeter/voltmeter
- \_\_\_\_\_ 4. Size and test fuses and breakers
- \_\_\_\_\_ 5. Explain listed various phase motors
- \_\_\_\_\_ 6. Proper use of testing equipment for motors
- \_\_\_\_\_ 7. Electrical circuits and controls
- \_\_\_\_\_ 8. Interpret instructions for wiring circuits
- \_\_\_\_\_ 9. Draw circuits that conform to standards
- \_\_\_\_\_ 10. Wire electrical circuits from wiring diagrams
- \_\_\_\_\_ 11. Demo basic electrical meters in actual wiring

**F. HEATING AND CONTROLS (11 hrs)**

- \_\_\_\_\_ 1. Identify/install heating & cooling thermostats
- \_\_\_\_\_ 2. Test fan control to identify set point of control
- \_\_\_\_\_ 3. Wire heating system line & low voltage
- \_\_\_\_\_ 4. Test spark ignition modules
- \_\_\_\_\_ 5. Test & change thermocouple flame sensor
- \_\_\_\_\_ 6. Different pilot proving devices

**G. ENERGY CONTROL SYSTEMS (6 hrs)**

- \_\_\_\_\_ 1. Various ways of making air flow
- \_\_\_\_\_ 2. Types of energy control systems
- \_\_\_\_\_ 3. Operational sequences of the control systems
- \_\_\_\_\_ 4. Set up programmable thermostat