

HVAC/2 (180 Hours)

Course No.: 72-85-65

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 AND SAFETY (2 hrs)

- _____ 1. Scope and purpose of course
- _____ 2. Course content as part of Linked Learning
- _____ 3. Classroom policies and procedures
- _____ 4. Occupations available in HVAC industry
- _____ 5. Promoting gender equity/non-trad. hiring
- _____ 6. Purpose of CalOSHA and its laws about HVAC
- _____ 7. Impact of EPA on energy and utilities sector
- _____ 8. Proper removal of hazardous materials
- _____ 9. NEC and its role to safeguard HVAC techs
- _____ 10. Use of MSDS as applied to HVAC field
- _____ 11. Organizations role to promote green tech
- _____ 12. City of LA Building & Safety Codes for HVAC
- _____ 13. Title 24 relating to energy & utilities industry
- _____ 14. Class/work first aid/emergency procedures
- _____ 15. Employer/employee insuring safe workplace
- _____ 16. Safety test

B. RESOURCE MANAGEMENT REVIEW (1 hr)

- _____ 1. Terms related to resource management
- _____ 2. Management of resources in HVAC field
- _____ 3. Examples of effective resource management
- _____ 4. Benefits of effective resource management
- _____ 5. Economic/environment benefits/liabilities

C. TRADE MATHEMATICS REVIEW (10 hrs)

- _____ 1. Practical application of math in HVAC field
- _____ 2. Problem solving using whole numbers
- _____ 3. Problem solving using various fractions
- _____ 4. Problem solving using various decimals
- _____ 5. Changing fractions to decimals
- _____ 6. Changing decimals to fractions
- _____ 7. English & metric systems to measure length
- _____ 8. English & metric systems to measure weight
- _____ 9. English/metric units for volume & capacity

- _____ 10. Solve English/metric measuring problems
- _____ 11. English/metric measures using tools of trade
- _____ 12. Units in ascending/descending powers of 10
- _____ 13. Calculate square roots of numbers
- _____ 14. Solving techniques for geometric problems
- _____ 15. Solving techniques for algebraic problems
- _____ 16. Solving techniques using percentage problems
- _____ 17. Techniques for reading/interpreting graphs
- _____ 18. Techniques for using a calculator

D. ELECTRICITY (15 hrs)

- _____ 1. Define listed terms related to electricity
- _____ 2. Differentiate AC current from DC current
- _____ 3. Differentiate uses of AC from DC currents
- _____ 4. Terms in electricity generation/modification
- _____ 5. Wiring diagrams to trace circuits/power needs

E. BASIC ELECTRICAL WIRING AND MOTOR SELECTION (25 hrs)

- _____ 1. Terms common to electrical service installations
- _____ 2. Features/functions of tools and components
- _____ 3. Grounding, service installations, circuits
- _____ 4. Operation of main electrical components
- _____ 5. Demonstrate wiring techniques
- _____ 6. Define terms common to motors
- _____ 7. Features/function of motor, controls, accessories
- _____ 8. Efficiency vs. cost; motor control problems
- _____ 9. Diagrams/troubleshooting/improve efficiency

F. THERMODYNAMICS REVIEW (5 hrs)

- _____ 1. Define terms related to matter and heat
- _____ 2. Five states of matter
- _____ 3. Review heat transfer methods
- _____ 4. Review principles of heat/matter
- _____ 5. 1st/2nd law of thermodynamics; Boyle's Law

G. VENTILATION SYSTEMS (30 hrs)

- _____ 1. Define terms related to ventilation/ducting
- _____ 2. Ventilation to prevent interior air stagnation
- _____ 3. Discharge patterns and convection
- _____ 4. Discuss air flow, distribution, volume
- _____ 5. Measuring air flow/air control devices/fans
- _____ 6. Draw air flow/choose fan & motor size

H. REFRIGERATION SYSTEMS (30 hrs)

- _____ 1. Define terms related to refrigeration
- _____ 2. Identify refrigeration components/devices
- _____ 3. Proper transfer and storage of refrigerants
- _____ 4. Discuss refrigeration operational techniques
- _____ 5. Demonstrate operation of components
- _____ 6. Features/function of energy control systems
- _____ 7. Installation/troubleshooting of systems

I. COMMERCIAL REFRIGERATION SYSTEMS (30 hrs)

- _____ 1. Identify commercial refrigeration systems
- _____ 2. Commercial refrigeration applications
- _____ 3. Shipboard refrigeration issues

J. REFRIGERATION TROUBLESHOOTING (30 hrs)

- _____ 1. Discuss refrigeration troubleshooting techniques
- _____ 2. Demonstrate the techniques

K. EMPLOYABILITY SKILLS REVIEW (2 hrs)

- _____ 1. Employer requirements in an employee
- _____ 2. Update list of potential employers
- _____ 3. Role of electronic networking in job search
- _____ 4. Update sample resume/cover letter
- _____ 5. Accurate/legible/complete application form
- _____ 6. Complete job application correctly
- _____ 7. Review importance of enthusiasm on job
- _____ 8. Review appropriate appearance on job
- _____ 9. Need for continuous upgrading of job skills
- _____ 10. Customer service to build relationships
- _____ 11. Review appropriate interviewing techniques
- _____ 12. Materials/resource to help with interview
- _____ 13. Update sample follow-up letters
- _____ 14. Review appropriate follow-up techniques