

# HVAC/1 (180 Hours)

Course No.: 72-85-60

## 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 AND SAFETY (5 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 and non-trad.
- \_\_\_\_\_ 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 (5 hrs)

- \_\_\_\_\_ 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 (15 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. BASIC ELECTRICAL THEORIES (20 hrs)

- \_\_\_\_\_ 1. Define listed terms related to electrical theory
- \_\_\_\_\_ 2. Discuss/understand basic electrical theories
- \_\_\_\_\_ 3. Refrigeration & air for AC/DC; 3-phase power
- \_\_\_\_\_ 4. Demonstrate basic electrical theory/problems

### E. THERMODYNAMICS (25 hrs)

- \_\_\_\_\_ 1. Define terms related to thermodynamics
- \_\_\_\_\_ 2. Three states of matter
- \_\_\_\_\_ 3. Heat transfer methods
- \_\_\_\_\_ 4. Evaluate principles of heat/matter
- \_\_\_\_\_ 5. 1<sup>st</sup>/2<sup>nd</sup> law of thermodynamics; Boyle's Law
- \_\_\_\_\_ 6. Discuss difference/principles of heat/matter

### F. HEATING AND CONTROLS (50 hrs)

- \_\_\_\_\_ 1. Identify features/functions of heating controls
- \_\_\_\_\_ 2. Demonstrate wiring, testing, diagnosing

### G. TROUBLESHOOTING AND MAINTENANCE (50hrs)

- \_\_\_\_\_ 1. Principles of maintenance and troubleshooting
- \_\_\_\_\_ 2. Troubleshooting various heating systems
- \_\_\_\_\_ 3. Demonstrate maintaining on various systems
- \_\_\_\_\_ 4. Document and report on maintenance calls

**H. EMPLOYABILITY SKILLS (10 hrs)**

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