

AUTO TECH: HEATING AND AIR CONDITIONING (180 Hours)

Course No.: 79-90-75

COMPETENCY CHECKLIST

Student Name _____

Teacher Name _____ School Site _____

Start Date _____ Completion Date _____ Certificate Date _____

Teacher Signature _____ Student Signature _____

(Signature verifies completion of course competencies)

A. ORIENTATION AND SAFETY (8 hrs)

- _____ 1. Scope and purpose of the course
- _____ 2. Describe classroom policies and procedures
- _____ 3. Class/work first aid/emergency procedures
- _____ 4. Industry jobs w/impact on auto technician
- _____ 5. Cal/OSHA workplace requirements
- _____ 6. EPA legislation on transportation industry
- _____ 7. California ARB legislation and industry
- _____ 8. BAR standards for safety and environment
- _____ 9. Use of MSDS as is applies to auto industry
- _____ 10. Safety items required by regulations
- _____ 11. Role of NATEF in auto technician training
- _____ 12. NATEF standards: protective clothing/gloves
- _____ 13. NATEF standards: protective respiratory gear
- _____ 14. NATEF standards: use of protective eye gear
- _____ 15. NATEF standards: proper ventilation in shop
- _____ 16. Proper handling of chemicals/materials
- _____ 17. Pass safety exam with 100% accuracy

B. RESOURCE MANAGEMENT (2 hrs)

- _____ 1. Define listed terms related to topic
- _____ 2. Management of resources in auto repair
- _____ 3. Examples of effective resource management
- _____ 4. Benefits of effective resource management
- _____ 5. Economic/environmental benefits/liabilities

C. TRADE MATHEMATICS (10 hrs)

- _____ 1. Practical applications of math in auto repair
- _____ 2. Demo solving whole number problems
- _____ 3. Demo solving fraction problems
- _____ 4. Demo solving decimal problems
- _____ 5. Changing fraction to decimals
- _____ 6. Changing decimals to fractions
- _____ 7. English system of measuring length
- _____ 8. English system of measuring weight

- _____ 9. English system-measuring volume/capacity
- _____ 10. Relationships in English linear units
- _____ 11. Relationships in English units of volume
- _____ 12. Solving English system measuring problems
- _____ 13. Demo measuring w/English system tools
- _____ 14. Metric system of measuring length
- _____ 15. Metric system of measuring weight
- _____ 16. Metric system of measuring volume/capacity
- _____ 17. Relationships in metric linear units
- _____ 18. Relationships in metric units of weight
- _____ 19. Solving metric system measuring problems
- _____ 20. Demo measuring w/metric tools of trade
- _____ 21. Demo solving geometric problems
- _____ 22. Demo solving algebraic problems
- _____ 23. Demo problem-solving using percentages
- _____ 24. Demo reading and interpreting graphs
- _____ 25. Demo techniques for using a calculator

D. TOOLS AND EQUIPMENT (10 hrs)

- _____ 1. Identify/demo general shop hand tools
- _____ 2. Identify/demo general shop equipment
- _____ 3. Identify/demo specialty tools and equipment

E. SERVICE MANUALS AND COMPUTER-BASED INFORMATION SYSTEMS (2 hrs)

- _____ 1. Different types of service manuals
- _____ 2. Types of info found in service manuals
- _____ 3. Demo use of service manuals
- _____ 4. Use of CD-ROM and web in finding auto info
- _____ 5. CD-ROM and web vs service manuals

F. A/C SYSTEM DIAGNOSIS AND REPAIR (30 hrs)

- _____ 1. Complete work order P1
- _____ 2. Identify concerns; determine action P1
- _____ 3. Research applicable vehicle/service info P1

- _____ 4. Locate/interpret vehicle ID P1
- _____ 5. Performance test; identify malfunctions P1
- _____ 6. ID noises in system; determine action P2
- _____ 7. Perform listed tasks P1
- _____ 8. Test A/C system; determine action P1
- _____ 9. Inspect refrigerant oil; determine action P2
- _____ 10. Capacity for system application P1
- _____ 11. Use scan tool for listed tasks P1

G. REFRIGERATION SYSTEM DIAGNOSIS AND REPAIR (30 hrs)

- _____ 1. Diagnose operation; determine action P2
- _____ 2. Inspect/replace parts; determine action P1
- _____ 3. Inspect/test/adjust components P2
- _____ 4. Remove/inspect/reinstall A/C compressor
- _____ 5. Identify hybrid vehicle circuits, precaution P3
- _____ 6. Determine filter need; perform action P3
- _____ 7. Remove/inspect parts; perform action P2
- _____ 8. Inspect airflow restriction; perform action P1
- _____ 9. Receiver/drier or accumulator/drier P1
- _____ 10. Remove/inspect/install expansion valve P1
- _____ 11. Evaporator housing water drain; action P2
- _____ 12. Remove/inspect/reinstall evaporator P3
- _____ 13. Remove/inspect/reinstall condenser P3

H. HEATING, VENTILATION, AND ENGINE COOLING SYSTEMS DIAGNOSIS AND REPAIR (30hrs)

- _____ 1. Diagnose system; determine action P2
- _____ 2. Pressure test; coolant condition, inspect/test
- _____ 3. Inspect system hose/belt; perform action P1
- _____ 4. Inspect/test/replace thermostat & parts P1
- _____ 5. Determine coolant condition and type P1
- _____ 6. Flush system; refill/drain/recover coolant P1
- _____ 7. Inspect and test fan parts; perform action P1
- _____ 8. Inspect/test other part; determine action P1
- _____ 9. Inspect and test valve(s); perform action P2
- _____ 10. Remove, inspect, & reinstall heater core P3

I. OPERATING SYSTEMS AND RELATED CONTROLS DIAGNOSIS AND REPAIR (30 hrs)

- _____ 1. Diagnose malfunctions; determine action P2
- _____ 2. Inspect and test; perform action P1
- _____ 3. Test and diagnose; determine action P1
- _____ 4. Other malfunctions; determine action P2
- _____ 5. More inspect/test; determine action P3
- _____ 6. Inspect/test items; perform action P3
- _____ 7. Ducts/components; perform action P2
- _____ 8. Identify source of A/C system odors P2
- _____ 9. Check operations; determine action P2

J. REFRIGERANT RECOVERY, RECYCLING, AND HANDLING (15 hrs)

- _____ 1. Correct use/maintenance of equipment P1
- _____ 2. Identify and recover A/C system refrigerant P1
- _____ 3. Recycle, label and store refrigerant P1
- _____ 4. Evacuate and charge A/C system P1

K. EMPLOYABILITY SKILLS (10 hrs)

- _____ 1. Employer requirements for employees
- _____ 2. Identify potential employers
- _____ 3. Design sample résumés
- _____ 4. Filling out a job application legibly/accurately
- _____ 5. Complete sample job application forms
- _____ 6. Describe importance of enthusiasm on job
- _____ 7. Appropriate appearance on a job
- _____ 8. Continuous upgrading of job skills
- _____ 9. Customer service to build business

L. ENTREPRENEURIAL SKILLS (3 hrs)

- _____ 1. Define entrepreneurship.
- _____ 2. Characteristics of successful entrepreneurs
- _____ 3. Contributions of entrepreneurs to industry
- _____ 4. Purpose and components of business plan
- _____ 5. Examine personal goals prior to start up
- _____ 6. Sources of monetary investment in business
- _____ 7. Licensing requirements in auto repair
- _____ 8. Scenario w/student as business owner
- _____ 9. Sustainable vs standard business practices