

AUTO TECH: BRAKES (180 Hours)

Course No.: 79-90-53

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 (5 hrs)

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

B. RESOURCE MANAGEMENT (2hrs)

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

C. TRADE MATHEMATICS (8 hrs)

- _____ 1. Identify applications of math in auto repair
- _____ 2. Demo problem-solving w/whole numbers
- _____ 3. Demo problem-solving w/fractions
- _____ 4. Demo problem-solving w/decimals
- _____ 5. Changing fractions to decimals
- _____ 6. Changing decimals to fractions
- _____ 7. Describe English system of measuring length
- _____ 8. Describe English system of measuring weight
- _____ 9. English system measuring volume/capacity
- _____ 10. English system linear units of measurement

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

D. TOOLS AND EQUIPMENT (15 hrs)

- _____ 1. Identify/demo general shop hand tools
- _____ 2. Identify/demo general shop equipment
- _____ 3. Specialty tools/equipment for brakes

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

- _____ 1. Identify different types of service manuals
- _____ 2. Info found in service manuals
- _____ 3. Describe/demo use of service manuals
- _____ 4. Use of CD-ROM & web in finding information
- _____ 5. Using CD/web over service manuals

F. GENERAL BRAKE SYSTEMS DIAGNOSIS (15 hrs)

- _____ 1. Complete work order w/ listed info P1
- _____ 2. Identify/interpret brake system concern P1
- _____ 3. Research applicable vehicle/service info P1
- _____ 4. Locate vehicle identification numbers P1

G. HYDRAULIC SYSTEM DIAGNOSIS AND REPAIR (25 hrs)

- _____ 1. Define Pascal's Law
- _____ 2. Pressure concerns in brake system P1
- _____ 3. Measure listed items; determine action P1
- _____ 4. Check master cylinder; determine action P1
- _____ 5. Remove, bleed, & reinstall master cylinder P1
- _____ 6. Diagnose problems w/system malfunctions P2
- _____ 7. Inspect components; determine action P1
- _____ 8. Replace components/fittings P2
- _____ 9. Fabricate brake lines using proper material P2
- _____ 10. Select, handle, store, & fill brake fluids P1
- _____ 11. Inspect, test, and/or replace system parts P3
- _____ 12. Brake warning light system P3
- _____ 13. Test brake fluid for contamination P1
- _____ 14. Bleed and/or flush brake system P1

H. DRUM BRAKE DIAGNOSIS AND REPAIR (15 hrs)

- _____ 1. Diagnose problems; determine action P1
- _____ 2. Remove/clean/inspect/measure drums P1
- _____ 3. Refinish brake drum; measure diameter P1
- _____ 4. Remove brake hardware/reassemble P1
- _____ 5. Inspect and install wheel cylinders P2
- _____ 6. Brake shoes/parking brake/brake drums P2
- _____ 7. Install wheel/make final adjustments P1

I. DISC BRAKE DIAGNOSIS AND REPAIR (25 hrs)

- _____ 1. Diagnose problems; determine action P1
- _____ 2. Remove parts/inspect; determine action P1
- _____ 3. Inspect wear/damage; determine action P1
- _____ 4. Pads and hardware; determine action P1
- _____ 5. Caliper assembly; inspect and replace P3
- _____ 6. Reassemble, lubricate, and reinstall P1
- _____ 7. Clean/inspect/measure rotor; action P1
- _____ 8. Remove and reinstall rotor P1
- _____ 9. Refinish rotor on vehicle; measure P1
- _____ 10. Refinish rotor off vehicle; measure P1
- _____ 11. Integrated parking brake system P3
- _____ 12. Install/make final check and adjustments P1
- _____ 13. Check wear indicator system operation P2

J. POWER ASSIST UNITS DIAGNOSIS AND REPAIR

(15 hrs)

- _____ 1. Check pedal travel; check operation P2
- _____ 2. Check vacuum supply to booster P1
- _____ 3. Inspect unit for leaks; determine action P1
- _____ 4. Check system; determine action P3
- _____ 5. Measure/adjust pushrod length P3

K. MISCELLANEOUS (WHEEL BEARINGS, PARKING BRAKES, ELECTRICAL, ETC) DIAGNOSIS AND REPAIR (15 hrs)

- _____ 1. Noises/concerns; determine action P1
- _____ 2. Perform listed wheel bearing tasks P1

- _____ 3. Perform listed parking brake tasks P2
- _____ 4. System operation; determine action P1
- _____ 5. Stop light system; determine action P1
- _____ 6. Replace wheel bearing and race P2
- _____ 7. Inspect and replace wheel studs P1
- _____ 8. Sealed wheel bearing assembly P1

L. ELECTRONIC BRAKE, TRACTION AND STABILITY CONTROL SYSTEMS DIAGNOSIS AND REPAIR

(25 hrs)

- _____ 1. Identify/inspect system; determine action P1
- _____ 2. Diagnose problems; determine action P2
- _____ 3. Use test equipment; determine action P1
- _____ 4. Depressurize high-pressure components P3
- _____ 5. Bleed system circuits P1
- _____ 6. Remove/install components P3
- _____ 7. Test/diagnose/service system sensors P1
- _____ 8. Concerns from modifications P3
- _____ 9. Identify system components P3
- _____ 10. Operation of regenerative braking system P3

M. EMPLOYABILITY SKILLS (8 hrs)

- _____ 1. Employer requirements for employee
- _____ 2. Continuous upgrading of job skills
- _____ 3. Identify professional industry organizations
- _____ 4. Adapting to varied roles/responsibilities
- _____ 5. Importance of personal integrity and ethics
- _____ 6. Customer service as way to build business
- _____ 7. Identify conflict resolution strategies
- _____ 8. Respect for individual/cultural differences
- _____ 9. Identify potential employers
- _____ 10. Role of social networking in job search
- _____ 11. Design sample resumes and cover letters
- _____ 12. Filling out application legibly/accurately
- _____ 13. Common mistakes made on job applications
- _____ 14. Complete sample job application forms
- _____ 15. Importance of enthusiasm
- _____ 16. Importance of appropriate appearance
- _____ 17. Create career plan
- _____ 18. Info/materials for successful interview
- _____ 19. Demo appropriate interviewing techniques

N. ENTREPRENEURIAL SKILLS (5 hrs)

- _____ 1. Define entrepreneurship
- _____ 2. Characteristics of successful entrepreneurs
- _____ 3. Contributions of entrepreneurs to industry
- _____ 4. Purpose/components of a 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