

AUTO TECH: MANUAL DRIVE TRAIN AND AXLES (180 Hours)

Course No.: 79-90-77

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 (4 hrs)

- _____ 1. Describe scope and purpose of course
- _____ 2. Describe classroom policies and procedures
- _____ 3. Class/work first aid/emergency procedures
- _____ 4. Occupations w/impact on auto technician
- _____ 5. Cal/OSHA requirements for auto technicians
- _____ 6. Impact of EPA legislation on industry sector
- _____ 7. California ARB legislation impact on industry
- _____ 8. BAR standards for safety and environment
- _____ 9. Demo MSDS as it applies to auto industry
- _____ 10. Identify 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: protective eye gear
- _____ 15. NATEF standards: proper ventilation in shop
- _____ 16. NATEF standards: shop 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 shop
- _____ 3. Examples of effective resource management
- _____ 4. Benefits of effective resource management
- _____ 5. Economic/environmental benefits/liabilities

C. TRADE MATHEMATICS (5 hrs)

- _____ 1. Practical 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. English system of measuring length
- _____ 8. English system of measuring weight

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

D. TOOLS AND EQUIPMENT (10 hrs)

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

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

- _____ 1. Describe different types of service manuals
- _____ 2. Information found in service manuals
- _____ 3. Demo use of service manuals
- _____ 4. CD-ROM and web in finding auto tech info
- _____ 5. CD-ROM/web vs service manuals

F. GENERAL DRIVE TRAIN DIAGNOSIS (20 hrs)

- _____ 1. Complete work order P1
- _____ 2. Drive train concern; determine action P1
- _____ 3. Research applicable vehicle/service info P1

- _____ 4. Locate vehicle/component ID numbers P1
- _____ 5. Fluid concerns; determine action P1
- _____ 6. Drain and fill P1

G. CLUTCH DIAGNOSIS AND REPAIR (25 hrs)

- _____ 1. Diagnose issues; determine action P1
- _____ 2. Inspect components; perform action P1
- _____ 3. Hydraulic components; determine action P1
- _____ 4. Inspect and replace items P1
- _____ 5. Bleed clutch hydraulic system P1
- _____ 6. Inspect parts; determine action P1
- _____ 7. Inspect components; determine action P1
- _____ 8. Measure; determine action P2

H. TRANSMISSION/TRANSAXLE DIAGNOSIS AND REPAIR (30 hrs)

- _____ 1. Diagnose problems; determine action P2
- _____ 2. Perform listed tests; perform action P1
- _____ 3. Inspect hoses/belts; perform action P1
- _____ 4. Thermostat and gasket/seal P1
- _____ 5. Coolant condition; drain/recover coolant P1
- _____ 6. Flush system; refill system; bleed system P2
- _____ 7. Inspect/test listed items; perform action P1
- _____ 8. Electric components; determine action P1
- _____ 9. Heater control valve(s); perform action P2
- _____ 10. Remove/inspect/reinstall heater core P3

I. DRIVE SHAFT AND HALF SHAFT, UNIVERSAL AND CONSTANT VELOCITY (CV) JOINT DIAGNOSIS AND REPAIR (20 hrs)

- _____ 1. Diagnose concerns; determine action P1
- _____ 2. Diagnose noise/vibration; perform action P2
- _____ 3. Remove/replace front wheel bearing P1
- _____ 4. Inspect/service/replace components P1
- _____ 5. Inspect/service/replace listed items P3
- _____ 6. Check/measure/adjust P2

J. DRIVE AXLE DIAGNOSIS AND REPAIR: RING AND PINION GEARS & DIFFERENTIAL CASE ASSEMBLY (15 hrs)

- _____ 1. Diagnose concerns; determine action P2
- _____ 2. Fluid leakage concerns; determine action P1
- _____ 3. Inspect and replace; measure P2
- _____ 4. Inspect; determine action P2
- _____ 5. Remove, inspect, and reinstall P2
- _____ 6. Measure and adjust drive pinion depth P2
- _____ 7. Measure and adjust bearing preload P2
- _____ 8. Side bearing preload P2
- _____ 9. Ring & pinion patterns; perform action P1
- _____ 10. Perform listed actions P2
- _____ 11. Reassemble/reinstall assembly P2

K. DRIVE AXLE DIAGNOSIS AND REPAIR: LIMITED SLIP DIFFERENTIAL (10 hrs)

- _____ 1. Diagnose concerns; determine action P3
- _____ 2. Clean and inspect; refill correctly P2
- _____ 3. Inspect and reinstall components P3
- _____ 4. Measure torque; determine action P3

L. DRIVE AXLE DIAGNOSIS AND REPAIR: DRIVE AXLE SHAFT (10 hrs)

- _____ 1. Diagnose concerns; determine action P2
- _____ 2. Inspect/replace listed components P1
- _____ 3. Remove/replace drive axle shafts P1
- _____ 4. Inspect/replace listed components P2
- _____ 5. Measure items; determine action P2

M. FOUR-WHEEL DRIVE/ALL-WHEEL DRIVE COMPONENT DIAGNOSIS AND REPAIR (20 hrs)

- _____ 1. Steering concerns; determine action P3
- _____ 2. Inspect, adjust, and repair components P3
- _____ 3. Remove and reinstall transfer case P3
- _____ 4. Disassemble, service, and reassemble P3
- _____ 5. Wheel bearings/hubs; perform action P3
- _____ 6. Check seals and vents; check lube level P3
- _____ 7. Four-wheel drive system P3
- _____ 8. Tire circumference &/or final drive ratios P3

N. EMPLOYABILITY SKILLS (5 hrs)

- _____ 1. Employer requirements for employees
- _____ 2. Identify potential employers
- _____ 3. Design sample résumés
- _____ 4. Legible job application w/accurate info
- _____ 5. Complete sample job application forms
- _____ 6. Importance of enthusiasm on a job
- _____ 7. Appropriate appearance on a job
- _____ 8. Continuous upgrading of job skills
- _____ 9. Customer service to build business

O. ENTREPRENEURIAL SKILLS (2 hrs)

- _____ 1. Define entrepreneurship
- _____ 2. Characteristics of successful entrepreneurs
- _____ 3. Contributions of entrepreneurs to auto repair
- _____ 4. Purpose and 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
- _____ 9. Sustainable vs standard business practices