

AUTO BODY REPAIR/3: MECHANICAL AND ELECTRICAL (360 Hours)

Course No.: 79-80-53

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. INTRODUCTION AND SAFETY (5 hrs)

- _____ 1. Review scope and purpose of course
- _____ 2. Review classroom policies and procedures
- _____ 3. First aid and emergency procedures
- _____ 4. Occupations w/impact on auto body techs
- _____ 5. Importance of "safety first" attitude
- _____ 6. OSHA workplace requirements
- _____ 7. EPA impact on industry
- _____ 8. Impact of ARB on industry practices
- _____ 9. Use of MSDS as it applies to industry
- _____ 10. Safety items required by regulations
- _____ 11. Role of NATEF in auto tech training
- _____ 12. Proper use of protective clothing/gloves
- _____ 13. Proper use of respiratory gear in auto shop
- _____ 14. Proper use of protective eye gear
- _____ 15. NATEF standards for ventilation in auto shop
- _____ 16. Handling/storage/disposal of chemicals
- _____ 17. Pass safety test with 100% accuracy

B. TOOLS AND EQUIPMENT (20 hrs)

- _____ 1. Review common hand tools used in trade
- _____ 2. Use/storage of listed shop equipment

C. TRADE MATHEMATICS REVIEW (5 hrs)

- _____ 1. Practical applications of math to industry
- _____ 2. Whole number problems
- _____ 3. Various fraction problems
- _____ 4. Various decimal problems
- _____ 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 to measure volume/capacity
- _____ 10. English system linear units
- _____ 11. English system of units of volume/capacity
- _____ 12. English system measuring problems

- _____ 13. Measuring objects w/ tools common to trade
- _____ 14. Metric system of measuring length
- _____ 15. Metric system of measuring weight
- _____ 16. Metric system to measure volume/capacity
- _____ 17. Relationships between metric units of length
- _____ 18. Relationships between metric units of weight
- _____ 19. Problem solving with metric system
- _____ 20. Measuring techniques w/metric tools
- _____ 21. Solving geometric problems
- _____ 22. Solving algebraic problems
- _____ 23. Solving percentage problems
- _____ 24. Demo reading/interpreting graphs
- _____ 25. Demo techniques for using a calculator

D. SUSPENSION AND STEERING (5 hrs)

- _____ 1. Identify one-time use fasteners
- _____ 2. Power steering pup, pulleys, fittings, & mount
- _____ 3. Remove/replace power steering gear
- _____ 4. Power rack & pinion steering gear/component
- _____ 5. Inspect/adjust steering linkage geometry
- _____ 6. Inspect/replace the pitman arm
- _____ 7. Inspect/replace the relay rod
- _____ 8. Inspect/remove/replace idler arm/mountings
- _____ 9. Tie rod sleeves, clamps, and tie rod ends
- _____ 10. Steering linkage damper
- _____ 11. Upper and lower control arms
- _____ 12. Control arm bushings/shafts/rebound bumper
- _____ 13. Upper and lower ball joints
- _____ 14. Steering knuckle/spindle/hub assemblies
- _____ 15. Front suspension system coil springs/insulators
- _____ 16. Suspension system torsion bars
- _____ 17. Stabilizer bar bushings, brackets & links
- _____ 18. MacPherson strut cartridge or assembly
- _____ 19. Inspect/remove/replace rear suspension parts
- _____ 20. Inspect/remove/replace suspension parts
- _____ 21. Inspect axle assembly for damage

- ___ 22. Inspect/remove/replace shock absorbers
- ___ 23. Active suspension systems/associated lines
- ___ 24. Measure auto ride height/determine repair
- ___ 25. Remove/replace/align front/rear frames
- ___ 26. Diagnose steering column issues
- ___ 27. Inspect/remove/replace steering parts
- ___ 28. Diagnose manual/power steering gear issues
- ___ 29. Power rack & pinion steering gear problems
- ___ 30. Non-MacPherson front/rear system noises
- ___ 31. MacPherson strut suspension system noises
- ___ 32. Diagnose listed steering problems
- ___ 33. Adjust front/rear wheel cambers
- ___ 34. Check front/rear wheel cambers
- ___ 35. Adjust caster on systems with caster
- ___ 36. Adjustable/non-adjustable systems
- ___ 37. Check/adjust wheel toe/centering steering
- ___ 38. Identify toe-out-on-turns problems/repairs
- ___ 39. Identify steering axis inclination & repairs
- ___ 40. Identify thrust angles related problems
- ___ 41. Check for front wheel setback and repairs
- ___ 42. Diagnose tire wear patterns and repairs
- ___ 43. Inspect tires/identify direction of rotation
- ___ 44. Diagnose wheel/tire problems & repairs
- ___ 45. Measure components and determine repairs
- ___ 46. Diagnose tire pull problems
- ___ 47. Reinstall wheels and torque

E. ELECTRICAL (70 hrs)

- ___ 1. Check voltages with a DMM
- ___ 2. Check for voltage drop and/or current flow
- ___ 3. Repair circuits, wiring and connectors
- ___ 4. Fusible links, circuit breakers, & fuses
- ___ 5. Perform battery state-of charge test
- ___ 6. Inspect, clean, replace battery
- ___ 7. Dispose of batteries/acid according to law
- ___ 8. Perform slow/fast battery charge
- ___ 9. Identify programmable components
- ___ 10. Battery cables, connectors, and clamps
- ___ 11. Alternator, drive belts, pulleys, & fans
- ___ 12. Check operation of exterior lighting
- ___ 13. Aim headlamp assemblies/fog lamps
- ___ 14. Components of exterior/interior light circuits
- ___ 15. Remove/replace horn
- ___ 16. Operation of wiper/washer systems
- ___ 17. Power side and tailgate windows
- ___ 18. Power seat, motors, linkages, & cables
- ___ 19. Electric door and hatch/trunk lock
- ___ 20. Keyless lock/unlock devices/alarms
- ___ 21. Electrical sunroof and convertible top
- ___ 22. Heated mirrors, windshields, & back lights
- ___ 23. Components of power antenna circuits

- ___ 24. Proper self-grounding for handling parts
- ___ 25. Check for module communication errors
- ___ 26. Use wiring diagrams/flow charts in diagnosis
- ___ 27. Demo safe disarming for hi-voltage/hybrids

F. BRAKES (50 hrs)

- ___ 1. Inspect brake lines and fittings/replace
- ___ 2. Inspect flexible brake hoses/replace
- ___ 3. Appropriate brake fluids/proper disposal
- ___ 4. Bleed hydraulic brake system
- ___ 5. Pressure test brake hydraulic system
- ___ 6. Adjust shoes/remove & reinstall drums
- ___ 7. Reinstall wheel and torque lug nuts
- ___ 8. Remove/reinstall caliper assembly
- ___ 9. Clean/inspect calipers for wear/damage
- ___ 10. Check parking brake system operation
- ___ 11. ABS wheel speed sensor components
- ___ 12. Depressurize ABS hydraulic system
- ___ 13. Proper procedure for handling brake dust
- ___ 14. Check for bent or damaged components

G. HEATING AND AIR CONDITIONING (25 hrs)

- ___ 1. EPA concerns relating to refrigerants/coolants
- ___ 2. Certified recovery/recharging equipment
- ___ 3. Locate/identify A/C system service ports
- ___ 4. Recover refrigerant from A/C system
- ___ 5. Recycle refrigerant to EPA regulations
- ___ 6. Identify, label, store refrigerant
- ___ 7. Test for non-condensable gases
- ___ 8. Evacuate A/C system; check for leaks
- ___ 9. Recharge w/refrigerant; perform leak test
- ___ 10. Identify oil type and maintain in A/C system
- ___ 11. A/C compressor drive belt; pulley alignment
- ___ 12. Remove/replace compressor; inspect mount
- ___ 13. Components of auto A/C system
- ___ 14. Condenser and mounts
- ___ 15. Receiver/drier or accumulator/drier
- ___ 16. Inspect/repair A/C component wiring

H. COOLING SYSTEMS (25 hrs)

- ___ 1. Engine cooling/heater systems hoses and belts
- ___ 2. Radiator/pressure cap/coolant recovery system
- ___ 3. Recover, refill, bleed system w/proper coolant
- ___ 4. Fan; fan pulley; fan clutch; fan shroud
- ___ 5. Auxiliary oil/fluid coolers; check oil levels
- ___ 6. Electric fan sensors; check operation

I. DRIVE TRAIN (40 hrs)

- ___ 1. Remove/replace/adjust shift or clutch linkage
- ___ 2. Cables/linkages for throttle valve/accelerator
- ___ 3. Electronic sensors, wires, connectors
- ___ 4. Remove/replace powertrain assembly/mounts

- _____ 5. Remove/replace drive axle assembly
- _____ 6. Half shafts and axle CV joints
- _____ 7. Remove/replace drive shafts/universal joints

J. FUEL, INTAKE, AND EXHAUST SYSTEMS (40 hrs)

- _____ 1. Remove/replace parts of exhaust system
- _____ 2. Remove/replace parts of fuel intake system
- _____ 3. Engine components of air intake systems
- _____ 4. Remove/replace EVAP control system parts

K. RESTRAINT SYSTEMS (20 hrs)

- _____ 1. Recommended procedures for systems/parts
- _____ 2. Remove/replace seatbelt & shoulder harness
- _____ 3. Inspect restraint system mounting areas
- _____ 4. Verify proper operation of seatbelt
- _____ 5. Deactivate/reactivate SRS
- _____ 6. SRS sensors and wiring/sensor orientation
- _____ 7. Verify the SRS is operational
- _____ 8. Deployed/non-deployed airbags
- _____ 9. Use DTC to diagnose/repair SRS

L. RESOURCE MANAGEMENT REVIEW (5 hrs)

- _____ 1. Review listed terms related to topic
- _____ 2. Resource management in repair industry
- _____ 3. Examples of effective management
- _____ 4. Benefits of effective resource management
- _____ 5. Economic/environmental benefits/liabilities

M. EMPLOYABILITY SKILLS REVIEW (5 hrs)

- _____ 1. Employer requirements in an employee
- _____ 2. Review potential employers thru job search
- _____ 3. Update sample résumés
- _____ 4. Accurate, legible application
- _____ 5. Complete sample job applications correctly
- _____ 6. Enthusiasm on the job
- _____ 7. Appropriate appearance on a job
- _____ 8. Continuous upgrading of job skills
- _____ 9. Customer service to build business

N. ENTREPRENEURIAL SKILLS (5 hrs)

- _____ 1. Review definition of entrepreneurship
- _____ 2. Characteristics of successful entrepreneurs
- _____ 3. Contribution of entrepreneurs to industry
- _____ 4. Review purpose/component of business plan
- _____ 5. Review personal goals before start-up
- _____ 6. Review sources of monetary investment
- _____ 7. Review business licensing requirements
- _____ 8. Scenario w/student as business owner