

AUTO TECH: EXHAUST EMISSION-20 HR SMOG LICENSING (UPGRADE) (20 Hours)

Course No.: 79-60-70

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 hr)

- _____ 1. Class expectations
- _____ 2. Classroom policies and procedures
- _____ 3. Benefits of updating certification
- _____ 4. Shop procedures/dynamometer safety
- _____ 5. Shop safety rules and regulations
- _____ 6. Pass safety exam with 100% accuracy

B. **INTRODUCTION TO ASM TESTING AND DIAGNOSIS** (2 hrs)

- _____ 1. Differences between listed tests
- _____ 2. Bar 97 versus ASM Diagnostic Smog test
- _____ 3. Procedures to pre-condition vehicle
- _____ 4. Describe an ASM failure diagnosis
- _____ 5. Identifying root cause of problem

C. **OSCILLOSCOPE TESTING AND WAVEFORM PATTERN DIAGNOSIS** (5 hrs)

- _____ 1. Demo use of oscilloscope as listed
- _____ 2. Demo lab scope testing of 5 sensors
- _____ 3. Different scales used on lab scope
- _____ 4. Capture of snapshot feature of lab scope
- _____ 5. How to analyze a waveform pattern
- _____ 6. Examples of failed sensors & how to analyze
- _____ 7. How sensor failures show up on lab scope
- _____ 8. Demo failure of sensors in emissions test

D. **LAB SCOPE OPERATION AND ANALYSIS OF FUEL CONTROL SENSORS** (5 hrs)

- _____ 1. 5 gases & emissions system that affect them
- _____ 2. Computerized systems diagnostic chart flow
- _____ 3. Describe HC causes and diagnosis
- _____ 4. Describe CO causes and diagnosis
- _____ 5. Describe CO₂ causes and diagnosis
- _____ 6. Describe O₂ causes and diagnosis
- _____ 7. Describe NO_x formation causes and diagnosis
- _____ 8. How system failures show up on a 5-gas

- _____ 9. Demo failure of emissions system: HC & CO
- _____ 10. NO_x failures /systems causing high readings

E. **DIAGNOSIS WITH TODAY'S TOOLS: THE SCAN TOOL, DVOM, AND LAB SCOPE** (3 hrs)

- _____ 1. Using scan tool for codes/data analysis
- _____ 2. Monitoring signals w/scan tool & lab scope
- _____ 3. Demo use of DVOM in finding sensor faults
- _____ 4. Use of scan tool to monitor computer
- _____ 5. Effect of sensor failures on ASM testing

F. **CATALYTIC CONVERTER INSPECTION AND TESTING** (3 hrs)

- _____ 1. Explain catalytic converter system operation
- _____ 2. Review listed items related to topic
- _____ 3. Explain troubleshooting differences
- _____ 4. Demo temperature test of catalytic converter
- _____ 5. Demo propane enrichment test
- _____ 6. Demo snap acceleration oxygen storage test
- _____ 7. Demo analysis w/front and rear oxygen sensor

G. **FINAL EXAMINATION** (1.5 hrs)

- _____ 1. Identify BAR's diagnostic flowchart worksheet
- _____ 2. Demo documentation of diagnostic info
- _____ 3. Demo evaluation techniques for collected data