

Appendix I

TRANSPORTATION, DISTRIBUTION AND LOGISTICS YOUTH APPRENTICESHIP

COURSE OUTCOME SUMMARY: OVERVIEW AND TABLE OF CONTENTS

Transportation, Distribution & Logistics Youth Apprenticeship

Course Outcome Summary

Course Information

Organization	Cooperative Educational Service Agency 6 (CESA 6)
Developers	Robin Kroyer-Kubicek
Development Date	2013

Description

This curriculum describes the performance-based worksite Competencies, Performance Standards, and Learning Objectives for the Wisconsin Youth Apprenticeship (YA) Program in Transportation, Distribution and Logistics (TDL). The Wisconsin TDL YA Program is designed to provide students with a working understanding of core industry skills and occupationally specific technical skills that serve as the standard for occupations in the TDL industry. This program provides the framework for educators and industry to work together to produce work-ready, entry-level employees that will compete favorably in a global market, as well as, provide for post-secondary educational advancement while integrating work-based learning in the school and worksite.

The Transportation, Distribution and Logistics YA program competencies are aligned with the National Association of State Directors of Career Technical Education Consortium (NASDCTEC) standards (<http://www.careerclusters.org/>) and the National Automotive Technicians Education Foundation (NATEF) skill standards. TDL YA students are required to perform all of the Core and Safety skill. **Level One (one year)** YA students are to choose additional competencies as indicated below in a specific TDL Pathway. **Level Two (two year)** YA students are to complete competencies in the specific TDL Pathway as indicated below.

TDL Units:

1. Mobile Equipment Maintenance Pathway

Auto Collision- Unit competencies aligned with NATEF 2005 Collision Repair and Refinish skills. *2 Units per year.*

- Collision Repair Basics Unit- REQUIRED FIRST
- Non-Structural Analysis and Repair Unit
- Painting and Refinishing Unit
- Damage Analysis and Electrical Repair Unit

Auto Technician- Unit competencies aligned with NATEF 2012 Maintenance and Light Repair Automotive Standards skills. *1 Unit per year.*

- General Auto Service Unit- REQUIRED FIRST
- Auto/Light Truck Systems Unit

Diesel Technician- Unit competencies aligned with NATEF 2007 Medium/Heavy Truck Standards skills. *1 or 2 year program as indicated on Skill Standards Checklist.*

- Diesel Technician Unit

2. Logistics/Supply Chain Management Pathway- *2 Units per year.*

- Planning and Purchasing Unit
- Inventory Management and Production Unit

Storage and Warehousing Unit
Distribution and Transportation Operations Unit

EACH competency (work site skill) is listed with its corresponding Performance Standards and Learning Objectives in the Appendices. The Performance Standards describe the behaviors, **as applicable**, that employers should look for in order to evaluate the competency. The Learning Objectives describe the classroom learning content for the required related technical instruction.

Curriculum Sources

APICS, Association for Operations Management, Certified Supply Chain Professional (CSCP) Content Outline, accessed October 2008.

ASE, National Institute for Automotive Service Excellence, Auto Collision Repair and Refinish Study Guide, 2008, Automobile Tests Study Guide, 2008.

AYES, Automotive Youth Educational Systems, AYES Curriculum version 2.0, January 2007.

Bennett, S. (2006). Workbook to Accompany Heavy Duty Truck Systems (4th ed.), Thomason/Delmar Learning: Clifton Park, NY.

CDX Automotive. (2013). Diesel: Tasksheet Manual for NATEF Proficiency, Jones & Bartlett Learning: Burlington, MA.

DACUM (Developing a Curriculum) Advisory Board Meeting for Diesel Technician 11/20/2012. Facilitated by Robin Kroyer-Kubicek, conducted at Fox Valley Technical College.

Duffy, J.E. (2004). Modern Automotive Technology, Instructor's Wraparound Edition, Goodheart-Wilcox Company: Tinley Park, IL.

Duffy, J.E. (2001). I-Car Professional Automotive Collision Repair, (2nd ed.), Delmar Thomson Learning.

Eastern Iowa Community College, "Logistics: Pathways to Hot Careers," 2007, career job tasks.

I-Car, online core training program content outlines for Mechanical Systems Analysis, Frontal Impact Analysis, Fundamentals of Collision Repair, Vehicle Identification, Estimating & Terminology, Hazardous Materials & Safety, Corrosion Protection, Restraints, Glass, & Impact Analysis, and Structures Damage Analysis, accessed from http://www.i-car.com/index_us.shtml January 2009.

Illinois Occupational Skill Standards for Automotive Technician Cluster, Illinois Occupational Skill Standards and Credentialing Council, accessed July 2008 online at <http://www.ioes.org/ctecurriculum-skillstandards.cfm>.

Institute for Supply Management, Certified Professional Supply Management certification content outline, October 2008.

NASBITE Certified Global Business Professional certification tasks and knowledge accessed from http://c.ymcdn.com/sites/www.nasbite.org/resource/resmgr/Docs/Nasbite_Practice_Delineation.pdf October 2008.

NATEF Collision Repair and Refinish standards, 2006; Auto Technician standards, 2008; General Service standards, 2005; Medium/Heavy Truck standards, 2007; Auto Maintenance & Light Repair standards, 2012.

National Association of State Directors of Career Technical Education Consortium (NASDCTEc) Clusters, Transportation, Distribution & Logistics Career Cluster Knowledge and Skills charts for Transportation Operations, Logistics Planning & Management Services, Warehousing & Distribution Center Operations, and Facility & Mobile Equipment Maintenance; Manufacturing Career Cluster Knowledge and Skills charts for Logistics & Inventory Control <http://www.careerclusters.org/>, accessed July 2008 and July 2012.

Northeast Technical College, Associate Degree course outline for Supply Chain Management, 2008-2009.

Oklahoma Career Tech Skills Standards for Medium/Heavy Truck- Diesel Engine Repair (OD32151-2009), Preventative Maintenance Inspection (OD32152-2009), Electrical Systems Repair (OD32153- 2009).

Wikipedia, Supply Chain Management Processes, [Supply chain - Wikipedia, the free encyclopedia](http://en.wikipedia.org/wiki/Supply_chain), accessed October 2008.

Wisconsin Administrative Code, Department of Workforce Development, Chapter 270, Child Labor, and Wisconsin State Statutes Chapter 106, Apprenticeship, Employment and Equal Rights Program, June 2, 2007.

Wisconsin Department of Workforce Development, Bob Anderson, Labor Standards Bureau, Child Labor Laws, 2007.

Wisconsin Department of Workforce Development, Logistics YA DACUM, October 1996.

Wisconsin Department of Workforce Development, Auto Collision, Auto Technician, Logistics, and Diesel (2012) Youth Apprenticeship Advisory Committees, formed September 2008 and 2012 for the purpose of revising and updating the respective Youth Apprenticeship curriculums.

Wisconsin Department of Workforce Development, Auto Collision, Auto Technician, and Logistics Youth Apprenticeship curriculum dated May 1995, August 1998, and July 1997, respectively.

Wisconsin Technical College System, Auto Collision Repair DACUM, April 2008.

Wisconsin Technical College System, Diesel Technician/Technology Industry Validation meeting. Facilitated by Sandra Schmidt. Held February 21, 2012 at Fox Valley Technical College.

Worknet Occupation Task Lists for Automotive Body Repairers, Tire Repairers, Electronic Equipment Repairers, Automotive Master Mechanics, Shipping, Receiving, & Traffic Clerks, Transportation Managers, Storage & Distribution Managers, Logisticians, Procurement Clerks, Production, Planning & Expediting Clerks, Buyers, and Purchasing Agents, accessed August – October 2008; Mobile Heavy Equipment Mechanics, Bus & Truck Mechanics & Diesel Engine Specialists, accessed July 2012 from <http://worknet.wisconsin.gov/worknet/default.aspx>

This curriculum was developed through a Grant from the Wisconsin Department of Workforce Development to the University of Wisconsin-Oshkosh's Center for Career Development and Employability Training (CCDET).

In 2012, the Auto Technician and this curriculum was revised and the Diesel Technician Unit added through a grant from the Wisconsin Department of Workforce Development to the Cooperative Educational Service Agency 6 (CESA 6).

Transportation, Distribution & Logistics Youth Apprenticeship

Table of Contents

REQUIRED SKILLS

APPENDIX J:

Unit 1: Core Skills

1. Apply applicable academic knowledge
2. Apply applicable career knowledge
3. Communicate effectively
4. Act professionally
5. Cooperate with others in a team setting
6. Think critically
7. Exhibit legal and ethical responsibilities
8. Use technology

Unit 2: Safety

1. Follow personal safety requirements
2. Maintain a safe work environment
3. Demonstrate professional role in an emergency

APPENDIX K:

Unit 3: Mobile Equipment Maintenance Pathway-Auto Collision: Collision Repair Basics

1. Obtain and apply basic vehicle and collision repair knowledge
2. Obtain required tools, equipment and materials before work
3. Maintain work area
4. Operate tools and equipment safely
5. Clean and store tools after use
6. Dispose of parts, garbage, and recyclables properly
7. Locate & record vehicle information
8. Maintain service & repair records
9. Remove old decals, stripes, emblems & moldings
10. Apply decals, tapes, stripes, emblems & moldings
11. Remove exterior dirt, grease, wax, and coatings from surfaces
12. Clean interior, exterior, body openings and glass
13. Mask exterior/interior panels & parts adjacent to repair areas
14. Remove over-spray
15. Apply anti-corrosion primers
16. Apply anti-corrosion protection to surfaces
17. Apply corrosion protection to joints, seams & weld areas
18. Sand and buff polish with appropriate compounds

APPENDIX L:

Unit 4: Mobile Equipment Maintenance Pathway-Auto Collision: Non-Structural Analysis & Repair

1. Remove undamaged body panels and components
2. Remove mechanical and electrical components
3. Rough straighten damaged metal panels

4. Remove damaged sections of metal body panels
5. Remove door and all components
6. Check door fit & function
7. Remove & install door lock and handle components
8. Assist to diagnose and repair water leaks, dust leaks and wind noise
9. Remove, replace, and align hood, hood hinges, and hood latch/lock
10. Remove, replace, and align deck lid, lid hinges, and lid latch/lock
11. Remove, replace, and align bumpers, reinforcements, guards, absorbers, isolators, and mounting hardware
12. Check and adjust clearances of front fenders, headlight mounting panel, and other panels
13. Remove and reinstall interior door trim panels
14. Remove and reinstall headliners and other interior panels
15. Remove and install upholstery and related items
16. Remove & install door glass & lower channel from door glass
17. Remove & install window regulator
18. Align door glass
19. Remove & install vent & hinged window assembly & glass
20. Assist to repair plastic parts
21. Assist to reshape and shrink flexible exterior plastic parts
22. Clean metal to be welded
23. Assist to weld metal

APPENDIX M:

Unit 5: Mobile Equipment Maintenance Pathway-Auto Collision: Painting & Refinishing

1. Sand area to be painted/refinished
2. Strip finish or other protective coatings
3. Featheredge adjacent areas for blending
4. Prepare undercoating
5. Apply undercoating
6. Smooth undercoating
7. Prepare painting and drying areas
8. Prepare paint mixing area
9. Prepare air supply equipment
10. Clean spray guns
11. Test spray guns
12. Assist to determine type, color & formula of paint
13. Assist to mix and strain paint or primer
14. Assist to apply paint on test panel or let-down panel
15. Assist to check color match; tint as necessary

APPENDIX N:

Unit 6: Mobile Equipment Maintenance Pathway-Auto Collision: Damage Analysis & Electrical Repair

1. Prepare vehicle for inspection
2. Assist to determine structural damage
3. Assist to determine suspension, mechanical, and electrical damage
4. Assist to determine if refinishing is required

5. Assist to plan repair work
6. Inspect, clean, and replace battery
7. Perform battery state-of-charge test
8. Perform battery charge
9. Retrieve codes and settings and disconnect the battery if needed
10. Assist to diagnose electrical circuits, wiring, and connectors
11. Assist to inspect, test, and replace fusible links, circuit breakers, and fuses
12. Assist to check & repair exterior lighting & wires
13. Aim headlamp assemblies and fog/driving lamps
14. Check & replace horn
15. Check & replace wiper/washer system motors & pumps
16. Check & replace power window system switches & motors
17. Check operation of electrically heated mirrors, windshields, back lights, panels, etc.
18. Inspect, remove and replace components of power antenna circuits

APPENDIX O:

Unit 7: Mobile Equipment Maintenance Pathway-Auto Technician: Vehicle Basics & General Service

Invalid beginning Fall 2015

1. Obtain and apply basic vehicle and servicing knowledge
2. Operate tools and equipment safely
3. Maintain work area
4. Process work order
5. Acquire parts
6. Assist to diagnose vehicle problems
7. Check & adjust fluid levels
8. Inspect & replace air filter
9. Perform oil & filter change
10. Replace fuel filter
11. Replace cabin filter
12. Drain, recover, flush & refill cooling system
13. Lubricate suspension & steering systems
14. Rotate tires
15. Inspect, replace, adjust drive belts, tensioners, & pulleys
16. Inspect, replace, transmission fluid & filters

APPENDIX P:

Unit 8: Mobile Equipment Maintenance Pathway-Auto Technician: Brake Systems

Invalid beginning Fall 2015

1. Assist to diagnose common brake problems
2. Measure brake pedal height, travel, & free play as applicable
3. Check master cylinder for leaks & proper operation
4. Inspect brake lines, flexible hoses, & fittings
5. Bleed &/or flush brake system
6. Remove & inspect caliper assembly
7. Remove, inspect & replace brake pads & retaining hardware

8. Reassemble, lubricate, & reinstall calipers, pads, & related hardware
9. Clean, inspect, & measure rotor thickness, lateral runout, & thickness variation
10. Install wheel
11. Check parking brake cables & components
12. Check brake & indicator light system
13. Inspect, replace wheel studs
14. Service wheel bearings & race
15. Remove, inspect or replace sealed wheel bearing assembly

APPENDIX Q:

**Unit 9: Mobile Equipment Maintenance Pathway-Auto Technician:
Electrical/Electronics**

Invalid beginning Fall 2015

1. Assist to diagnose electrical/electronic integrity of series, parallel, and series-parallel circuits using principles of electricity (Ohm's Law)
2. Demonstrate proper use of a digital multimeter (DMM) during diagnosis of electrical circuit problems, including source voltage, voltage drop, current flow, and resistance
3. Locate shorts, grounds, opens, and resistance problems in electrical/electronic circuits
4. Inspect, test fusible links, circuit breakers, & fuses
5. Inspect, test switches, connectors, relays, solenoid devices, & wires of electrical/electronic circuits
6. Remove/replace terminal end from connector; replace connectors & terminal ends
7. Perform battery state-of-charge test
8. Perform battery load (capacity) test
9. Inspect, clean, fill, &/or replace battery, battery cables, connectors, clamps, & hold-downs
10. Perform battery charge
11. Start a vehicle using jumper cables or auxiliary power supply
12. Perform starter current draw tests
13. Perform starter circuit voltage drop tests
14. Remove, install starter in a vehicle
15. Perform charging system output test
16. Remove, inspect, install generator (alternator)
17. Inspect, replace, aim headlights & bulbs
18. Inspect, test gauges & gauge sending units for cause of abnormal gauge readings
19. Remove, reinstall door panel
20. Check for module communication (including CAN/BUS systems) errors using scan tool
21. Diagnose electronic transmission control systems using a scan tool

APPENDIX R:

**Unit 10: Mobile Equipment Maintenance Pathway-Auto Technician:
Suspension & Steering**

Invalid beginning Fall 2015

1. Assist to diagnose common suspension & steering problems
2. Disable, enable supplemental restraint system (SRS)
3. Determine proper power steering fluid type; inspect fluid level & condition
4. Flush, fill, bleed power steering system
5. Remove, inspect, replace, adjust power steering pump belt
6. Inspect, replace, adjust tie rod ends (sockets), tie rod sleeves, & clamps

7. Remove, inspect, install upper & lower ball joints
8. Remove, inspect, install strut cartridge or assembly, strut coil spring, insulators (silencers), & upper strut bearing mount
9. Inspect, remove, replace shock absorbers
10. Perform pre-alignment inspection & measure vehicle ride height
11. Perform four wheel alignment by checking and adjusting front & rear wheel caster, camber, and toe as required
12. Center steering wheel
13. Inspect tire condition & tire wear patterns; check air pressure
14. Measure wheel, tire, axle flange, & hub runout
15. Dismount, inspect, remount tire on wheel; balance wheel & tire assembly (static & dynamic)
16. Inspect tire & wheel assembly for air loss; repair tire using internal patch

APPENDIX S:

Unit 11: Mobile Equipment Maintenance Pathway-Auto Technician: Engine Performance & Repair

Invalid beginning Fall 2015

1. Assist to diagnose common engine performance problems
2. Inspect engine assembly for fuel, oil, coolant, & other leaks
3. Perform cranking & running compression tests
4. Perform cylinder leakage test
5. Perform cooling system pressure tests; check coolant condition; inspect & test radiator, pressure cap, coolant recovery tanks, & hoses
6. Retrieve, record diagnostic trouble codes, OBD monitor status & freeze frame data
7. Inspect, test computerized engine control system sensors, powertrain/engine control module (PCM/ECM), actuators, & circuits using a graphing multimeter (GMM)/digital storage oscilloscope (DSO)
8. Inspect, test fuel pumps & pump control systems for pressure, regulation & volume
9. Inspect, test fuel injectors
10. Inspect the integrity of the exhaust manifold, exhaust pipes, muffler(s), catalytic converter(s), resonator(s), tail pipe(s) & heat shield(s)
11. Perform exhaust system back-pressure test
12. Inspect, test, replace components of the EGR system including EGR tubing, exhaust passages, vacuum pressure controls, filters & hoses
13. Remove, replace timing belt; verify correct camshaft timing
14. Inspect, test mechanical/electrical fans, fan clutch, fan shroud/ducting, air dams, & fan control devices
15. Install gaskets, seals, & sealers as required
16. Perform oil pressure tests
17. Inspect, replace engine cooling & heater system hoses
18. Inspect, test, replace thermostat housing, gasket, & seal
19. Inspect, remove, replace water pump
20. Remove, replace radiator
21. Inspect, service, replace shafts, yokes, boots, & CV joints

APPENDIX T:

Unit 12: Logistics/Supply Chain Management (SCM) Pathway: Planning & Purchasing

1. Respond to customer inquiries

2. Provide product and service information
3. Assist to process claims
4. Collect and maintain data & files
5. Process documentation & prepare reports
6. Compile customer & order information
7. Process customer sales order
8. Assist to plan for customer order using production and logistics documents
9. Purchase raw materials/services
10. Track and maintain order and receipt schedules
11. Review requisition orders
12. Prepare purchase orders
13. Contact suppliers to verify shipment details
14. Process supplier invoices
15. Monitor customer order status
16. Inform internal & external customers of order status
17. Compile purchasing, production, & shipping information for status reports

APPENDIX U:

Unit 13: Logistics/Supply Chain Management (SCM) Pathway: Inventory Management & Production

1. Respond to customer inquiries
2. Collect and maintain data & files
3. Process documentation & prepare reports
4. Gather qualified supplier information for materials to be ordered
5. Assist to determine prices, specifications, and delivery dates from potential suppliers
6. Gather and organize data for demand forecasting
7. Assist to develop forecasts
8. Assist to develop production & inventory solutions based on production and logistics plan
9. Assist to develop packaging and material handling requirements based on production and logistics plan
10. Verify receipt of goods/services
11. Complete inventory transfer forms for bookkeeping purposes
12. Assist to coordinate schedules for materials/product/services movement
13. Assist to perform physical inventory
14. Report inventory shortage
15. Assist with inventory inaccuracies investigations

APPENDIX V:

Unit 14: Logistics/Supply Chain Management (SCM) Pathway: Storage & Warehousing

1. Operate tools and equipment safely
2. Assist to plan for customer order using production and logistics documents
3. Unload materials
4. Inspect package for integrity, damage, quality specifications
5. Check order accuracy against packing slip/purchase order
6. Deliver materials to staging/storage location
7. Store or discard packaging materials as required
8. Pull items from warehouse storage location
9. Store orders for transporting
10. Check container and packing materials for labeling

11. Verify contents match order and description
12. Isolate defective contents prior to packing
13. Load orders
14. Perform cycle counts
15. Check stock for outdated or damaged supplies
16. Rotate raw materials and stock to minimize old and outdated inventory
17. Respond to recall procedures by removing and discarding inventory according to regulations
18. Assist to examine loss, damage & returns reports for trends

APPENDIX W:

Unit 15: Logistics/Supply Chain Management (SCM) Pathway: Distribution & Transportation Operations

1. Assist to plan distribution of products
2. Compile transportation documentation
3. Assist to schedule transportation of products and materials
4. Ensure product is shipped on time
5. Prepare invoice for products and shipment
6. Operate tools and equipment safely
7. Inspect outgoing product packaging and labeling
8. Verify packing list against actual shipment
9. Load vehicles OR stage for courier transportation
10. Complete required shipping documents
11. Assist to plan and route shipments
12. Assist to coordinate and schedule drivers, pickups, deliveries
13. Determine shipment status
14. Maintain shipping and customs records/documentation
15. Follow up with customer regarding shipment receipt

APPENDIX X:

Unit 16: Mobile Equipment Pathway- Diesel Technician

1. Obtain & apply basic diesel servicing knowledge
2. Operate tools & equipment safely
3. Maintain work area
4. Assist to process work order
5. Research information
6. Acquire parts
7. Assist to diagnose common concerns & determine action
8. Assist to retrieve, record, interpret diagnostic codes
9. Perform engine lubrication PM
10. Perform oil & filter change
11. Perform fuel system checks
12. Perform air induction & exhaust PM
13. Perform cooling system PM
14. Pressure test cooling system
15. Assist to bleed cooling system
16. Assist to perform engine brake PM
17. Perform instrument checks
18. Perform safety equipment checks
19. Perform hardware checks
20. Check HVAC operation

21. Lubricate grease fittings
22. Perform transmission PM
23. Change transmission oil & filter
24. Perform clutch PM
25. Perform drive axle PM
26. Change drive axle oil & filter
27. Inspect driveshaft
28. Use wiring diagrams
29. Properly use a digital multimeter (DMM)
30. Perform battery PM
31. Perform battery load test
32. Determine battery state of charge test
33. Jump start a vehicle
34. Engage starter
35. Perform charging system PM
36. Assist to remove & replace alternator
37. Perform lighting system PM
38. Perform air brake PM
39. Perform hydraulic brake PM
40. Check ABS & ATC warning lights
41. Read & interpret hydraulic system diagrams
42. Service filtration/reservoirs (tanks)
43. Check hoses, fittings, connections
44. Perform suspension & steering PM
45. Perform steering linkage PM
46. Perform tire checks
47. Assist to remove & install steering & drive axle wheel/tire assemblies
48. Perform fifth wheel, frame, trailer PM

APPENDIX Y:

Unit 17: Mobile Equipment Pathway- Auto Technician: General Auto Service

1. Obtain & apply basic vehicle & servicing knowledge
2. Operate tools & equipment safely
3. Maintain work area
4. Assist to process work order
5. Research information
6. Acquire parts
7. Assist to diagnose common concerns & determine action
8. Perform engine oil & filter change
9. Replace fuel filter
10. Check, drain, recover, flush, refill cooling system
11. Assist to inspect engine assembly for leaks
12. Inspect, replace air filter
13. Retrieve, record, interpret diagnostic codes
14. Check for leaks & fluid conditions
15. Check & adjust differential housing fluid level
16. Check fluid level in a transmission/transaxle
17. Inspect, replace, flush transmission fluid & filters
18. Test brake fluid for contamination

19. Inspect power steering fluid level & condition
20. Flush, fill, bleed power steering system
21. Inspect for power steering fluid leakage
22. Lubricate suspension & steering systems
23. Inspect tire condition & adjust air pressure
24. Rotate tires
25. Verify, replace, refill wiper & washer operation
26. Check brake lights
27. Test, replace, aim lights
28. Inspect, check, replace battery
29. Perform battery capacity test
30. Perform slow/fast battery charge
31. Perform battery state-of-charge test
32. Verify panel gauges & lights; reset maintenance indicators
33. Jump start a vehicle
34. Replace cabin filter
35. Inspect engine cooling & heater systems hoses, ducts, doors, filters

APPENDIX Z:

Unit 18: Mobile Equipment Pathway- Auto Technician: Auto/Light Truck Systems

1. Install engine covers using gaskets, seals, & sealers
2. Assist to remove & replace timing belt, verify camshaft timing
3. Perform cooling system pressure tests to identify leaks
4. Inspect, replace, adjust drive belts, tensioners, & pulleys
5. Remove, inspect, replace thermostat & gasket/seal
6. Inspect, remove, replace water pump
7. Perform cylinder cranking & running compression tests
8. Perform cylinder leakage tests
9. Remove, replace spark plugs
10. Inspect exhaust manifold, pipes, muffler, catalytic converter, resonator, & heat shields
11. Remove, replace radiator
12. Inspect, replace external seals, gaskets, bushings
13. Inspect powertrain mounts
14. Drain/refill differential or transfer case housings
15. Remove & replace drive axle shafts
16. Assist to disable & enable supplemental restraint system (SRS)
17. Assist to remove, inspect, replace, adjust power steering pump drive belt
18. Assist to remove, reinstall power steering pump
19. Inspect, replace, adjust tie rod ends (sockets), tie rod sleeves, & clamps
20. Assist to inspect, remove, install upper &/or lower ball joints
21. Inspect, remove, install front stabilizer bar bushings, brackets, links
22. Assist to inspect, remove, install strut cartridge or assembly, strut coil spring, insulators, & upper strut bearing mount
23. Inspect rear suspension system leaf springs, bushings, center pins/bolts, & mounts
24. Perform pre-alignment inspection & measure vehicle ride height
25. Dismount, inspect, balance, remount tire on wheel
26. Inspect tire for air loss; Repair tire using internal patch
27. Assist to test & calibrate pressure monitoring system for operation
28. Inspect brake lines, hoses, fittings for leaks kinks, rust, cracks, bulging, wear, loose fittings

29. Select, handle, store, fill brake fluids
30. Bleed &/or flush brake system
31. Measure brake pedal height, travel, free play
32. Check master cylinder for leaks & operation
33. Remove, clean, inspect, measure brake drum diameter
34. Assist to remove, clean, inspect, lubricate, reassemble brake shoes, springs, pins, clips, levers, adjusters, etc.
35. Remove, clean, inspect, caliper assembly
36. Clean, inspect caliper mounting & slides/pins
37. Remove, inspect, replace pads & retaining hardware
38. Lubricate, reinstall caliper, pads, & related hardware
39. Clean, inspect, measure rotor, rotor thickness, variation, & lateral run-out
40. Remove, reinstall rotor
41. Check brake pad wear indicator
42. Remove, clean, inspect, repack, install wheel bearings, seals, hub
43. Check parking brake cables & components
44. Check parking brake operation & indicator lights
45. Assist to replace wheel bearing & race
46. Properly use a digital multimeter (DMM)
47. Use wiring diagrams
48. Inspect, test fusible links, breakers, fuses
49. Replace electrical connectors & terminal ends
50. Perform starter current draw tests
51. Perform starter circuit voltage drop tests
52. Remove, install starter
53. Remove, inspect, reinstall generator (alternator)
54. Remove, reinstall door panel