TDL Career Cluster
Automotive Pathway
Course Descriptions and Competencies

Course Standards
National Automotive Technicians Education Foundation (NATEF) 2005

Automotive Introduction Hours 45

This course covers occupational health and safety, tools and equipment identification, usage and operation. The students will learn about the history, current state and future of the automotive service industry. This course will cover dealership and independent operations. Students will learn vehicle identification and how to look up service information using several different sources. Students will learn vehicle maintenance, which will include fluid level checks and adjustments, peripheral electrical system checks and tire inspection and air pressure adjustment. In this course the students will learn basic measuring instruments used in vehicle service and diagnosis, as well as communication skills used through out the automotive service industry.

Competencies:
Automotive History and Career Exploration
Occupational Health & Safety
Using an MSDS
Hazardous Waste procedures
Using fire extinguishers
Emergency procedures
Basic first aid & CPR
Personal safety
Defect warning procedures
Cleaning tools & equipment
Workplace security procedures
Tools & Equipment
Using hand tools
Using a floor jack
Using a two-post hoist
Using a four-post hoist
Using an engine hoist
Using a torque wrench & an angle gauge
Setting up an oxyacetylene torch
Using an oxyacetylene torch
Using a lubrication gun
Using an air drill
Using an air impact wrench
Using an air chisel
Using an air blow gun
Using an electric drill
Using an angle grinder
Using a bench grinder
Using a lead light
Using a gear puller
Using a screw extractor
Using a micrometer
Using a dial indicator
Using a feeler gauge
Using a tire pressure gauge

Measuring a fastener
Repairing an internal thread
Removing a stud
Repairing an external thread
Using a vacuum gauge
Vehicle Maintenance
Identifying powertrain configurations
Identifying chassis configurations
Identifying axle configurations
Identifying powertrain configurations
Locating vehicle information
Identifying axle configurations
Measuring vehicle wheelbase
Decoding a VIN
Using an owner's manual
Using a shop manual
Using a repair manual
Using a computerized service system
Using a parts manual
Using a labor guide
Complete Work Order to contain pertinent information
Checking engine oil
Checking & adjusting power steering fluid
Checking & adjusting transmission fluid
Checking & adjusting brake fluid
Checking & adjusting differential/transaxle fluid
Checking & adjusting coolant levels
Checking windshield washer fluid
Checking peripheral electrical systems
Checking & replacing wiper blades
Checking & adjusting tire pressures
Checking seat belts

Automotive Brakes Introduction (I) Hours 30

This course covers braking system components, checking and adjusting brake fluids, checking wheel cylinders and adjusting parking brakes. Students will learn to check and replace brake pads, as well as to check and replace brake linings.

Competencies:

Braking Systems
Braking systems: Components
Replacing brake fluid
Checking brake pads
Replacing brake pads
Checking wheel cylinders
Replacing brake linings
Adjusting park brake cables

Automotive Brakes Fundamentals (II) Hours 60

In this course the student will learn to diagnose and repair drum and disc brake systems. Also covered will be diagnosing and repairing the entire hydraulic brake system, which will include, the master cylinder, lines and proportioning valves and stop light operation. Students will learn to diagnose and repair power assist units. Finally this course will cover diagnosis and service of

wheel bearings, to include how to replace bearings and races, as well as clean, repack and adjust wheel bearing.

Competencies:

Hydraulic System Diagnosis and Repair

Diagnose pressure concerns in the brake system using hydraulic principles (Pascal's Law)
Measure and adjust pedal height.
Check master cylinder for internal and external leaks and proper operation; determine necessary action.
Remove, bench bleed, and reinstall master cylinder.
Diagnose poor stopping, pulling or dragging concerns caused by problems in the hydraulic system; determine necessary action.
Fabricate and install brake lines (double flare and ISO types); replace hoses, fittings, and supports as needed.
Inspect, test, and replace metering (hold-off), proportioning (balance), pressure differential, and combination valves.
Inspect, test, replace, and adjust height (load) sensing proportioning valve.
Inspect, test, and replace components of brake warning light system.

Drum Brake Diagnosis and Repair

Diagnose poor stopping, noise, pulling, grabbing, dragging or pedal pulsation concerns; determine necessary action.
Mount brake drum on lathe; machine braking surface.
Remove, inspect, and install wheel cylinders.
Install wheel, torque lug nuts, and make final checks and adjustments.

Disc Brake Diagnosis and Repair

Diagnose poor stopping, noise, pulling, grabbing, dragging or pedal pulsation concerns; determine necessary action.
Disassemble and clean caliper assembly; inspect parts for wear, rust, scoring, and damage; replace seal, boot, and damaged or worn parts.
Remove and install rotor
Refinish rotor on vehicle.
Refinish rotor off vehicle
Adjust calipers with integrated parking brake system.
Install wheel, torque lug nuts, and make final checks and adjustments.

Power Assist Units Diagnosis and Repair

Test pedal free travel with and without engine running; check power assist operation.
Check vacuum supply (manifold or auxiliary pump) to vacuum-type power booster.
Inspect the vacuum-type power booster unit for vacuum leaks; inspect the check valve for proper operation; determine necessary action.
Inspect and test hydraulically assisted power brake system for leaks and proper operation; determine necessary action.
Measure and adjust master cylinder pushrod length.

Miscellaneous (Wheel Bearings, Parking Brakes, Electrical, Etc.) Diagnosis and Repair

Diagnose wheel bearing noises, wheel shimmy, and vibration concerns; determine necessary action.
Remove, clean, inspect, repack, and install wheel bearings and replace seals; install hub and adjust wheel bearings.
Check operation of brake stop light system; adjust and service as needed.
Replace wheel bearing and race.

Automotive Brakes Advanced (III) Hours 30

This course covers how to diagnose, service and repair the Anti-lock Brake System (ABS). Also covered will be the ABS braking concerns caused be vehicle modifications, such as tire size, curb weight and change of final drive ratios.

Competencies:

Anti-lock Brake System

Inspect and test anti-lock brake system (ABS) components; determine necessary action
Diagnose poor stopping, wheel lock-up, abnormal pedal feel or pulsation, and noise concerns caused by the anti-lock brake system (ABS); determine necessary action.
Diagnose anti-lock brake system (ABS) electronic control(s) and components using self-diagnosis and/or recommended test equipment; determine necessary action.
Depressurize high-pressure components of the anti-lock brake system (ABS).
Bleed the anti-lock brake system's (ABS) front and rear hydraulic circuits.
Remove and install anti-lock brake system (ABS) electrical/electronic and hydraulic components.
Service, test, and adjust anti-lock brake system (ABS) speed sensors.

Diagnose anti-lock brake system (ABS) braking concerns caused by vehicle modifications (tire size, curb height, final drive ratio, etc.).
Identify traction control and vehicle stability control system components.

Automotive Steering and Suspension Introduction (I) Hours 15

In this course the student will learn about the steering and suspension components and quick checks for these components. Student will cover shocks and struts. Also covered will be mounting tires and balancing of tire and wheel assembly.

Competencies:

Steering & Suspension Systems
Steering & suspension systems: Components
Checking steering system components
Check and adjust wheel bearings
Checking & adjusting power steering fluid
Checking suspension components
Lubricating suspension components
Checking shock absorbers
Checking tire wear patterns
Balance Tires
Dismount, inspect and remount tire and wheel assembly
Dismount, inspect and remount tire and wheel equipped with tire pressure sensor.
Repair tire using and internal patch.
Inspect, diagnose, and calibrate tire pressure monitoring system.

Automotive Steering and Suspension Fundamentals (II) Hours 75

This course includes steering system diagnosis and repair or replacement operations, including the power steering pump, tie rod ends, pitman arms, relay rods and steering dampeners. Also covered will be front and rear suspension systems diagnosis and repair, including inspecting and replacement of components. Students will also learn to perform wheel alignments and how to diagnose wheel alignment issues.

Competencies:

Steering Systems Diagnosis and Repair
Flush, fill, and bleed power steering system
Remove, inspect, and replace power steering pump, mounts, seals, and gaskets
Remove, inspect, and replace power steering pump pulley; check alignment
Inspect and replace pitman arm, relay (centerlink/intermediate) rod, idler arm and mountings, and steering linkage damper
Inspect, replace, and adjust tie rod ends (sockets), tie rod sleeves, and clamps
Suspension Systems Diagnosis and Repair
Front Suspension
Diagnose short and long arm suspension system noises, body sway, and uneven riding height concerns; determine necessary action
Diagnose MacPherson strut suspension system noises, body sway, and uneven riding height concerns; determine necessary action.
Remove, inspect, and install upper and lower control arms, bushings, shafts, and rebound bumpers.
Remove, inspect, install, and adjust strut (compression/tension) rods and bushings.
Remove, inspect, and install upper and lower ball joints on short and long arm suspension systems.
Remove, inspect, and install steering knuckle assemblies.
Remove, inspect, and install short and long arm suspension system coil springs and spring insulators. Remove, inspect, install, and adjust suspension system torsion bars; inspect mounts.
Remove, inspect, and install stabilizer bar bushings, brackets, and links.
Remove, inspect, and install MacPherson strut cartridge or assembly, strut coil spring, insulators (silencers), and upper strut bearing mount.
Rear Suspension
Remove, inspect, and install coil springs and spring insulators.
Remove, inspect, and install transverse links, control arms, bushings, and mounts.

Remove, inspect, and install leaf springs, leaf spring insulators (silencers), shackles, brackets, bushings, and mounts.
Remove, inspect, and install MacPherson strut cartridge or assembly, strut coil spring, and insulators (silencers).
Wheel Alignment Diagnosis, Adjustment, and Repair
Diagnose vehicle wander, drift, pull, hard steering, bump steer, memory steer, torque steer, and steering return concerns; determine necessary action.
Perform pre-alignment inspection; perform necessary action.
Measure vehicle-riding height; determine necessary action.
Check and adjust front and rear wheel camber; perform necessary action.
Check and adjust caster; perform necessary action.
Check and adjust front wheel toe, adjust as needed.
Center steering wheel.
Check toe-out-on-turns (turning radius); determine necessary action.
Check SAI (steering axis inclination) and included angle; determine necessary action
Check and adjust rear wheel toe
Check rear wheel thrust angle; determine necessary action
Check for front wheel setback; determine necessary action
Check front cradle (sub-frame) alignment; determine necessary action
Wheel and Tire Diagnosis and Repair
Diagnose wheel/tire vibration, shimmy, and noise; determine necessary action
Measure wheel, tire, axle, and hub run-out; determine necessary action
Diagnose tire pull (lead) problem; determine necessary action

Automotive Steering and Suspension Advanced (III) Hours 45

Student will learn to diagnose and repair steering columns, and how to disable and enable the Supplemental Restraint System (SRS). Also covered will the power and manual steering racks and steering gears. This course will cover the electrically controlled steering systems and how to diagnose and repair these systems.

Competencies:

Steering Systems Diagnosis and Repair
Disable and enable supplemental restraint system (SRS) in accordance with manufacturer's procedures.
Remove and replace steering wheel, center/time supplemental restraint system (SRS) coil in accordance with manufacturer's procedures.
Diagnose steering column noises, looseness, and binding concerns (including tilt mechanisms); determine necessary action.
Diagnose power steering gear (non-rack and pinion) binding, uneven turning effort, looseness, hard steering, and fluid leakage concerns; determine necessary action.
Diagnose power steering gear (rack and pinion) binding, uneven turning effort, looseness, hard steering, and fluid leakage concerns; determine necessary action.
Inspect steering shaft universal-joint(s), flexible coupling(s), collapsible column, lock cylinder mechanism, and steering wheel; perform necessary action.
Adjust manual or power non-rack and pinion worm bearing preload and sector lash.
Remove and replace manual or power rack and pinion steering gear; inspect mounting bushings and brackets.
Disassemble, inspect, perform necessary action and reassemble rack and pinion steering gear.
Adjust manual or power rack and pinion steering gear.
Inspect and replace manual or power rack and pinion steering gear inner tie rod ends (sockets) and bellows boots.
Diagnose and adjust components of electronically controlled steering systems; determine necessary action.
Inspect and test non-hydraulic electric-power assist steering.
Identify hybrid vehicle power steering system electrical circuits, service and safety precautions.
Suspension Systems Diagnosis and Repair
Diagnose, inspect, adjust, repair or replace components of electronically controlled suspension systems.

Automotive Electrical/Electronics Introduction (I) Hours 45

In this course the student will learn battery testing and maintenance. This course will cover electrical theory and Digital Volt Ohm Meter (DVOM) operation. Students will learn basic system checks using a DVOM. Students will learn to soldering techniques for wiring and other connections.

Competencies:

Battery Maintenance
Battery maintenance: Fundamentals
Inspecting & testing a battery
Cleaning & replacing a battery
Starting a vehicle with a discharged battery
Charging a battery
Electrical Systems
Electrical systems: Fundamentals
Using a DVOM to measure voltage
Using a DVOM to measure continuity
Checking alternators
Checking starter motors
Using a non-powered test light
Installing a solder-less terminal
Soldering an electrical connection
Soldering wires together
Checking & changing a headlight bulb
Checking & changing an exterior light bulb

Automotive Electrical/Electronics Fundamentals (II) Hours 90

In this Electrical/Electronics course the students will study general electrical system diagnosis. Students will learn to check voltage drop on circuits, locate shorts, test grounds, test relays and circuit breakers then determine necessary action. Students will learn to diagnose and repair starting systems, charging systems as well as horn and windshield wiper systems. Students will also learn to diagnose and repair lighting circuits, sockets and controllers. Also covered in this course will be gauges, warning devices, drivers information system and sending units for gauges.

Competencies:

General Electrical System Diagnosis
Use wiring diagrams during diagnosis of electrical circuit problems.
Check voltage and voltage drop in electrical/electronic circuits using a digital multi-meter (DMM); determine necessary action.
Check electrical circuits using jumper wires; determine necessary action.
Locate shorts, grounds, opens, and resistance problems in electrical/electronic circuits; determine necessary action
Measure and diagnose the cause(s) of abnormal key-off battery drain; determine necessary action.
Inspect and test fusible links, circuit breakers, and fuses; determine necessary action
Inspect and test switches, connectors, relays, and wires of electrical/electronic circuits; perform necessary action
Battery Diagnosis and Service
Maintain or restore electronic memory functions
Lighting Systems Diagnosis and Repair
Diagnose the cause of brighter than normal, intermittent, dim, or no light operation; determine necessary action
Horn and Wiper/Washer Diagnosis and Repair
Diagnose incorrect horn operation; perform necessary action
Diagnose incorrect wiper operation; diagnose wiper speed control and park problems; perform necessary action.
Diagnose incorrect windshield washer operation; perform necessary action.
Charging System Diagnosis and Repair
Diagnose charging system for the cause of undercharge, no-charge, and overcharge conditions
Inspect and test voltage regulator/regulating circuit; perform necessary action
Remove, inspect, and install generator (alternator)
Disassemble generator (alternator), clean, inspect, and test components; determine necessary action. Perform charging circuit voltage drop tests; determine necessary action
Starting System Diagnosis and Repair
Perform starter circuit voltage drop tests; determine necessary action
Inspect and test starter relays and solenoids; replace as needed
Remove and install starter
Perform starter bench tests; determine necessary action

Inspect and test switches, connectors, and wires of starter control circuits; perform necessary action Disassemble, clean, inspect, and test starter components; replace as needed
Gauges, Warning Devices, and Driver Information Systems Diagnosis and Repair
Inspect and test gauges and gauge sending units for cause of intermittent, high, low, or no gauge readings; determine necessary action
Inspect and test connectors, wires, and printed circuit boards of gauge circuits; determine necessary action

Automotive Electrical/Electronics Advanced (III) Hours 105

This course will cover diagnosing and repairing accessories such as motor driven accessory circuits, cruise controls, electrical heated seats and mirrors and factory installed audio systems. This course will cover the Supplemental Restraint Systems (SRS) service as well as safety procedures to prevent accidental deployment. Students will learn to about module communication, including the Controller Area Network (CAN).

Competencies:

Battery Diagnosis and Service
Identify high voltage circuits of electric or hybrid electric vehicle and related safety precautions
Identify electronic modules, security systems and/or radios that require reinitialization or code entry following battery disconnect.
Identify hybrid vehicle auxiliary (12v) battery service, repair and test procedures.
Identify system voltage and safety precautions associated with high intensity discharge headlights.
Gauges, Warning Devices, and Driver Information Systems Diagnosis and Repair
Diagnose the cause of incorrect operation of warning devices and other driver information systems; determine necessary action.
Inspect and test sensors, connectors, and wires of electronic instrument circuits; determine necessary action.
Accessories Diagnosis and Repair
Remove and reinstall door panel
Diagnose incorrect operation of motor-driven accessory circuits; determine necessary action.
Diagnose incorrect heated glass operation; determine necessary action.
Diagnose incorrect electric lock operation; determine necessary action.
Diagnose incorrect operation of cruise control systems; repair as needed.
Diagnose incorrect heated seat operation; determine necessary action.
Diagnose supplemental restraint system (SRS) concerns; determine necessary action. (Note: Follow manufacturer's safety procedures to prevent accidental deployment.)
Disarm and enable the airbag system for vehicle service.
Diagnose radio static and weak, intermittent, or no radio reception; determine necessary action.
Diagnose body electronic system circuits using a scan tool; determine necessary action.
Check for module communication (including CAN/BUS systems) errors using scan tool.
Diagnose the cause of false, intermittent, or no operation of anti-theft systems.

Automotive Engine Performance Introduction (I) Hours 45

This course will cover the engine system components and the valve train components. Also in this course the student will learn to perform basic engine tune-up operations, such as checking and changing spark plugs, checking emission system, checking and cleaning PVC valve as well as checking and setting ignition timing, remove and replace timing belt and verify correct camshaft timing. Students will learn about the fuel system components, checking and changing the fuel and air filters, checking and setting idle speed and also cover mechanical and electric fuel pumps.

Competencies:

Engine & Components
Checking & changing spark plugs
Checking an emission system
Checking & cleaning a PCV valve

Checking ignition timing

Fuel Systems

Fuel systems: Components
Checking & changing an air filter
Removing & replacing a fuel filter
Checking idle speed
Adjusting & cleaning carburettors
Fuel systems: Mechanical & electrical pumps
Identify hybrid vehicle internal combustion engine service precautions.

Automotive Engine Performance Fundamentals (II) Hours 105

In this course the student will learn to perform diagnostic techniques and determining necessary action from cylinder leakage tests, compression test and power balance tests. In this course the student will learn to retrieve, record, diagnose and clear diagnostic codes from OBD I and II electronic systems. In ignition systems diagnosis and repair the students will learn about no-start, drivability and emission concerns on vehicles with electronic ignitions (distributorless) and distributor ignition systems. Students will learn to test, inspect and determine repair primary circuit wiring, distributor performance, ignition coils, pick-up sensors and triggering devices and ignition control modules. In this course the student will test fuel pressure regulation systems, service the throttle body, inspect the exhaust system and perform necessary action as well as test the electrical components of the fuel system. In the emission system this course covers positive crankcase ventilation (PCV) system, the exhaust gas recirculation (EGR) system, intake air temperature control system as well as the evaporative emissions control system.

Competencies:

General Engine Diagnosis

Interpret and verify concern; determine necessary action.
Diagnose unusual engine noise or vibration concerns; determine necessary action.
Diagnose unusual exhaust color, odor, and sound; determine necessary action.
Perform engine absolute (vacuum/boost) manifold pressure tests; determine necessary action.
Perform cylinder power balance test; determine necessary action.
Perform cylinder compression test; determine necessary action.
Perform cylinder leakage test; determine necessary action.
Computerized Engine Controls Diagnosis and Repair
Retrieve and record stored OBD I diagnostic trouble codes; clear codes.
Retrieve and record stored OBD II diagnostic trouble codes; clear codes.
Obtain and interpret digital multi-meter (DMM) readings.
Access and use electronic service information (ESI).
Locate and interpret vehicle and major component identification numbers (VIN, vehicle certification labels, and calibration decals).
Inspect and test power and ground circuits and connections; service or replace as needed.
Practice recommended precautions when handling static sensitive devices.
Perform active tests of actuators using scan tool; determine necessary action.

Ignition System Diagnosis and Repair

Diagnose no-starting, driveability, and emissions concerns on vehicles with electronic ignition (EI/DIS)(distributorless) systems; determine necessary action.
Diagnose no-starting, driveability, and emissions concerns on vehicles with distributor ignition (DI) systems; determine necessary action.
Inspect and test ignition primary circuit wiring and components; perform necessary action.
Inspect and test distributor; perform necessary action.
Inspect and test ignition coil(s); perform necessary action.
Inspect and test ignition system pick-up sensor or triggering devices; perform necessary action
Inspect and test ignition control module; perform necessary action.
Fuel, Air Induction, and Exhaust Systems Diagnosis and Repair
Inspect and test fuel pressure regulation system and components of injection-type fuel systems; perform necessary action.

Inspect and test cold enrichment system and components; perform necessary action.
Remove, service, and install throttle body; adjust related linkages.
Adjust idle speed and fuel mixture
Remove, inspect, and test vacuum and electrical circuits, components and connections of fuel system; perform necessary action
Inspect exhaust manifold, exhaust pipes, muffler(s), catalytic converter(s), resonator(s), tail pipe(s), and heat shield(s); perform necessary action
Perform exhaust system backpressure test; determine necessary action.

Emissions Control Systems Diagnosis and Repair

Positive Crankcase Ventilation

Diagnose oil leaks, emissions, and driveability problems resulting from failure of the positive crankcase ventilation (PCV) system; determine necessary action

Exhaust Gas Recirculation

Inspect and test valve, valve manifold, and exhaust passages of exhaust gas recirculation (EGR) systems; perform necessary action.
Inspect and test vacuum/pressure controls, filters, and hoses of exhaust gas recirculation (EGR) systems; perform necessary action.
Inspect and test electrical/electronic sensors, controls, and wiring of exhaust gas recirculation (EGR) systems; perform necessary action.

Exhaust Gas Treatment

Inspect and test mechanical components of secondary air injection systems; perform necessary action.
Inspect and test electrical/electronically-operated components and circuits of air injection systems; perform necessary action.
Inspect and test components of catalytic converter systems; perform necessary action.
Intake Air Temperature Controls
Inspect and test components of intake air temperature control system; perform necessary action.

Early Fuel Evaporation (Intake Manifold Temperature) Controls

Inspect and test components of early fuel evaporation control system; perform necessary action.

Evaporative Emissions Controls

Diagnose emissions and driveability problems resulting from failure of evaporative emissions control system; determine necessary action.
Inspect and test components and hoses of evaporative emissions control system; perform necessary action.

Engine Related Service

Adjust valves on engines with mechanical or hydraulic lifters.
Verify correct camshaft timing; determine necessary action.
Inspect and test thermostat, by-pass, and housing; perform necessary action.
Inspect and test mechanical/electrical fans, fan clutch, fan shroud/ducting, air dams, and fan control devices; perform necessary action.

Automotive Engine Performance Advanced (III) Hours 105

In this course the student will learn to perform diagnosis using a gas analyzer, oscilloscope and engine diagnostic equipment. Students will learn to diagnose the cause of emissions or drivability resulting from failure of computerized engine controls, power control module (PCM) and interrelated systems. This course also covers diagnose and repair action for hot and cold no-start situations, engine misfire, stalling, poor mileage, flooding and hesitation on vehicles with injection type fuel systems. Students will learn to inspect, test and clean fuel injectors as well as test the operation of turbochargers and superchargers and determine necessary action. Students will cover drivability problems resulting from exhaust gas recirculation (EGR) failure, secondary air injection and catalytic converter systems as well as failure of the intake air temperature control system, and the failure of the evaporative control system. Student will learn to check for module communication errors using a scan tool on CAN/BUS systems.

Competencies:

General Engine Diagnosis

Diagnose engine mechanical, electrical, electronic, fuel, and ignition concerns with oscilloscope and engine diagnostic equipment; determine necessary action.

Prepare 4 or 5 gas analyzer; inspect and prepare vehicle for test, and obtain exhaust readings; interpret readings, and determine necessary action.

Computerized Engine Controls Diagnosis and Repair

Diagnose the causes of emissions or drivability concerns resulting from failure of computerized engine controls with stored diagnostic trouble codes.

Diagnose emissions or drivability concerns resulting from failure of computerized engine controls with no stored diagnostic trouble codes; determine necessary action.

Inspect and test computerized engine control system sensors, powertrain control module (PCM), actuators, and circuits; perform necessary action.

Diagnose drivability and emissions problems resulting from failures of interrelated systems (cruise control, security alarms, suspension controls, traction controls, A/C, automatic transmissions, non-OEM-installed accessories, and similar systems); determine necessary action.

Fuel, Air Induction, and Exhaust Systems Diagnosis and Repair

Diagnose hot or cold no-starting, hard starting, poor drivability, incorrect idle speed, poor idle, flooding, hesitation, surging, engine misfire, power loss, stalling, poor mileage, dieseling, and emissions problems on vehicles with carburetor-type fuel systems; determine necessary action.

Diagnose hot or cold no-starting, hard starting, poor drivability, incorrect idle speed, poor idle, flooding, hesitation, surging, engine misfire, power loss, stalling, poor mileage, dieseling, and emissions problems on vehicles with injection-type fuel systems; determine necessary action.

Check fuel for contaminants and quality; determine necessary action.

Inspect, test, and clean fuel injectors.

Test the operation of turbocharger/supercharger systems; determine necessary actionP-3

Emissions Control Systems Diagnosis and Repair

Exhaust Gas Recirculation

Diagnose emissions and drivability problems caused by failure of the exhaust gas recirculation (EGR) system; determine necessary action.

Exhaust Gas Treatment

Diagnose emissions and drivability problems resulting from failure of the secondary air injection and catalytic converter systems; determine necessary action.

Intake Air Temperature Controls

Diagnose emissions and drivability problems resulting from failure of the intake air temperature control system; determine necessary action.

Early Fuel Evaporation (Intake Manifold Temperature) Controls

Diagnose emissions and drivability problems resulting from failure of early fuel evaporation control system; determine necessary action.

Evaporative Emissions Controls

Diagnose emissions and drivability problems resulting from failure of evaporative emissions control system; determine necessary action.

Automotive Engine Repair Introduction (I) Hours 15

In this course the student will learn to inspect the engine assembly for fuel, oil coolant and other leaks. Students will also cover the engine system's component operation and location. Also in this course is engine oil service and engine accessory drive belt inspection and service.

Competencies:

General Engine Diagnosis

Inspect engine assembly for fuel, oil, coolant, and other leaks; determine necessary action.

Engine & Components

Engine systems: Components

Valve train: Components

Checking engine oil

Changing engine oil

Inspecting & adjusting engine drive belts

Removing & replacing engine drive belts

Automotive Engine Repair Fundamentals (II) Hours 45

In this course the student will learn general engine vacuum tests and to perform general cylinder tests and determine necessary action. Students will cover gaskets and seals on pans and covers, an how to prime the lubrication system. Students will also learn to perform oil pressure tests, as well as to test and replace thermostats, water pumps, radiators and fan clutches. Students will also learn to inspect test and replace oil and water sending units and switches.

Competencies:

General Engine Diagnosis
Verify and interpret engine concern; determine necessary action.
Perform engine vacuum tests; determine necessary action.
Perform cylinder power balance tests; determine necessary action.
Perform cylinder compression tests; determine necessary action.
Perform cylinder leakage tests; determine necessary action.

Cylinder Head and Valve Train Diagnosis and Repair
Adjust valves (mechanical or hydraulic lifters).
Inspect camshaft drives (including gear wear and backlash, sprocket and chain wear); replace as necessary.
Inspect and replace timing belt(s), overhead camdrive sprockets, and tensioners; check belt tension; adjust as necessary.
Inspect camshaft for run-out, journal wear and lobe wear.
Inspect and measure camshaft bearings for wear, damage, out-of-round, and alignment; determine necessary action.
Verify camshaft(s) timing according to manufacturer's specifications and procedure.

Engine Block Assembly Diagnosis and Repair
Inspect and replace pans, covers, gaskets, and seals.
Inspect internal and external threads; restore as needed (includes installing thread inserts).
Prime engine lubrication system.

Lubrication and Cooling Systems Diagnosis and Repair
Perform oil pressure tests; determine necessary action.
Inspect, test, and replace thermostat and housing.
Inspect, test, remove, and replace water pump.
Remove and replace radiator.
Inspect, and test fans(s) (electrical or mechanical), fan clutch, fan shroud, and air dams.
Inspect auxiliary oil coolers; replace as needed.
Inspect, test, and replace oil temperature and pressure switches and sensors.

Automotive Engine Repair Advanced (III) Hours 105

Students will learn to remove and reinstall the engine assembly from the front wheel and rear wheel drive configurations. Students will also learn to inspect and determine action needed for valves, valve springs, guides and retainers. Also covered in this course is the inspection, measuring and determination of action for the engine block and its components, cam bearing, rod and main bearings, pistons and rings and cylinder walls. This course will also cover inspection and reassembly of the oil pump system, and the reassembly of the engine, using the proper sealants and gaskets. Also covered in this course will be cylinder head and valve train component inspection including, casting cracks, gaskets and bolts, lifters and camshafts as well as drive gears.

Competencies:

General Engine Diagnosis; Removal and Reinstallation (R & R)
Diagnose engine noises and vibrations; determine necessary action.
Diagnose the cause of excessive oil consumption, unusual engine exhaust color, odor, and sound; determine necessary action.
Remove engine (front-wheel drive); prepare for disassembly. (OBD-II or newer)
Reinstall engine (front-wheel drive). (OBD-II or newer) Reconnect all attaching components to running condition.
Remove engine (rear-wheel drive); prepare for disassembly. (OBD-II or newer)
Reinstall engine (rear-wheel drive). (OBD-II or newer) Reconnect all attaching components to running condition.

Cylinder Head and Valve Train Diagnosis and Repair
Remove cylinder head(s); visually inspect cylinder head(s) for cracks; check gasket surface areas for warpage and leakage; check passage condition.

Install cylinder heads and gaskets; tighten according to manufacturer's specifications and procedures. Inspect pushrods, rocker arms, rocker arm pivots and shafts for wear, bending, cracks, looseness, and blocked oil passages (orifices); perform necessary action.
Inspect hydraulic or mechanical lifters; replace as needed.
Inspect and test valve springs for squareness, pressure, and free height comparison; replace as needed.
Inspect valve spring retainers, locks, and valve grooves.
Replace valve stem seals.
Inspect valve guides for wear; check valve guide height and stem-to-guide clearance; recondition or replace as needed.
Resurface valves; perform necessary action.
Resurface valve seats; perform necessary action.
Check valve face-to-seat contact and valve seat concentricity (run-out); service seats and valves as needed.
Check valve spring assembled height and valve stem height; service valve and spring assemblies as needed.
Engine Block Assembly Diagnosis and Repair
Inspect engine block for visible cracks, passage condition, core and gallery plug condition, and surface warpage; determine necessary action.
Remove cylinder wall ridges
Inspect and measure cylinder walls for damage and wear; determine necessary action.
Deglaze and clean cylinder walls.
Inspect and measure camshaft bearings for wear, damage, out-of-round, and alignment; determine necessary action.
Inspect crankshaft for surface cracks and journal damage; check oil passage condition; measure journal wear; determine necessary action.
Inspect and measure main and connecting rod bearings for damage, wear, determine necessary action (includes the proper selection of bearings).
Identify piston and bearing wear patterns that indicate connecting rod alignment and main bearing bore problems; inspect rod alignment and bearing bore condition.
Inspect, measure, and service pistons and pins; determine necessary action.
Inspect, measure, and install piston rings.
Inspect, repair or replace crankshaft vibration damper (harmonic balancer).
Reassemble engine components using correct gaskets and sealants.
Inspect auxiliary (balance, intermediate, idler, counterbalance or silencer) shaft(s); inspect shaft(s) and support bearings for damage and wear; determine necessary action; reinstall and time.
Lubrication and Cooling Systems Diagnosis and Repair
Inspect oil pump gears or rotors, housing, pressure relief devices, and pump drive; perform necessary action.

Automotive Heating and Air-Conditioning Introduction (I) Hours 15

This course covers the automotive heating systems, air conditioning systems, parts identification and function, and system operations. Also in this course the students will cover the refrigerants used in air conditioning systems and how to identify them along with Federal Legislation. Temperature control components and systems will also be identified. Students will learn about the cooling system components, identifying coolant type, checking and adjusting coolant levels as well as checking and replacing coolant hoses. Students will also learn to flush and pressure test the coolant system.

Competencies:

HVAC Systems
HVAC systems: Refrigerants
HVAC systems: Climate control
Checking a heater system
Checking an A/C system
Checking A/C hoses & pipes
Locating a leak in A/C systems
HVAC systems: Legislation
Cooling Systems
Cooling systems: Fundamentals
Checking & adjusting coolant levels
Draining & refilling coolant
Checking & replacing coolant hoses

Pressure testing a cooling system
Flushing a cooling system
Cooling systems: Water pumps
Cooling systems: Thermostats
Cooling systems: Radiators

Automotive Heating and Air-Conditioning Fundamentals (II) Hours 30

In this course the student will learn servicing procedures and how to operate testing and servicing equipment. Students will learn to evacuate and recharge air-conditioning systems using the proper refrigerant. Students will learn to evaluate and determine necessary action for compressor and clutch assemblies, and how to perform the replacement of these parts. Students will learn to perform component replacement, such as the receiver drier, expansion valve, orifice tube, hose assemblies and o-rings. Students will learn to trouble shoot heating and air-conditioning systems operation and how to evaluate climate control systems. This course covers both the electrical and vacuum controls.

Competencies:

A/C System Diagnosis and Repair
Select oil type; measure, and add oil to the A/C system as needed.
Refrigeration System Component Diagnosis and Repair
Compressor and Clutch
Inspect, test, and replace A/C compressor clutch components or assembly.
Remove and replace A/C compressor and mountings
Evaporator, Condenser, and Related Components
Determine need for A/C system filter; perform necessary action
Remove and inspect A/C system mufflers, hoses, lines, fittings, o-rings, seals, and service valves; perform necessary action
Remove and install receiver/drier or accumulator/drier
Remove and install expansion valve or orifice (expansion) tube
Heating, Ventilation, and Engine Cooling Systems Diagnosis and Repair
Inspect, test, and replace thermostat and housing
Inspect and test fan, fan clutch (electrical and mechanical), fan shroud, and air dams; perform necessary action
Inspect and test electrical fan control system and circuits
Inspect and test heater control valve(s); perform necessary action
Operating Systems and Related Controls Diagnosis and Repair
Inspect and test A/C-heater blower, motors, resistors, switches, relays, wiring, and protection devices; perform necessary action
Refrigerant Recovery, Recycling, and Handling
Verify correct operation and maintenance of refrigerant handling equipment
Identify (by label application or use of a refrigerant identifier) and recover A/C system refrigerant
Recycle refrigerant
Label and store refrigerant
Test recycled refrigerant for non-condensable gases
Evacuate and charge A/C system

Automotive Heating and Air-Conditioning Advanced (III) Hours 60

In this course the student will learn to diagnose air conditioning system failure concerns, such as the protection device interrupt system, temperature control problems, climate control systems, electrical controls for heating and ventilation, load cut-off systems and other climate control malfunctions. Students will also learn to evaluate and perform the necessary action of control panel assemblies, control cables, ducts, doors and outlets.

Competencies:

Compressor and Clutch

Diagnose A/C system conditions that cause the protection devices (pressure, thermal, and PCM) to interrupt system operation; determine necessary action.

Heating, Ventilation, and Engine Cooling Systems Diagnosis and Repair

Diagnose temperature control problems in the heater/ventilation system; determine necessary action

Operating Systems and Related Controls Diagnosis and Repair

Using scan tool, observe and record related HVAC data and trouble codes.
Identify hybrid vehicle air conditioning system electrical circuits, service and safety precautions.
Diagnose failures in the electrical controls of heating, ventilation, and A/C (HVAC) systems; determine necessary action.
Test A/C compressor load cut-off systems; determine necessary action.
Diagnose failures in the vacuum and mechanical components and controls of the heating, ventilation, and A/C (HVAC) system; determine necessary action
Inspect and test A/C-heater control panel assembly; determine necessary action.
Inspect and test A/C-heater control cables and linkages; perform necessary action.
Inspect and test A/C-heater ducts, doors, hoses, and outlets; perform necessary action.

Automotive Manual Drive Train and Axle Introduction (I) Hours 15

In this course the student will learn about the components that make up the manual transmissions, final drive systems, drive lines and clutch systems. Students will learn to check and adjust fluid levels, check drive shaft joints and check and adjust clutches.

Competencies:

Transmission Systems
Manual transmission systems: Components
Checking & adjusting transmission fluid
Changing manual transmission fluid
Checking & adjusting differential/transaxle fluid
Final Drive & Driveline
Final drive & driveline: Components
Checking rear wheel drives
Identifying driveline components
Checking drive shaft joints
Clutch and Associated Systems
Clutch systems: Types
Clutch systems: Components
Clutch systems: Mechanisms
Checking & adjusting clutches

Automotive Manual Drive Train and Axle Fundamentals (II) Hours 75

In this course the student will learn to diagnose, inspect and replace or reinstall the clutch components, which will include, clutch disc, pressure plate, fly wheel, throw out bearing, pilot bearing and bell housing. Students will learn to remove and reinstall the manual transmission and transaxle assembly and to replace gaskets and seals. Students will learn to diagnose and determine necessary action for constant velocity (CV) joints, universal joints, yokes, front drive shaft boots and center support bearing. Students will learn to inspect diagnose and determine necessary action for pinion seal, ring and pinion contact patterns, axles shaft wheel studs, axle seals and bearings, as well as measure the axle flange run-out.

Competencies:

Clutch Diagnosis and Repair,

Diagnose clutch noise, binding, slippage, pulsation, and chatter; determine necessary action.
Inspect release (throw-out) bearing, lever, and pivot; perform necessary action.
Inspect and replace clutch pressure plate assembly and clutch disc.
Inspect, remove or replace crankshaft pilot bearing or bushing (as applicable).
Inspect flywheel and ring gear for wear and cracks, measure runout; determine necessary action.

Inspect engine block, clutch (bell) housing, and transmission/transaxle case mating surfaces; determine necessary action.
Measure flywheel-to-block runout and crankshaft endplay; determine necessary action.

Transmission/Transaxle Diagnosis and Repair

Remove and reinstall transmission/transaxle.
Disassemble, clean, and reassemble transmission/transaxle components
Inspect transmission/transaxle case, extension housing, case mating surfaces, bores, bushings, and vents; perform necessary action
Inspect, adjust, and reinstall shift linkages, brackets, bushings, cables, pivots, and levers
Inspect and reinstall powertrain mounts
Inspect and replace gaskets, seals, and sealants; inspect sealing surfaces
Inspect and reinstall speedometer drive gear, driven gear, vehicle speed sensor (VSS), and retainers
Inspect, test, and replace transmission/transaxle sensors and switches.
Drive Shaft and Half Shaft, Universal and Constant-Velocity (CV) Joint Diagnosis and Repair
Diagnose constant-velocity (CV) joint noise and vibration concerns; determine necessary action.
Diagnose universal joint noise and vibration concerns; perform necessary action.
Replace front wheel drive (FWD) front wheel bearing.
Inspect, service, and replace shafts, yokes, boots, and CV joints.
Inspect, service, and replace shaft center support bearings.
Check shaft balance; measure shaft run-out; measure and adjust driveline angles
Drive Axle Diagnosis and Repair

Ring and Pinion Gears and Differential Case Assembly

Inspect and replace companion flange and pinion seal; measure companion flange runout.
Check ring and pinion tooth contact patterns; perform necessary action.

Limited Slip Differential

Diagnose noise, slippage, and chatter concerns; determine necessary action.

Drive Axle Shaft

Inspect and replace drive axle shaft wheel studs.
Remove and replace drive axle shafts.
Inspect and replace drive axle shaft seals, bearings, and retainers.
Measure drive axle flange runout and shaft endplay; determine necessary action.

Automotive Manual Drive Train and Axle Advanced (III) Hours 45

In this course the student will cover noise, hard shifting, jumping out of gear, vibration and fluid leakage. Students will learn to inspect, adjust and reinstall shift covers, forks, levers, shafts, sleeves detent mechanisms and interlocks. Students will learn to service final drive pinion gears, side bearings, thrust washers and lubrication devices. Students will learn to overhaul and set-up differential assembly including limited slip systems. Students will learn to diagnose and service the four-wheel drive transfer case systems, and other four-wheel drive components.

Competencies:

Transmission/Transaxle Diagnosis and Repair

Diagnose noise, hard shifting, jumping out of gear, and fluid leakage concerns; determine necessary action.
Remove and replace transaxle final drive.
Inspect, adjust, and reinstall shift cover, forks, levers, grommets, shafts, sleeves, detent mechanism, interlocks, and springs.
Measure endplay or preload (shim or spacer selection procedure) on transmission/transaxle shafts; perform necessary action.
Inspect and reinstall synchronizer hub, sleeve, keys (inserts), springs, and blocking rings.
Diagnose transaxle final drive assembly noise and vibration concerns; determine necessary action.
Remove, inspect, measure, adjust, and reinstall transaxle final drive pinion gears (spiders), shaft, side gears, side bearings, thrust washers, and case assembly.
Inspect lubrication devices (oil pump or slingers); perform necessary action.

Drive Axle Diagnosis and Repair

Ring and Pinion Gears and Differential Case Assembly

Diagnose noise and vibration concerns; determine necessary action.
Inspect ring gear and measure run-out; determine necessary action.
Remove, inspect, and reinstall drive pinion and ring gear, spacers, sleeves, and bearings.
Measure and adjust drive pinion depth.

Measure and adjust drive pinion bearing preload.
Measure and adjust side bearing preload and ring and pinion gear total backlash and backlash variation on a differential carrier assembly (threaded cup or shim types).
Disassemble, inspect, measure, and adjust or replace differential pinion gears (spiders), shaft, side gears, side bearings, thrust washers, and case.
Reassemble and reinstall differential case assembly; measure run-out; determine necessary action.
Limited Slip Differential
Inspect and reinstall clutch (cone or plate) components.
Measure rotating torque; determine necessary action.
Drive Axle Shaft
Diagnose drive axle shafts, bearings, and seals for noise, vibration, and fluid leakage concerns; determine necessary action.
Four-wheel Drive/All-wheel Drive Component Diagnosis and Repair
Diagnose noise, vibration, and unusual steering concerns; determine necessary action.
Inspect, adjust, and repair shifting controls (mechanical, electrical, and vacuum), bushings, mounts, levers, and brackets.
Remove and reinstall transfer case.
Disassemble, service, and reassemble transfer case and components
Inspect front-wheel bearings and locking hubs; perform necessary action.
Check drive assembly seals and vents; check lube level.
Diagnose test, adjust, and replace electrical/electronic components of four-wheel drive systems.

Automotive Automatic Transmission Introduction (I) Hours 15

In this course the student will learn about the components of the automatic transmission. Students will learn to check and adjust fluid levels and how to change the automatic transmission fluid and filter.

Competencies:

Transmission Systems
Automatic transmission systems: Components
Research applicable vehicle service information, such as transmission/transaxle system operation, fluid type, vehicle service precautions and technical service bulletins.
Checking & adjusting transmission fluid
Changing automatic transmission fluid

Automotive Automatic Transmission Fundamentals (II) Hours 45

In this course the student will learn to identify and interpret transmission concerns and determine necessary action. Students will learn to perform pressure tests and determine necessary action. Also covered in this course will be vacuum modulators, governor assemblies, external seals and gaskets, speedometer drive gear and vehicle speed sensors. Students will also cover power train mounts, extension housing bushings and seals. Also in this course students will leak test, flush and replace cooler lines and fittings.

Competencies:

General Transmission and Transaxle Diagnosis
Identify and interpret transmission concern; assure proper engine operation; determine necessary action.
Diagnose unusual fluid usage, level, and condition concerns; determine necessary action.
Perform pressure tests; determine necessary action.
Transmission and Transaxle Maintenance and Adjustment
Inspect, adjust or replace throttle (TV) linkages or cables, check gear select indicator (as applicable).
In-Vehicle Transmission and Transaxle Repair
Inspect, adjust or replace (as applicable) vacuum modulator; inspect and repair or replace lines and hoses.
Inspect, repair, and replace governor assembly.
Inspect and replace external seals and gaskets.
Inspect extension housing, bushings and seals; perform necessary action.
Inspect, leak test, flush, and replace cooler, lines, and fittings.

Inspect and replace speedometer drive gear, driven gear, vehicle speed sensor (VSS), and retainers. Inspect, replace, and align powertrain mounts.

Automotive Automatic Transmission Advanced (III) Hours 90

In this course the student will learn to perform lock-up converter system tests, and how to diagnose electronic, mechanical, hydraulic vacuume control system concerns. Students will learn to inspect and test, adjust and replace transmission electrical and electronic components. Students will learn to remove and reinstall transmission and transaxle assemblies as well as the torque converter systems. Also covered will be service and repair techniques on the valve body assembly. Students will learn to perform inspection, measuring, cleaning, and replacement of all the internal components to perform a complete automatic transmission and transaxle overhaul, this will include internal seals and o-rings, planetary gears, link chains and sprockets, pistons, check balls, springs, servo assemblies as well as drums and bands.

Competencies:

General Transmission and Transaxle Diagnosis
Perform lock-up converter system tests; determine necessary action.
Diagnose electronic, mechanical, hydraulic, vacuum control system concerns; determine necessary action.
Diagnose noise and vibration concerns; determine necessary action.
In-Vehicle Transmission and Transaxle Repair
Inspect and test, adjust, repair or replace transmission related electrical and electronic components (includes computers, solenoids, sensors, relays, switches, and harnesses).
Off-Vehicle Transmission and Transaxle Repair
Removal, Disassembly, and Reinstallation
Remove and reinstall transmission and torque converter (rear-wheel drive).
Remove and reinstall transaxle and torque converter assembly.
Disassemble, clean, and inspect transmission/transaxle.
Inspect, measure, clean, and replace valve body (includes surfaces and bores, springs, valves, sleeves, retainers, brackets, check-balls, screens, spacers, and gaskets), and torque valve body bolts.
Inspect servo bore, piston, seals, pin, spring, and retainers; determine necessary action.
Inspect accumulator bore, piston, seals, spring, and retainer; determine necessary action.
Assemble transmission/transaxle.
Oil Pump and Converter
Inspect converter flex plate, attaching parts, pilot, pump drive, and seal areas.
Measure torque converter endplay and check for interference; check stator clutch
Inspect, measure, and replace oil pump assembly and components.
Check torque converter and transmission cooling system for contamination.
Gear Train, Shafts, Bushings and Case
Measure endplay or preload; determine necessary action.
Inspect, measure, and replace thrust washers and bearings.
Inspect oil delivery seal rings, ring grooves, and sealing surface areas.
Inspect bushings; replace as needed.
Inspect and measure planetary gear assembly (includes sun, ring gear, thrust washers, planetary gears, and carrier assembly); replace as needed.
Inspect case bores, passages, bushings, vents, and mating surfaces; determine necessary action.
Inspect transaxle drive, link chains, sprockets, gears, bearings, and bushings; perform necessary action.
Inspect, measure, repair, adjust or replace transaxle final drive components.
Inspect and reinstall parking pawl, shaft, spring, and retainer; determine necessary action.
Friction and Reaction Units
Inspect clutch drum, piston, check-balls, springs, retainers, seals, and friction and pressure plates; replace as needed.
Measure clutch pack clearance; adjust as needed.
Air test operation of clutch and servo assemblies.
Inspect roller and sprag clutch, races, rollers, sprags, springs, cages, and retainers; replace as needed.
Inspect bands and drums; adjust or replace as needed.

Additional Transportation Related Courses

Standards: ASE: Service Consultant

Transportation Service Management, Operation and Supervision

Hours 60

In this course the student will learn about the types of service facilities and the roles of the service consultant. Students will learn about the team approach, what the responsibilities of the team leader are, optional team formats, member assignments and how a team approach can provide superior customer service. This course will cover the internal communications, relations and supervision, as well as workflow development. This course will explain other duties for general operation practices such as, making the sale, making sublet and up sales, business contracts, facility maintenance contracts, internal services, liability insurance and workers' compensation. Students will also learn to present and prioritize service needs and explain related and additional services and there value. Also covered in this course will be ways to develop and maintain a positive work environment.

Competencies:

Monitor repair progress.
Maintain shop production and efficiency.
Maintain open lines of communication within the organization.
Establish completion expectations.
Verify availability of required parts.
Manage workflow.
Present professional image.
Identify labor operations.
Demonstrate knowledge of sublet procedures.
Maintain customer appointment log.
Address repeat repairs/comebacks.
Use available shop management system (computerized/manual).
Provide and explain estimates.
Identify and prioritize vehicle needs.
Address customer needs.
Communicate the value of performing related and additional services.
Explain product/service features and benefits.
Close the sale.
Interpret and clarify repair procedures.
Understand the technician's diagnosis and service recommendation.
Effectively communicate customer service concerns.

Transportation Customer Service, Marketing, and Communication

Hours 45

In this course the student will learn communication skills using telephone and verbal techniques. Students will cover customer-greeting, checking the vehicle records, checking the customer records, presentation of the invoice and work order explanation. Students will learn how to perform customer delivery and follow-ups after the repair. Also covered will be warranties, service contracts, service bulletins, campaigns ands recalls. This course will close with the how to develop promotions and advertising.

Competencies:

Demonstrate proper telephone skills.
Present professional image.
Demonstrate appropriate greeting skills.
Demonstrate proper customer communication skills.
Obtain and document pertinent vehicle information and confirm accuracy.
Identify customer concern and request.
Obtain and document customer contact information.
Open repair order and confirm accuracy.
Arrange for alternate transportation.
Promote procedures, benefits and capabilities of the service facility.
Check vehicle service history.
Identify and recommend service and maintenance needs.
Communicate completion expectations.
Obtain repair authorization.
Identify customer types (first time, warranty, fleet, ect.).
Perform customer follow-up.
Overcome customer objection.
Explain and confirm understanding of work performed, charges and review methods of payment.
Maintain service records.