Appendix A

AUTOMOTIVE TECHNICIAN SPECIALIST

WORK PROCESS SCHEDULE

AND

RELATED INSTRUCTION OUTLINE

Appendix A

WORK PROCESS SCHEDULE
AUTOMOTIVE TECHNICIAN SPECIALIST

O*NET-SOC CODE: 49-3023.02 **RAPIDS CODE:** 1034CB

This schedule is attached to and a part of these Standards for the above identified occupation.

1. APPRENTICESHIP APPROACH

☐ Time-based ☒ Competency-based ☐ Hybrid

2. TERM OF APPRENTICESHIP

The term of the apprenticeship is 30 months duration

3. RATIO OF APPRENTICES TO JOURNEYWORKERS

The apprentice to journeyworker ratio is: 1 Apprentice to 1 Journeyworker.

4. APPRENTICE WAGE SCHEDULE

Apprentices shall be paid a progressively increasing schedule of wages based on either a percentage or a dollar amount of the current hourly journeyworker wage rate, which is: $21.18. Wage rates will be determined locally.
Sample wage rate increment is:

0-12 months	min $11.00
12-24 months	min $12.00
24-36 months	min $13.00

5. PROBATIONARY PERIOD

Every applicant selected for apprenticeship will serve a probationary period of *not more than 6 months.*

6. SELECTION PROCEDURES

Please enter selection procedures for this occupation:

AAG will partner with local high schools, colleges and community organizations and will use various online platforms to recruit suitable and interested applicants.

Applicants will have to complete and online application and may attend an AAG information event to learn more about the apprenticeship program prior to applying.

Successful applicants will have to attend the AAG orientation workshop prior to commencement.

Automotive Apprenticeship Group will not discriminate against apprenticeship applicants or apprentices based on race, color, religion, national origin, sex (including pregnancy and gender identity), sexual orientation, genetic information, or because they are an individual with a disability or a person 40-years old or older.

COMPETENCY-BASED OCCUPATIONAL FRAMEWORK FOR REGISTERED APPRENTICESHIP

AUTOMOTIVE TECHNICIAN SPECIALIST

ONET Code: 49-3023.02

RAPIDS Code: 1034CB

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Prepared by AAG

Work Process Schedule: **Approximate Hours: 5000 in the workplace**

Apprentices will undertake the following tasks in the workplace. The apprentice's supervisor or journeyworker will initial and date apprentice's workplace log book once each task is undertaken.

AAG will monitor progress through workplace visits and arrange for Apprentices to undertake tasks not completed at the AAG experience lab/academy or with their registered training provider.

Job Function 1: Maintain safety, health and professionalism at work

Identify and follow workplace safety procedures		
	Completion Initials	***Date***
1. Identify shop hazards and explain the necessary steps to avoid personal injury or property damage		
2. Identify and follow workplace emergency procedures regarding illness and accidents, safety warnings and emergency evacuations		
3. Identify and follow workplace manual handling procedures		

Use and maintenance of tools and equipment

	Completion Initials	Date
4. Display understanding of key functions, limitations and operating procedures of hand tools, power tools, air tools, vehicle lifting equipment and supporting equipment.		
5. Select and use tools and equipment to meet task requirements		
6. Use tools, equipment and personal protecting equipment according to manufacturer procedure and safety requirements		
7. Service, adjust and maintain tools and equipment according to workplace and manufacturer schedules and procedures to ensure safe and accurate operation		
8. Check tools and equipment for serviceability, clean and store according to workplace procedure		

9. Follow basic maintenance and storage procedure for tools and equipment		

JOB FUNCTION 1: Engine Repair

Engine Repair – General		
	Completion Initials	***Date***
1. Research vehicle service information, including fluid type, vehicle service history, service precautions, and technical service bulletins.		
2. Verify operation of the instrument panel engine warning indicators.		
3. Inspect engine assembly for fuel, oil, coolant, and other leaks; determine necessary action.		
4. Install engine covers using gaskets, seals, and sealers as required.		
5. Verify engine mechanical timing.		
6. Perform common fastener and thread repair, to include: remove broken bolt, restore internal and external threads, and repair internal threads with thread insert.		

Engine Repair -- Cylinder Head and Valve Train		
	Completion Initials	***Date***
1. Adjust valves (mechanical or hydraulic lifters).		

Engine Repair -- Lubrication and Cooling Systems		
	Completion Initials	***Date***
1. Perform cooling system pressure and dye tests to identify leaks; check coolant condition and level; inspect and test radiator, pressure cap, coolant recovery tank, heater core, and galley plugs; determine necessary action.		
2. Inspect, replace, and/or adjust drive belts, tensioners, and pulleys; check pulley and belt alignment.		
3. Remove, inspect, and replace thermostat and gasket/seal.		
4. Inspect and test coolant; drain and recover coolant; flush and refill cooling system; use proper fluid type per manufacturer specification; bleed air as required.		
5. Perform engine oil and filter change; use proper fluid type per manufacturer specification; reset maintenance reminder as required.		
6. Identify components of the lubrication and cooling systems.		

JOB FUNCTION 2: Automatic Transmission and Transaxle

Automatic Transmission and Transaxle – General		
	Completion Initials	***Date***
1. Research vehicle service information including fluid type, vehicle service history, service precautions, and technical service bulletins.		
2. Check fluid level in a transmission or a transaxle equipped with a dip-stick.		
3. Check fluid level in a transmission or a transaxle not equipped with a dip-stick.		
4. Check transmission fluid condition; check for leaks.		
5. Identify drive train components and configuration.		

Automatic Transmission and Transaxle -- In-Vehicle Transmission/Transaxle		
	Completion Initials	***Date***
1. Inspect, adjust, and/or replace external manual valve shift linkage, transmission range sensor/switch, and/or park/neutral position switch.		
2. Inspect for leakage at external seals, gaskets, and bushings.		
3. Inspect, replace and/or align power train mounts.		
4. Drain and replace fluid and filter(s); use proper fluid type per manufacturer specification.		

Automatic Transmission and Transaxle -- Off-Vehicle Transmission and Transaxle		
	Completion Initials	***Date***
1. Describe the operational characteristics of a continuously variable transmission (CVT).		
2. Describe the operational characteristics of a hybrid vehicle drive train.		

JOB FUNCTION 3: MANUAL DRIVE TRAIN AND AXELS

MANUAL DRIVE TRAIN AND AXLES -- General		
	Completion Initials	***Data***
1. Research vehicle service information including fluid type, vehicle service history, service precautions, and technical service bulletins.		
2. Drain and refill manual transmission/transaxle and final drive unit; use proper fluid type per manufacturer specification.		
3. Check fluid condition; check for leaks.		
4. Identify manual drive train and axle components and configuration.		

MANUAL DRIVE TRAIN AND AXLES -- Clutch		
	Completion Initials	***Date***
1. Check and adjust clutch master cylinder fluid level; use proper fluid type per manufacturer specification		
2. Check for hydraulic system leaks.		

MANUAL DRIVE TRAIN AND AXLES -- Drive Shaft, Half Shafts, Universal Joints and Constant-Velocity (CV) Joints (Front, Rear, All, and Four-wheel drive)		
	Completion Initials	***Date***
1. Inspect, remove, and/or replace bearings, hubs, and seals.		
2. Inspect, service, and/or replace shafts, yokes, boots, and universal/CV joints.		
3. Check for leaks at drive assembly and transfer case seals; check vents; check fluid level; use proper fluid type per manufacturer specification.		

MANUAL DRIVE TRAIN AND AXLES – Differential Case Assembly		
	Completion Initials	***DAte***
1. Clean and inspect differential case; check for leaks; inspect housing vent.		
2. Check and adjust differential case fluid level; use proper fluid type per manufacturer specification.		
3. Drain and refill differential housing.		
4. Inspect and replace drive axle wheel studs.		

JOB FUNCTION 4: SUSPENSION AND STEERING SYSTEMS

SUSPENSION AND STEERING SYSTEMS – General		
	Completion Initials	***Date***
1. Research vehicle service information including fluid type, vehicle service history, service precautions, and technical service bulletins.		
2. Disable and enable supplemental restraint system (SRS); verify indicator lamp operation.		
3. Identify suspension and steering system components and configurations.		

SUSPENSION AND STEERING – Related Suspension and Steering Service		
	Completion Initials	***Date***
1. Inspect rack and pinion steering gear inner tie rod ends (sockets) and bellows boots.		
2. Inspect power steering fluid level and condition.		
3. Flush, fill, and bleed power steering system; use proper fluid type per manufacturer specification.		
4. Inspect for power steering fluid leakage.		
5. Remove, inspect, replace, and/or adjust power steering pump drive belt.		
6. Inspect and replace power steering hoses and fittings.		
7. Inspect pitman arm, relay (centerlink/intermediate) rod, idler arm, mountings, and steering linkage damper.		
8. Inspect tie rod ends (sockets), tie rod sleeves, and clamps.		
9. Inspect upper and lower control arms, bushings, and shafts.		
10. Inspect track bar, strut rods/radius arms, and related mounts and bushings.		
11. Inspect upper and lower ball joints (with or without wear indicators).		
12. Inspect suspension system coil springs and spring insulators (silencers).		
13. Inspect suspension system torsion bars and mounts.		
14. Inspect and/or replace front/rear stabilizer bar (sway bar) bushings, brackets, and links.		
15. Inspect, remove, and/or replace strut cartridge or assembly; inspect mounts and bushings.		
16. Inspect front strut bearing and mount.		
17. Inspect rear suspension system lateral links/arms (track bars), control (trailing) arms.		

18. Inspect rear suspension system leaf spring(s), spring insulators (silencers), shackles, brackets, bushings, center pins/bolts, and mounts.		
19. Inspect, remove, and/or replace shock absorbers; inspect mounts and bushings.		
20. Inspect electric power steering assist system.		
21. Identify hybrid vehicle power steering system electrical circuits and safety precautions.		
22. Describe the function of steering and suspension control systems and components, (i.e., active suspension, and stability control).		

SUSPENSION AND STEERING – Wheel Alignment		
	Completion Initials	***Date***
1. Perform pre-alignment inspection; measure vehicle ride height.		
2. Describe alignment angles (camber, caster and toe)		

SUSPENSION AND STEERING – Wheels and Tires		
	Completion Initials	***Date***
1. Inspect tire condition; identify tire wear patterns; check for correct tire size, application (load and speed ratings), and air pressure as listed on the tire information placard/label.		
2. Rotate tires according to manufacturers' recommendations including vehicles equipped with tire pressure monitoring systems (TPMS).		
3. Dismount, inspect, and remount tire on wheel; balance wheel and tire assembly.		
4. Dismount, inspect, and remount tire on wheel equipped with tire pressure monitoring system sensor.		
5. Inspect tire and wheel assembly for air loss; determine necessary action.		
6. Repair tire following vehicle manufacturer approved procedure.		

7. Identify indirect and direct tire pressure monitoring systems (TPMS); calibrate system; verify operation of instrument panel lamps.		
8. Demonstrate knowledge of steps required to remove and replace sensors in a tire pressure monitoring system (TPMS), including relearn procedure.		

JOB FUNCTION 5: BRAKES

Brakes -- General		
	Completion Initials	***Date***
1. Research vehicle service information including fluid type, vehicle service history, service precautions, and technical service bulletins.		
2. Describe procedure for performing a road test to check brake system operation, including an anti-lock brake system (ABS).		
3. Install wheel and torque lug nuts.		
4. Identify brake system components and configuration.		

BRAKES – Hydraulic System		
	Completion Initials	***Date***
1. Describe proper brake pedal height, travel, and feel.		
2. Check master cylinder for external leaks and proper operation.		
3. Inspect brake lines, flexible hoses, and fittings for leaks, dents, kinks, rust, cracks, bulging, wear, and loose fittings/supports.		
4. Select, handle, store, and fill brake fluids to proper level; use proper fluid type per manufacturer specification.		
5. Identify components of hydraulic brake warning light system.		
6. Bleed and/or flush brake system.		

7. Test brake fluid for contamination.		

Brakes – Drum Brakes		
	Completion Initials	***Date***
1. Remove, clean, and inspect brake drum; measure brake drum diameter; determine serviceability.		
2. Refinish brake drum and measure final drum diameter; compare with specification.		
3. Remove, clean, inspect, and/or replace brake shoes, springs, pins, clips, levers, adjusters/self-adjusters, other related brake hardware, and backing support plates; lubricate and reassemble.		
4. Inspect wheel cylinders for leaks and proper operation; remove and replace as needed.		
5. Pre-adjust brake shoes and parking brake; install brake drums or drum/hub assemblies and wheel bearings; make final checks and adjustments.		

Brakes – Disc Brakes		
	Completion Initials	***Date***
1. Remove and clean caliper assembly; inspect for leaks and damage/wear; determine necessary action.		
2. Inspect caliper mounting and slides/pins for proper operation, wear, and damage; determine necessary action.		
3. Remove, inspect, and/or replace brake pads and retaining hardware; determine necessary action.		
4. Lubricate and reinstall caliper, brake pads, and related hardware; seat brake pads and inspect for leaks.		
5. Clean and inspect rotor and mounting surface, measure rotor thickness, thickness variation, and lateral runout; determine necessary action.		
6. Remove and reinstall/replace rotor.		

7. Refinish rotor on vehicle; measure final rotor thickness and compare with specification.		
8. Refinish rotor off vehicle; measure final rotor thickness and compare with specification.		
9. Retract and re-adjust caliper piston on an integral parking brake system.		
10. Check brake pad wear indicator; determine necessary action.		
11. Describe importance of operating vehicle to burnish/break-in replacement brake pads according to manufacturers' recommendation.		

Brakes – Power Assist Units

	Completion Initials	***Date***
1. Check brake pedal travel with, and without, engine running to verify proper power booster operation.		
2. Identify components of the brake power assist system (vacuum and hydraulic); check vacuum supply (manifold or auxiliary pump) to vacuum-type power booster.		

Brakes – Related Systems (i.e., Wheel Bearings, Parking Brakes, Electrical)

	Completion Initials	***Date***
1. Remove, clean, inspect, repack, and install wheel bearings; replace seals; install hub and adjust bearings.		
2. Check parking brake system components for wear, binding, and corrosion; clean, lubricate, adjust and/or replace as needed.		
3. Check parking brake operation and parking brake indicator light system operation; determine necessary action.		
4. Check operation of brake stop light system.		
5. Replace wheel bearing and race.		

6. Inspect and replace wheel studs.		

Brakes – Electronic Brake, Traction Control, and Stability Control Systems		
	Completion Initials	***Date***
7. Identify traction control/vehicle stability control system components.		
8. Describe the operation of a regenerative braking system.		

JOB FUNCTION 6: ELECTRICAL/ELECTRONIC SYSTEMS

ELECTRICAL/ELECTRONIC SYSTEMS – General		
	Completion Initials	***Date***
1. Research vehicle service information including vehicle service history, service precautions, and technical service bulletins.		
2. Demonstrate knowledge of electrical/electronic series, parallel, and series-parallel circuits using principles of electricity (Ohm's Law).		
3. Use wiring diagrams to trace electrical/electronic circuits.		
4. Demonstrate proper use of a digital multimeter (DMM) when measuring source voltage, voltage drop (including grounds), current flow, and resistance.		
5. Demonstrate knowledge of the causes and effects from shorts, grounds, opens, and resistance problems in electrical/electronic circuits.		
6. Use a test light to check operation of electrical circuits.		
7. Use fused jumper wires to check operation of electrical circuits.		
8. Measure key-off battery drain (parasitic draw).		

9. Inspect and test fusible links, circuit breakers, and fuses; determine necessary action.		
10. Repair and/or replace connectors, terminal ends, and wiring of electrical/electronic systems (including solder repair)		
11. Identify electrical/electronic system components and configuration.		

ELECTRICAL/ELECTRONIC SYSTEMS – Battery Service		
	Completion Initials	***Date***
A. Perform battery state-of-charge test; determine necessary action.		
B. Confirm proper battery capacity for vehicle application; perform battery capacity and load test; determine necessary action.		
C. Maintain or restore electronic memory functions.		
D. Inspect and clean battery; fill battery cells; check battery cables, connectors, clamps, and hold-downs.		
E. Perform slow/fast battery charge according to manufacturers' recommendations.		
F. Jump-start vehicle using jumper cables and a booster battery or an auxiliary power supply.		
G. Identify safety precautions for high voltage systems on electric, hybrid-electric, and diesel vehicles.		
H. Identify electrical/electronic modules, security systems, radios, and other accessories that require reinitialization or code entry after reconnecting vehicle battery.		
I. Identify hybrid vehicle auxiliary (12v) battery service, repair, and test procedures.		

ELECTRICAL/ELECTRONIC SYSTEMS – Starting System

	Completion Initials	Date
A. Perform starter current draw test; determine necessary action.		
B. Perform starter circuit voltage drop tests; determine necessary action.		
C. Inspect and test starter relays and solenoids; determine necessary action.		
D. Remove and install starter in a vehicle.		
E. Inspect and test switches, connectors, and wires of starter control circuits; determine necessary action.		

ELECTRICAL/ELECTRONIC SYSTEMS – Charging System		
	Completion Initials	***Date***
1. Perform charging system output test; determine necessary action.		
2. Inspect, adjust, and/or replace generator (alternator) drive belts; check pulleys and tensioners for wear; check pulley and belt alignment.		
3. Remove, inspect, and/or replace generator (alternator).		
4. Perform charging circuit voltage drop tests; determine necessary action.		

ELECTRICAL/ELECTRONIC SYSTEMS – Lighting, Instrument Cluster, Driver Information, and Body Electrical Systems		
	Completion Initials	***Date***
1. Inspect interior and exterior lamps and sockets including headlights and auxiliary lights (fog lights/driving lights); replace as needed.		
2. Aim headlights.		
3. Identify system voltage and safety precautions associated with high-intensity discharge headlights.		
4. Disable and enable supplemental restraint system (SRS); verify indicator lamp operation.		

5. Describe the operation of keyless entry/remote-start systems.		
6. Verify operation of instrument panel gauges and warning/indicator lights; reset maintenance indicators.		
7. Verify windshield wiper and washer operation; replace wiper blades.		

JOB FUNCTION 7: HEATING, VENTILATION, AND AIR CONDITIONING (HVAC)

HEATING, VENTILATION, AND AIR CONDITIONING (HVAC) – General		
	Undertaken Initials	***Date***
1. Research vehicle service information, including refrigerant/oil type, vehicle service history, service precautions, and technical service bulletins.		
2. Identify heating, ventilation and air conditioning (HVAC) components and configuration.		

HEATING, VENTILATION, AND AIR CONDITIONING (HVAC) – Refrigeration System Components		
	Undertaken Initials	***Date***
1. Inspect and replace A/C compressor drive belts, pulleys, and tensioners; visually inspect A/C components for signs of leaks; determine necessary action.		
2. Identify hybrid vehicle A/C system electrical circuits and the service/safety precautions.		
3. Inspect A/C condenser for airflow restrictions; determine necessary action.		

HEATING, VENTILATION, AND AIR CONDITIONING (HVAC) – Heating, Ventilation, and Engine Cooling Systems		
	Undertaken	***Date***

	Initials	
1. Inspect engine cooling and heater systems hoses and pipes; determine necessary action.		

HEATING, VENTILATION, AND AIR CONDITIONING (HVAC) – Operating Systems and Related Controls		
	Undertaken Initials	***Date***
1. Inspect A/C-heater ducts, doors, hoses, cabin filters, and outlets; determine necessary action.		
2. Identify the source of A/C system odors.		

JOB FUNCTION 8: ENGINE PERFORMANCE

ENGINE PERFORMANCE – General		
	Undertaken Initials	***Date***
1. Research vehicle service information, including fluid type, vehicle service history, service precautions, and technical service bulletins.		
2. Perform engine absolute manifold pressure tests (vacuum/boost); document results.		
3. Perform cylinder cranking and running compression tests; document results.		
4. Perform cylinder leakage test; document results.		
5. Verify engine operating temperature.		
6. Remove and replace spark plugs; inspect secondary ignition components for wear and damage.		

ENGINE PERFORMANCE – Computerized Controls

	Undertaken Initials	Date
1. Retrieve and record diagnostic trouble codes (DTC), OBD monitor status, and freeze frame data; clear codes when applicable.		
2. Describe the use of the OBD monitors for repair verification.		

ENGINE PERFORMANCE – Fuel, Air Induction, and Exhaust Systems		
	Undertaken Initials	***Date***
1. Replace fuel filter(s) where applicable.		
2. Inspect, service, or replace air filters, filter housings, and intake duct work.		
3. Inspect integrity of the exhaust manifold, exhaust pipes, muffler(s), catalytic converter(s), resonator(s), tail pipe(s), and heat shields; determine necessary action.		
4. Inspect condition of exhaust system hangers, brackets, clamps, and heat shields; determine necessary action.		
5. Check and refill diesel exhaust fluid (DEF).		

ENGINE PERFORMANCE – Emissions Control Systems		
	Undertaken Initials	***Date***
1. Inspect, test, and service positive crankcase ventilation (PCV) filter/breather, valve, tubes, orifices, and hoses; perform necessary action.		

Additional Workplace Learning Undertaken

Task	Initial	Date undertaken

RELATED INSTRUCTION OUTLINE
Registered Training Provider, AAG Lab/Academy
and Manufacturer Specific Training
Automotive Technician Specialist

O*NET-SOC CODE: 49-3023.02 **RAPIDS CODE:** 1034CB

Related Instruction General Category Descriptions:

Follow safe working practices in an automotive workplace
Follow environmental and sustainability best practice in an automotive workplace
Use and maintain tools and equipment in an automotive workplace
Communicate effectively in an automotive workplace
Test and repair basic electrical circuits
Diagnose and repair ignition management system
Test, charge and replace batteries
Diagnose and repair charging system
Diagnose and repair starting system
Diagnose and repair steering system
Diagnose and repair hydraulic breaking system
Diagnose and repair vehicle suspension system
Diagnose and repair light vehicle engine system
Diagnose and repair emission control system
Carry out servicing operations
Develop and carry out diagnostic test strategies
Inspect and service breaking and fuel systems
Diagnose and repair Cooling systems
Electric and hybrid automotive systems
Diagnose and repair tires, wheels and suspension (including alignment) systems
Manufacturer specific training