

Idaho Professional-Technical Education

Automotive Technology Program Standards Criticality Survey Results		Nice to Know	Need to Know	Critical to Know	Rating Average	Response Count
CONTENT STANDARD 1: Identify and utilize safety procedures and proper tools						
Performance Standard 1.1: Demonstrate general lab safety rules and procedures						
1.1.1	Describe general shop safety rules and procedures	1	4	24	2.79	29
1.1.2	Utilize safe procedures for handling of tools and equipment	1	4	24	2.79	29
1.1.3	Identify and use proper placement of floor jacks and jack standards	1	1	27	2.90	29
1.1.4	Identify and use proper procedures for safe vehicle life operation	1	3	25	2.83	29
1.1.5	Utilize proper ventilation procedures for working within the lab/shop area	1	11	17	2.55	29
1.1.6	Identify marked safety areas	2	13	14	2.41	29
1.1.7	Identify the location and the types of fire extinguishers and other fire safety equipment; demonstrate knowledge of the procedures for using fire extinguishers and other safety equipment	1	8	19	2.64	28
1.1.8	Identify the location and use of eye wash stations	1	10	18	2.59	29
1.1.9	Identify the location of the posted evacuation routes	4	11	14	2.34	29
1.1.10	Comply with the required use of safety glasses, ear protection, gloves and shoes during lab/shop activities	2	8	19	2.59	29
1.1.11	Identify and wear appropriate clothing for lab/shop activities	2	13	14	2.41	29
1.1.12	Secure hair and jewelry for lab/shop activities	4	9	14	2.37	27
1.1.13	Identify safety aspects of supplemental restraint systems (SRS), electronic brake control systems, and hybrid vehicle high voltage circuits	4	11	13	2.32	28
1.1.14	Identify safety aspects of high voltage circuits (such as high intensity discharge (HID) lamps, ignition systems, injection systems, etc.)	3	12	14	2.38	29
1.1.15	Locate and interpret material safety data sheets (MSDS)	5	16	8	2.10	29
1.1.16	Handle and dispose of hazardous waste and materials	1	14	14	2.45	29
Performance Standard 1.2: Identify and utilize proper tools						
1.2.1	Identify tools and their usage in automotive applications	3	20	6	2.10	29
1.2.2	Identify standard and metric designations and fasteners	5	19	5	2.00	29
1.2.3	Demonstrate safe handling and use of appropriate tools	1	19	9	2.28	29
1.2.4	Demonstrate proper cleaning, storage, and maintenance of tools and equipment	5	19	4	1.96	28
1.2.5	Demonstrate proper use of precision measuring tools (e.g., micrometer, dial-indicate, dial-caliper)	2	18	9	2.24	29
CONTENT STANDARD 2: Perform Basic Vehicle Service						
Performance Standard 2.1: Identify and utilize vehicle service information						
2.1.1	Locate and utilize paper and/or electronic service information	5	13	11	2.21	29
2.1.2	Locate and utilize Technical Service Bulletins (TSBs)	4	14	11	2.24	29
2.1.3	Demonstrate knowledge of special service messages, quotes, service campaigns/recalls, vehicle/service warranty applications and service interval recommendations	8	17	4	1.86	29
2.1.4	Locate Vehicle Identification Number (VIN) and production data code	5	16	8	2.10	29
2.1.5	Analyze Vehicle Identification Number (VIN) information	13	14	2	1.62	29
2.1.6	Identify other vehicle information labels (such as tire, emissions, etc.)	12	13	4	1.72	29
Performance Standard 2.2: Prepare a vehicle for the customer						
2.2.1	Ensure vehicle is prepared to return to customer per school/company policy (floor mats, steering wheel cover, etc.)	3	20	6	2.10	29
2.2.2	Verify vehicle repair	0	12	17	2.59	29
CONTENT STANDARD 3: Apply concepts of engine repair (A1)						
Performance Standard 3.1: Demonstrate general engine service techniques						
3.1.1	Research applicable vehicle and service information, vehicle service history, service precautions, and technical service bulletins	6	18	5	1.97	29
3.1.2	Verify operation of the instrument panel engine warning indicators	3	21	5	2.07	29
3.1.3	Inspect engine assembly for fuel, oil, coolant, and other leaks; determine necessary action	2	19	8	2.21	29
3.1.4	Install engine covers using gaskets, seals and sealers as required	4	18	7	2.10	29
3.1.5	Demonstrate knowledge of timing belt removal and replacement	5	18	6	2.03	29
3.1.6	Perform common fastener and thread repair, to include: remove broken bolt, restore internal and external threads, and repair internal threads with thread insert	4	20	4	2.00	28
3.1.7	Identify hybrid vehicle internal combustion engine service precautions	5	16	8	2.10	29

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Performance Standard 3.2: Perform cylinder head and valve train service and repair						
3.2.1	Identify various cylinder head configurations (i.e., OHV, OHC, DOHC, VVT)	4	21	4	2.00	29
3.2.2	Demonstrate knowledge of valve adjustment (mechanic and hydraulic lifters)	7	18	4	1.90	29
Performance Standard 3.3: Perform lubrication and cooling systems service and repair						
3.3.1	Diagnose various cooling system faults including block test, thermostat operation, coolant restrictions, leaks, and fan operation	4	21	3	1.96	28
3.3.2	Inspect, replace and adjust drive belts, tensioners, and pulleys, check pulley and belt alignment	2	23	4	2.07	29
3.3.3	Inspect and test coolant; drain and recover coolant; flush and refill cooling system with recommended coolant; bleed air as required	3	22	4	2.03	29
3.3.4	Perform oil and filter change	3	21	5	2.07	29
CONTENT STANDARD 4: Analyze automatic transmission/transaxle for service (A2)						
Performance Standard: 4.1: Perform general transmission/transaxle service						
4.1.1	Research applicable vehicle and service information, fluid type, vehicle service history, service precautions, and technical service bulletins	2	18	9	2.24	29
4.1.2	Check fluid level in a transmission, or a transaxle equipped with a dip-stick	2	22	5	2.10	29
4.1.3	Check fluid level in a transmission, or a transaxle not equipped with a dip-stick	4	18	6	2.07	28
4.1.4	Check transmission fluid condition; check for leaks	3	18	6	2.11	27
Performance Standard 4.2: Perform in-vehicle transmission/transaxle service and repair						
4.2.1	Inspect, adjust, and replace external manual valve shift linkage, transmission range sensor/switch, and park/neutral position switch	7	18	4	1.90	29
4.2.2	Inspect for leakage at external seals, gaskets, and bushings	4	21	3	1.96	28
4.2.3	Inspect powertrain mounts	5	21	3	1.93	29
4.2.4	Drain and replace fluid and filter(s)	4	18	6	2.07	28
CONTENT STANDARD 5: Analyze manual drivetrain and axles for service (A3)						
Performance Standard 5.1: Perform general drive train service						
5.1.1	Research applicable vehicle and service information, fluid type, vehicle service history, service precautions, and technical service bulletins	5	15	9	2.14	29
5.1.2	Drain and refill manual transmission/transaxle and final drive unit	4	21	3	1.96	28
5.1.3	Check fluid condition; check for leaks	4	21	4	2.00	29
Performance Standard 5.2: Investigate clutch systems for service and repair						
5.2.1	Check and adjust clutch master cylinder fluid level	5	20	4	1.97	29
5.2.2	Check for system leaks	4	20	5	2.03	29
5.2.3	Describe basic operation of a manual clutch system	7	17	5	1.93	29
Performance Standard: 5.3 Perform drive shaft and half shaft, universal and constant velocity (CV) joint service and repair						
5.3.1	Diagnose, inspect, remove and replace front wheel drive (FWD) bearings, hubs, and seals	5	19	4	1.96	28
5.3.2	Diagnose, inspect, service and replace shafts, yokes, boots, and universal/CV joints	5	17	6	2.04	28
Performance Standard 5.4: Assess differential case assembly for service						
5.4.1	Demonstrate knowledge of differential operation	4	20	5	2.03	29
5.4.2	Clean and inspect differential housing; check for leaks; inspect housing vent	3	23	3	2.00	29
5.4.3	Check and adjust differential housing fluid level + A71	4	22	3	1.97	29
5.4.4	Drain and fill differential housing	4	20	4	2.00	28
Performance Standard 5.5: Perform drive axle service and repair						
5.5.1	Inspect and replace drive axle wheel studs	5	19	4	1.96	28
Performance Standard 5.6: Assess four-wheel drive/all-wheel drive component for service and repair						
5.6.1	Inspect front-wheel bearings and locking hubs	5	20	4	1.97	29
5.6.2	Check for leaks at drive assembly seals, check vents; check lub level	3	22	4	2.03	29
5.6.3	Demonstrate knowledge of 4WD, AWD systems	4	21	4	2.00	29
CONTENT STANDARD 6: Perform suspension and steering service and repair (A4)						

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Performance Standard 6.1: Prepare vehicle for general suspension and steering systems service						
6.1.1	Research applicable vehicle and service information, vehicle service history, service precautions, and technical service bulletins	5	12	12	2.24	29
6.1.2	Disable and enable supplemental restraint system (SRS)	5	11	13	2.28	29
Performance Standard 6.2: Perform steering systems service and repair						
6.2.1	Demonstrate knowledge of various power steering systems	4	22	3	1.97	29
6.2.2	Identify and inspect various steering system components	3	23	3	2.00	29
6.2.3	Demonstrate knowledge of various suspension systems	3	24	2	1.97	29
6.2.4	Identify and inspect various suspension system components	3	23	3	2.00	29
6.2.5	Inspect electric power-assisted steering	3	24	2	1.97	29
6.2.6	Identify electronically controlled suspension systems and safety precautions	4	20	5	2.03	29
6.2.7	Identify hybrid vehicle power steering system electrical circuits and safety precautions	4	16	9	2.17	29
Performance Standard 6.3: Investigate wheel alignment conditions						
6.3.1	Demonstrate knowledge of alignment angles, including camber, caster, toe, and SAI	5	18	6	2.03	29
6.3.2	Perform prealignment inspection and measure vehicle ride height, perform necessary action	5	18	6	2.03	29
Performance Standard 6.4: Perform wheel and tire service and repair						
6.4.1	Inspect tire condition; identify tire wear patterns; check for correct size and application (load and speed ratings) and adjust air pressure; determine necessary action	1	20	8	2.24	29
6.4.2	Rotate tires according to manufacturer's recommendations	2	22	5	2.10	29
6.4.3	Dismount, inspect, and remount tire on wheel; balance wheel and tire assembly (static and dynamic)	4	18	6	2.07	28
6.4.4	Dismount, inspect, and remount tire on wheel equipped with tire pressure monitoring system sensor	4	18	7	2.10	29
6.4.5	Inspect tire and wheel assembly for air loss; perform necessary action	7	17	5	1.93	29
6.4.6	Repair tire according to industry standards	5	16	8	2.10	29
6.4.7	Identify TPMS maintenance and relearn procedures	4	18	7	2.10	29
CONTENT STANDARD 7: Analyze brake systems for service and repair (A5)						
Performance Standard 7.1: Demonstrate knowledge of general brake systems						
7.1.1	Research applicable vehicle and service information, vehicle service history, service precautions, and technical service bulletins	3	14	12	2.31	29
7.1.2	Describe procedure for performing a road test to check brake system operation, including the anti-lock brake system (ABS)	1	19	9	2.28	29
7.1.3	Demonstrate knowledge of basic hydraulic principles	1	20	8	2.24	29
Performance Standard 7.2: Perform hydraulic system service and repair						
7.2.1	Measure brake pedal height, travel, and free play (as applicable); determine necessary action	4	23	2	1.93	29
7.2.2	Check master cylinder for internal/external leaks and proper operation	1	23	4	2.11	28
7.2.3	Inspect brake lines, flexible hoses, and fittings for leaks, dents, kinks, rust, cracks bulging, wear, loose fittings and support; determine necessary action	1	22	6	2.17	29
7.2.4	Select, handle, store, and fill brake fluids to proper level	1	22	6	2.17	29
7.2.5	Identify components of brake warning light system	4	21	3	1.96	28
7.2.6	Bleed and/or flush brake system	3	20	5	2.07	28
7.2.7	Test brake fluid for contamination	5	18	5	2.00	28
Performance Standard 7.3: Perform drum brake service and repair						
7.3.1	Remove, clean, inspect, and measure brake drum diameter; determine necessary action	2	22	5	2.10	29
7.3.2	Refinish brake drum and measure final drum diameter; compare with specifications	2	22	5	2.1	29
7.3.3	Remove, clean, and inspect brake shoes, springs, pins, clips, levers, adjusters/self-adjusters, other related brake hardware, and backing support plates; lubricate and reassemble	4	21	4	2	29
7.3.4	Inspect wheel cylinders for leaks and proper operation; remove and replace as needed	2	21	5	2.11	28
7.3.5	Preadjust brake shoes and parking brake; install brake drums or drum/hub assemblies, wheel bearings; make final checks and adjustments	3	18	6	2.11	27

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7.3.6	Install wheel and torque lug nuts to proper specifications	1	15	12	2.39	28
Performance Standard 7.4: Perform disc brake service and repair						
7.4.1	Remove and clean caliper assembly; inspect for leaks and damage/wear to caliper housing; determine necessary action	1	20	6	2.19	27
7.4.2	Clean, inspect and lubricate clipper mounting and slides/pins for proper operation wear, and damage; determine necessary action	1	23	5	2.14	29
7.4.3	Remove, inspect and replace pads and retaining hardware; determine necessary action	1	23	5	2.14	29
7.4.4	Lubricate and reinstall caliper, pads, and related hardware; seat pads and inspect for leaks	1	22	6	2.17	29
7.4.5	Clean and inspect rotor, measure rotor thickness, thickness variation, and lateral runout; determine necessary action	1	19	9	2.28	29
7.4.6	Remove and reinstall rotor	3	20	6	2.1	29
7.4.7	Refinish rotor on vehicle; measure final rotor thickness and compare with specifications	5	14	10	2.17	29
7.4.8	Refinish rotor off vehicle; measure final rotor thickness and compare with specifications	5	15	9	2.14	29
7.4.9	Retract and readjust caliper piston on an integral parking brake system	3	19	7	2.14	29
7.4.10	Check brake pad wear indicator; determine necessary action	3	20	6	2.1	29
7.4.11	Describe importance of operating vehicle to burnish/break-in replacement brake pads according to manufacturer's recommendations	2	21	6	2.14	29
Performance Standard 7.5: Analyze power assist units						
7.5.1	Check brake pedal free-travel with, and without, engine running to verify proper power booster operation	6	20	3	1.9	29
7.5.2	Check vacuum supply (manifold or auxiliary pump) to vacuum-type power booster	4	21	4	2	29
7.5.3	Identify alternative power assist units	6	20	3	1.9	29
Performance Standard 7.6: Perform miscellaneous service and repair (wheel bearings, parking brakes, electrical, etc.)						
7.6.1	Remove, clean, inspect, repack, and install wheel bearings, races, seals; install hub and adjust bearings	3	23	3	2	29
7.6.2	Check parking brake cables and components for wear, binding, and corrosion; clean, lubricate, adjust or replace as needed	3	23	3	2	29
7.6.3	Check parking brake operation and parking brake indicator light system operation; determine necessary action	3	22	4	2.03	29
7.6.4	Check operation of brake stop light system	3	19	6	2.11	28
CONTENT STANDARD 8: Analyze electrical/electronic system (A6)						
Performance Standard 8.1: Perform general electronic systems service						
8.1.1	Research applicable vehicle and service information vehicle service history, service precautions, and technical service bulletins	2	15	9	2.27	26
8.1.2	Demonstrate knowledge of electrical/electronic series, parallel and series-parallel circuits using principles of electricity (Ohm's and Watt's Law)	2	14	9	2.28	25
8.1.3	Use and interpret wiring diagrams to trace electrical/electronic circuits	2	14	10	2.31	26
8.1.4	Demonstrate proper use of digital multimeter (DMM) when measuring source voltage, voltage drop (including grounds), current flow, and resistance	2	12	12	2.38	26
8.1.5	Research the causes and effects from shorts, grounds, opens, and resistance problems in electrical/electronic circuits	2	13	11	2.35	26
8.1.6	Check operations of electrical circuits with a test light	3	13	10	2.27	26
8.1.7	Check operation of electrical circuits using fused jumper wires	4	13	9	2.19	26
8.1.8	Measure key-off battery drain (parasitic draw)	4	15	7	2.12	26
8.1.9	Inspect and test fusible links, circuit breakers, and fuses; determine necessary action	4	14	8	2.15	26
8.1.10	Perform solder repair of electrical wiring	6	12	8	2.08	26
8.1.11	Replace electrical connectors and terminal ends	7	11	7	2.00	25
Performance Standard 8.2: Perform battery service						
8.2.1	Perform battery state-of-charge test; determine necessary action	3	17	6	2.12	26
8.2.2	Confirm proper battery capacity for vehicle application; perform battery capacity test; determine necessary action	3	19	4	2.04	26

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8.2.3	Maintain or restore electronic memory functions	5	14	7	2.08	26
8.2.4	Inspect and clean battery; fill battery cells, clean battery cables, connectors, clamps, and hold-downs	3	17	6	2.12	26
8.2.5	Perform slow/fast battery charge according to manufacturer recommendations	2	18	6	2.15	26
8.2.6	Jump-start vehicle using jumper cables and a booster battery or an auxiliary power supply	3	16	7	2.15	26
8.2.7	Identify high voltage circuits of electric or hybrid electric vehicle and related safety precautions	4	14	8	2.15	26
8.2.8	Identify electronic modules, security systems, radios, and other accessories that require reinitialization or code entry after reconnecting vehicle battery	3	17	5	2.08	25
8.3 Perform starting system service and repair						
8.3.1	Perform starter current draw test; determine necessary action	4	15	6	2.08	25
8.3.2	Perform starter circuit voltage drop tests; determine necessary action	4	15	6	2.08	25
8.3.3	Inspect and test starter relays and solenoid; determine necessary action	3	18	5	2.08	26
8.3.4	Remove and install starter in a vehicle	4	19	3	1.96	26
8.3.5	Inspect and test switches, connectors, and wires of starter control circuits; determine necessary action	5	18	3	1.92	26
Performance Standard 8.4: Perform charging system service and repair						
8.4.1	Perform charging system output test; determine necessary action	3	16	7	2.15	26
8.4.2	Inspect, adjust, or replace generator (alternator) drive belts; check pulleys and tensioners	3	19	4	2.04	26
8.4.3	Remove, inspect and reinstall generator (alternator)	3	20	3	2	26
8.4.4	Perform charging circuit voltage drop tests; determine necessary action	4	17	5	2.04	26
Performance Standard 8.5: Perform lighting systems service and repair						
8.5.1	Inspect interior and exterior lamps and sockets including headlights and auxiliary lights (fog lights)	4	18	3	1.96	25
8.5.2	Aim headlights	9	15	1	1.68	25
8.5.3	Identify system voltage and safety precautions associated with high intensity discharge headlights	5	16	4	1.96	25
Performance Standard 8.6: Perform accessories service and repair						
8.6.1	Disable and enable the airbag system for vehicle service; verify indicator lamp operation	2	10	14	2.46	26
8.6.2	Remove and reinstall door panel	5	18	2	1.88	25
8.6.3	Describe the operation of keyless entry/remote-start system	5	19	2	1.88	26
8.6.4	Verify operation of instrument panel gauges and warning/indicator lights; reset maintenance indicator	6	18	2	1.85	26
8.6.5	Verify windshield wiper and washer operation; replace wiper blades	5	18	3	1.92	26
Content Standard 9: Analyze heating and air conditioning systems (A7)						
9.1 Demonstrate knowledge of A/C systems						
9.1.1	Research applicable vehicle and service information, vehicle service history, service precautions	7	11	8	2.04	26
9.1.2	Identify A/C components on a vehicle	5	17	3	1.92	25
9.2 Inspect refrigeration system components						
9.2.1	Inspect and replace A/C compressor drive belts, pulleys, and tensioners; determine necessary action	6	17	3	1.88	26
9.2.2	Research hybrid vehicle A/C system electrical circuits and the service/safety precautions	6	14	6	2	26
9.2.3	Inspect A/C condenser for airflow restrictions; determine necessary action	5	18	3	1.92	26
9.3 Inspect heating, ventilation, and engine cooling systems						
9.3.1	Inspect engine cooling and heater system hoses; perform necessary action	4	18	4	2	26
9.4 Inspect operating systems and related controls						
9.4.1	Inspect A/C-heater ducts, doors, hoses, cabin filters, and outlets; perform necessary action	6	17	3	1.88	26
9.4.2	Identify the source of A/C system odors	5	19	2	1.88	26
Content Standard 10: Analyze engine performance (A8)						
Performance Standard 10.1: Perform general engine service						
10.1.1	Research applicable vehicle and service information, vehicle service history, service precautions	3	15	8	2.19	26
10.1.2	Demonstrate knowledge of 4-stroke engine	6	10	10	2.15	26
10.1.3	Perform engine absolute (vacuum) manifold pressure tests; determine necessary action	5	15	6	2.04	26
10.1.4	Perform cylinder cranking and running compressions tests; determine necessary action	4	16	6	2.08	26

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10.1.5	Perform cylinder leakage test; determine necessary action	5	15	6	2.04	26
10.1.6	Verify engine operating temperature	3	17	6	2.12	26
10.1.7	Remove and replace spark plugs; inspect secondary ignition components for wear and damage	3	16	7	2.15	26
Performance Standard 10.2: Analyze computerized engine controls						
10.2.1	Retrieve and record diagnostic trouble codes, OBD monitor status, and freeze frame data;	3	13	10	2.27	26
10.2.2	Describe the importance of operating all OBDII monitors for repair verification	3	13	10	2.27	26
Performance Standard 10.3: Perform fuel, air induction, and exhaust systems service and repair						
10.3.1	Replace fuel filter(s)	5	17	3	1.92	25
10.3.2	Inspect, service, or replace air filters, filter housing and intake duct work	4	18	4	2	26
10.3.3	Inspect the integrity of the exhaust manifold, exhaust pipes, muffler(s), catalytic converter	5	16	4	1.96	25
10.3.4	Inspect condition of exhaust system hangers, brackets, clamps, and heat shields; repair or	4	18	4	2	26
10.3.5	Describe diesel exhaust fluid (DEF)	7	16	3	1.85	26
Performance Standard 10.4: Perform emissions control systems service and repair						
10.4.1	Demonstrate knowledge of basic emission control components	5	16	5	2	26