Tennessee CTE

Maintenance and Light Repair II (MLR II)

Students will perform safety examinations and maintain safety records. 1	**1.1** Use and inspect personal protective equipment. Demonstrate appropriate related safety procedures. 1.1
	1.2 Inspect, maintain, and employ safe operating procedures with tools and equipment, such as hand and power tools, ladders, scaffolding, and lifting equipment. 1.2
	1.3 Demonstrate continuous awareness of potential hazards to self and others and respond appropriately. 1.3
	1.4 Assume responsibilities under HazCom (Hazard Communication) regulations. 1.4
	1,5 Adhere to responsibilities, regulations, and Occupational Safety & Health Administration (OSHA) policies to protect coworkers and bystanders from hazards; reporting of accidents and observed hazards; and regarding emergency response procedures. 1,5
	1.6 Pass with 100% accuracy a written examination relating to safety issues relating specifically to Maintenance and Light Repair. 1.6
	1.7 Pass with 100% accuracy a performance examination relating to safety issues relating specifically to Maintenance and Light Repair. 1.7
	1.8 Maintain a portfolio record of written safety examinations and equipment examinations for which the student has passed an operational checkout by the instructor. 1.8
Students will demonstrate leadership, citizenship, and teamwork skills required for success in the school, community, and workplace. 2	**2.1** Cultivate positive leadership skills. Take part in opportunities to practice and demonstrate personal leadership skills. For example, taking advantage of opportunities provided by a career and technical student organization (CTSO), such as SkillsUSA. 2.1
	2.2 Assess situations, apply problem-solving techniques and decision-making skills within the school, community, and workplace. 2.2
	Participate as a team member in a learning environment. 2.3

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	2.4 Respect the opinions, customs, and individual differences of others. 2.4
	2.5 Build personal career development by identifying career interests, strengths, and opportunities. 2.5
Students will properly test, diagnose, repair, and service general automotive electrical systems. 3	**3.1** Research applicable vehicle and service information, vehicle service history, service precautions, and technical service bulletins. (P-1) 3.1
	3.2 Demonstrate knowledge of electrical/electronic series, parallel, and series parallel circuits using principles of electricity (Ohm's Law). (P-1) 3.2
	3.3 Use wiring diagrams to trace electrical/electronic circuits. (P-1) 3.3
	3.4 Demonstrate proper use of a digital multimeter (DMM) when measuring source voltage, voltage drop (including grounds), current flow, and resistance. (P-1) 3.4
	3.5 Demonstrate knowledge of the causes and effects from shorts, grounds, opens, and resistance problems in electrical/electronic circuits. (P-2) 3.5
	3.6 Check operation of electrical circuits with a test light. (P-2) 3.6
	3.7 Check operation of electrical circuits with fused jumper wires. (P-2) 3.7
	3.8 Measure key-off battery drain (parasitic draw). (P-1) 3.8
	3.9 Inspect and test fusible links, circuit breakers, and fuses; determine necessary action. (P-1) 3.9
	3.10 Perform solder repair of electrical wiring. (P-1) 3.10
	3.11 Replace electrical connectors and terminal ends. (P-1) 3.11
Students will service inspect, test, and service vehicle batteries. 4	**4.1** Perform battery state-of-charge test; determine necessary action. (P-1) 4.1
	4.2 Confirm proper battery capacity for vehicle application; perform battery capacity test; determine necessary action. (P-1) 4.2
	4.3 Maintain or restore electronic memory functions. (P-1) 4.3
	4.4 Inspect and clean battery; fill battery cells; check battery cables, connectors, clamps, and hold- downs. (P-1) 4.4
	4.5 Perform slow/fast battery charge according to manufacturer's recommendations. (P-1) 4.5
	4.6 Jump-start vehicle using jumper cables and a booster battery or auxiliary power supply. (P-1) 4.6

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	4.7 Identify high-voltage circuits of electric or hybrid electric vehicle and related safety precautions. (P- 3) 4.7
	4.8 Identify electronic modules, security systems, radios, and other accessories that require reinitialization or code entry after reconnecting vehicle battery. (P-1) 4.8
	4.9 Identify hybrid vehicle auxiliary (12v) battery service, repair, and test procedures. (P-3) 4.9
Students will inspect, test, service, and repair vehicle starting and charging systems. 5	**5.1** Perform starter current draw test; determine necessary action. (P-1) 5.1
	5.2 Perform starter circuit voltage drop tests; determine necessary action. (P-1) 5.2
	5.3 Inspect and test starter relays and solenoids; determine necessary action. (P-2) 5.3
	5.4 Remove and install starter in a vehicle. (P-1) 5.4
	5.5 Inspect and test switches, connectors, and wires of starter control circuits; determine necessary action. (P-2) 5.5
	5.6 Perform charging system output test; determine necessary action. (P-1) 5.6
	5.7 Inspect, adjust, or replace generator (alternator) drive belts; check pulleys and tensioners for wear; check pulley and belt alignment. (P-1) 5.7
	5.8 Remove, inspect, and re-install generator (alternator). (P-2) 5.8
	5.9 Perform charging circuit voltage drop tests; determine necessary action. (P-1) 5.9
	5.10 Inspect interior and exterior lamps and sockets including headlights and auxiliary lights (fog lights/driving lights); replace as needed. (P-1) 5.10
	5.11 Aim headlights. (P-2) 5.11
	5.12 Identify system voltage and safety precautions associated with high-intensity discharge headlights. (P-2) 5.12
Students will inspect, test, service, and repair vehicle lighting and accessory systems. 6	**6.1** Disable and enable airbag system for vehicle service; verify indicator lamp operation. (P-1) 6.1
	6.2 Remove and reinstall door panel. (P-1) 6.2
	6.3 Describe the operation of keyless entry/remote-start systems. (P-3) 6.3
	6.4 Verify operation of instrument panel gauges and warning/indicator lights; reset maintenance indicators. (P-1) 6.4

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6.5 Verify windshield wiper and washer operation; replace wiper blades. (P-1) 6.5