

# 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**

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- 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**

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- 1.3** Demonstrate continuous awareness of potential hazards to self and others and respond appropriately. **1.3**

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- 1.4** Assume responsibilities under HazCom (Hazard Communication) regulations. **1.4**

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- 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**

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- 1.6** Pass with 100% accuracy a written examination relating to safety issues relating specifically to Maintenance and Light Repair. **1.6**

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- 1.7** Pass with 100% accuracy a performance examination relating to safety issues relating specifically to Maintenance and Light Repair. **1.7**

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- 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**

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- 2.2** Assess situations, apply problem-solving techniques and decision-making skills within the school, community, and workplace. **2.2**

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- 2.3** 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

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**2.5** Build personal career development by identifying career interests, strengths, and opportunities. 2.5

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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

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**3.2** Demonstrate knowledge of electrical/electronic series, parallel, and series parallel circuits using principles of electricity (Ohm's Law). (P-1) 3.2

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**3.3** Use wiring diagrams to trace electrical/electronic circuits. (P-1) 3.3

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**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

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**3.5** Demonstrate knowledge of the causes and effects from shorts, grounds, opens, and resistance problems in electrical/electronic circuits. (P-2) 3.5

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**3.6** Check operation of electrical circuits with a test light. (P-2) 3.6

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**3.7** Check operation of electrical circuits with fused jumper wires. (P-2) 3.7

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**3.8** Measure key-off battery drain (parasitic draw). (P-1) 3.8

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**3.9** Inspect and test fusible links, circuit breakers, and fuses; determine necessary action. (P-1) 3.9

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**3.10** Perform solder repair of electrical wiring. (P-1) 3.10

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**3.11** Replace electrical connectors and terminal ends. (P-1) 3.11

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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

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**4.2** Confirm proper battery capacity for vehicle application; perform battery capacity test; determine necessary action. (P-1) 4.2

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**4.3** Maintain or restore electronic memory functions. (P-1) 4.3

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**4.4** Inspect and clean battery; fill battery cells; check battery cables, connectors, clamps, and hold-downs. (P-1) 4.4

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**4.5** Perform slow/fast battery charge according to manufacturer's recommendations. (P-1) 4.5

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**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**

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**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**

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**4.9 Identify hybrid vehicle auxiliary (12v) battery service, repair, and test procedures. (P-3) 4.9**

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**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**

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**5.2 Perform starter circuit voltage drop tests; determine necessary action. (P-1) 5.2**

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**5.3 Inspect and test starter relays and solenoids; determine necessary action. (P-2) 5.3**

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**5.4 Remove and install starter in a vehicle. (P-1) 5.4**

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**5.5 Inspect and test switches, connectors, and wires of starter control circuits; determine necessary action. (P-2) 5.5**

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**5.6 Perform charging system output test; determine necessary action. (P-1) 5.6**

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**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**

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**5.8 Remove, inspect, and re-install generator (alternator). (P-2) 5.8**

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**5.9 Perform charging circuit voltage drop tests; determine necessary action. (P-1) 5.9**

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**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**

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**5.11 Aim headlights. (P-2) 5.11**

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**5.12 Identify system voltage and safety precautions associated with high-intensity discharge headlights. (P-2) 5.12**

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**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**

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**6.2 Remove and reinstall door panel. (P-1) 6.2**

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**6.3 Describe the operation of keyless entry/remote-start systems. (P-3) 6.3**

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**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**