**MLR-B: Course Outline (Second Semester)**

**Standard 3: Automatic Transmission and Transaxle**

**Unit 1: General**

1. Research applicable vehicle and service information, fluid type, vehicle service history, service precautions, and TSB’s. P-1

2. Check fluid level in a transmission or transaxle equipped with a dip-stick. P-1

3. Check fluid level in a transmission/transaxle not equipped with a dip-stick. P-1

4. Check transmission fluid condition; check for leaks. P-2

**Unit 2: In-Vehicle Transmission/Transaxle**

1. Inspect, adjust, and replace external manual valve shift linkage, transmission range sensor/switch, and park/neutral position switch. P-2

2. Inspect for leakage at external seals, gaskets, and bushings. P-2

3. Inspect, replace, and align powertrain mounts. P-2

4. Drain and replace fluid and filter. P-1

**Unit 3: Off-Vehicle Transmission/Transaxle**

1. Describe the operational characteristics of a CVT. P-3

2. Describe the operational characteristics of a hybrid vehicle drive train. P-3

**Standard 4: Manual Drive Train and Axles**

**Unit 1: General**

1. Research applicable vehicle and service information, fluid type, vehicle service history, service precautions, and TSB’s. P-1

2. Drain and refill manual transmission/transaxle and final drive unit. P-1

3. Check fluid condition; check for leaks. P-2

**Unit 2: Clutch**

1. Check and adjust clutch master cylinder fluid level. P-1

2. Check for system leaks. P-1

**Unit 3: Transmission/Transaxle**

1. Describe the operational characteristics of an electronically-controlled manual transmission/transaxle. P-3

**Unit 4: Drive Shaft, Half Shafts, Universal and Constant-Velocity (CV) Joints**

1. Inspect, remove, and replace front wheel drive bearings, hubs, and seals. P-2

2. Inspect, service, and replace shafts, yokes, boots, and universal/CV joints. P-2

**Unit 5: Differential Case Assembly**

1. Clean and inspect differential housing; check for leaks; inspect vent. P-2

2. Check and adjust differential housing fluid level. P-1

3. Drain and refill differential housing. P-1

4. Inspect and replace drive axle wheel studs. P-2

**Unit 6: Four-Wheel/All-Wheel Drive**

1. Inspect front wheel bearings and locking hubs. P-3

2. Check for leaks at drive assembly seals; check vents; check lube level. P-2

**Standard 5: Suspension and Steering**

**Unit 1: General**

1. Research applicable vehicle and service information, vehicle service history, service precautions, and TSB’s. P-1

2. Disable and enable supplemental restraint system (SRS). P-1

**Unit 2: Related Suspension and Steering Service**

1. Inspect rack and pinion steering gear inner tie rod ends and bellows boots. P-1

2. Determine proper fluid type; inspect fluid level and condition. P-1

3. Flush, fill, and bleed power steering system. P-2

4. Inspect for power steering fluid leakage; determine necessary action. P-1

5. Remove, inspect, replace, and adjust power steering pump drive belt. P-1

6. Inspect and replace power steering hoses and fittings. P-2

7. Inspect pitman arm, center-link, idler arm, and steering damper. P-1

8. Inspect tie rod ends, tie rod sleeves, and clamps. P-1

9. Inspect upper and lower control arms, bushings, and shafts. P-1

10. Inspect and replace rebound and jounce bumpers. P-1

11. Inspect track bar, strut rods, and related mounts and bushings. P-1

12. Inspect upper and lower ball joints (with or without wear indicators). P-1

13. Inspect suspension system coil springs and spring insulators. P-1

14. Inspect suspension system torsion bars and mounts. P-1

15. Inspect and replace front stabilizer bar (sway bar) bushings, brackets, and links. P-1

16. Inspect strut cartridge or assembly. P-1

17. Inspect front strut bearing and mount. P-1

18. Inspect rear suspension system lateral links/arms and control arms. P-1

19. Inspect rear suspension system leaf springs, insulators, shackles, brackets, bushings, center pins/bolts, and mounts. P-1

20. Inspect, remove, replace shock absorbers; inspect mounts and bushings. P-1

21. Inspect electric power-assisted steering. P-3

22. Identify hybrid vehicle power steering system electrical circuits and safety precautions. P-2

23. Describe the function of the power steering pressure switch. P-3

**Unit 3: Wheel Alignment**

1. Perform pre-alignment inspection and measure vehicle ride height; determine necessary action. P-1

**Unit 4: Wheels and Tires**

1. Inspect tire condition; identify tread wear patterns; check for correct size and application; adjust air pressure; determine necessary action. P-1

2. Rotate tires according to manufacturer’s recommendations. P-1

3. Dismount and remount tire on wheel; balance wheel and tire assembly. P-1

4. Dismount and remount tire on wheel equipped with a tire pressure monitoring system sensor. P-2

5. Inspect tire and wheel assembly for air loss; perform necessary action. P-1

6. Repair tire using internal patch. P-1

7. Identify and test tire pressure monitoring systems for operation; verify operation of instrument panel lamps. P-2

8. Demonstrate knowledge of steps required to remove and replace sensors in a tire pressure monitoring system. P-2