

## Advanced Electrical 3-Day Class

### **Class Description (Train the Trainer)**

This three-day class covers advanced diagnostic techniques of computer controlled systems and is intended for experienced technicians. This high level class will provide the technician with the skills to identify between mechanical and electrical failures and isolate circuit faults. The class will cover waveform analysis and system diagnostics using an oscilloscope, DVOM and a scan tool for retrieving and interpreting data to look at all aspects of the circuit.

### **Tools and Equipment:**

Classroom, Digital Projector, Tool cart/Shop Table, Vehicles/Equipment, Basic Hand-tools, Digital Multimeters, Service Information and PPE

### **Expected Outcomes:**

Upon completion of the class, the technician should be able to:

- Read and Interpret electrical wiring diagrams for troubleshooting
- Identify between electrical and mechanical faults using an oscilloscope
- Interpret Scan tool/Oscilloscope Data to determine necessary action
- Demonstrate advanced diagnostic techniques using sensor simulation
- Use various test equipment to gather raw data to determine root cause
- Diagnose and repair all signals and component concerns using an oscilloscope
- Diagnose and repair communication(J1939)/computer-controlled circuitry using an Scan Tool/oscilloscope data.

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### AGENDA

#### Day 1:

- 8:00am - 9:00am - Diagnosing Circuitry Review
- 9:00am - 10:30am - Wiring Diagram/Guided Diagnostics
- 10:30am - 12:00pm - Diagnosing Computer Circuitry (Shop)
- 12:00pm - 12:45pm - Lunch
- 12:45pm - 3:15pm - Diagnostic test equipment (Shop)
- 3:14pm - 5:00pm - Measuring "Raw Data" Scope/DVOM (Shop)

#### Day 2:

- 8:00am - 9:30am - Bi-directional tests with scan tool (Shop)
- 9:45am - 10:45am - Basic Waveform Analysis
- 10:45am - 12:00pm - On Vehicle Scope Diagnostics (Shop)
- 12:00pm - 1:00pm - Lunch
- 1:00pm - 3:15pm - Advanced Waveform Analysis (Classroom/Shop)
- 3:15pm - 5:00pm - Advanced Scope Setup/Diagnostics (Classroom/Shop)

#### Day 3:

- 8:00am - 10:30am - On Vehicle Waveform Snapshots (Shop)
- 10:45am - 12:00pm - On Vehicle Waveform Snapshots (Shop)
- 12:00pm - 1:00pm - Lunch
- 1:00pm - 3:15pm - On Vehicle Diagnostics (Shop)
- 3:15pm - 5:00pm - On Vehicle Diagnostics Communication/CAN