

# Spokane Community College

## Course Learning Outcomes and Outline

**Course Title:** Diagnosis of Electrical & Electronics

**Prefix and Course Number:** AUTO 116

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### Course Learning Outcomes:

**By the end of this course, a student should be able to:**

- Understand and describe how electricity works.
- Read an Ammeter, Voltmeter, and Ohmmeter and know how they are used to measure voltage, current, and resistance.
- Diagnose electrical circuits, components i.e. battery's, starters, alternators.
- Diagnose control units i.e. Engine Control Module (ECM), Air Bag Diagnostic Sensor & door lock control modules.

### Course Outline:

- Electrical Fundamentals including, Theory's, Laws, Types of Circuits, Circuit Testers and Meters.
  - Using and Reading a Digital Multi Meter and Oscilloscope Correctly
  - Diagnose a Series, Parallel and Series Parallel Circuits
  - Test and Diagnose a Circuit using a Test Light, Logic Probe or Meter
- Automotive Wiring, Repair, Capacitance, Capacitors, Magnetism and Networking Communications.
  - Types of wire, Wire Repair. Soldering, Connectors and Types of Solder
  - Reading and Understanding Wiring Schematics & Symbols
  - Reading and Understanding Wiring Diagrams & Symbols
- Batteries, Starters, and Alternators.
  - Testing Battery's, Starters and Alternators
  - Diagnosing Battery's, Starters and Alternators
- Driver Information, Navigation, Safety, Comfort and Convenience including Audio, Cruise Control and Autonomous Vehicles.
  - Diagnosing Instrument Cluster, Warning lamps
  - Diagnosing Back up Camera, Power seats, Power Windows
  - Diagnosing and Repairing Air Bags, Remote audio controls, Cruise Control & other Switches
- Electric and Plug-In Hybrid Electric Vehicles.
  - Recharging the High-Voltage Battery