

Curriculum for second semester “Mechanics with Mike”
Beginning Automotive and Mobile Equipment, Low-voltage Electrical Class

Instructor: Mike Viguera

More Safety Rules

1. Low Voltage electrical safety
2. First aid for low voltage electrical accidents

How the Electrical System Works

1. Basic components
2. Batteries
 - a. wet cell
 - b. dry cell
 - c. 12, 24, 36, 48 volts
3. Switches, solenoids, fuses
4. Very basic difference between AC and DC current
5. Tracing the path of the electrical system—use of a test light
6. Proper grounding

Use of Tools for Measuring Electricity

1. Volt/Ohm meter
2. Meter settings for different circumstances
3. Some electrical symbols: positive, negative, ground

Wet Cell Battery

1. How it works
2. Trouble Shooting
3. Maintenance
4. Figuring volts , counting cells

Wire size numbers, what they mean

1. Application of different size wire for various uses
2. Labeling your wires for easy identification

Fuses and why they are needed

1. Different fuse types
2. Fuse sizes and values
3. Automotive circuit breakers

Choosing the right bulb for the application

1. The different bulb types, when to use them
2. Single element, dual elements, and others
3. How to troubleshoot and replace a faulty light

Basic Automotive Electrical System

1. What happens when you turn the key “on”?
 - a. The wet cell battery and a basic overview of what makes it work.
 - b. Follow the current as it leaves the battery
 - c. Tracing current flow for the purpose of troubleshooting
2. Use of the Test Light for basic problem solving
3. Overview of the basic ignition system used in small equipment and the standard automobile
4. Electrical safety on low voltage Direct Current (DC) systems used in most automobile applications
 - a. Batteries and related electrical components
 - b. Low voltage (12, 24, and 36 Volt) systems
5. Trouble shooting lighting, ignition problems, and electrical accessories

The Volt Meter

1. When we do and do not need a volt meter
2. How volt/ohm meters are used
 - a. Application
 - b. Safety
 - c. Troubleshooting
 - d. Choosing the right meter for you

Wiring a trailer

1. Different applications: single axle, dual axle, triple axle trailers
2. With or without electric brakes
3. Types of terminal plugs in use today
 - A. Round, general use, 6-terminal plug
 - B. Flat, light duty use, 4-terminal plug
 - C. Some oddball plugs, what to do with them
4. Laying out a complete re-wire on a trailer

Additional Notes:

---Materials required: gloves and safety glasses

---Optional materials: apron, shop coat or coveralls

---A good amount of “hands-on” instruction will be applied along with the classroom/shop instruction. There will be sessions, especially as we progress in the basic learning, that we will use the entire two hour time frame working in the shop/lab.

---There will be some homework required.