

Electricity Merit Badge

2010 Merit Badge College Syllabus



The Instructor

Hello,

My name is Chris Bernier. Scoutmaster for Troop 433 in Winslow Maine. I have been in Scouting since 1984. I am an Eagle Scout and have been Scoutmaster for Troop 433 since 2006. I hold two college degrees. One is for Applied Electronics and Computer Technology and the other for Industrial Electrical and Electronics Technology.

My trail name is Montawagon which a lot of people call me. If you have been in Scouting for a long time I am sure our trails have crossed at some point and if you are a New Scout I look forward to our Trails crossing again soon after you have completed this years Merit Badge College.

Prerequisites.

Yeup.....that is right....you have to have some stuff done before you get to class.

1. You need to go online and download and PRINT out a copy of the Electricity Merit Badge Work Sheet. Make sure to put your name and troop number on it.
2. You need to bring a note book and a pen or pencil to class with you.
3. You need a Blue Card from your Scoutmaster.
4. A positive Attitude and a smile. =o)

Requirements needed before you start Class.

Requirements you need to complete on your work sheet before you get to class.

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| Requirement 4. | This requirement is a very important principle of Electricity. If you don't entirely get it....it is ok. We will cover it briefly in class. |
| Requirement 9a | Make sure to talk to your parent/s to see there Central Maine Power(CMP) Bill. This states the amount of power on it. You will need to find on the bill how much Kilowatts have been used. You will also need to find out how much CMP charges per Kilowatt hour. |
| Requirement 10. | Make sure you understand these terms as we will be discussing them in class. I will try to help you understand how they work in class. |

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Electricity Requirements.

1. Demonstrate that you know how to respond to electrical emergencies by doing the following:
 - a. Show how to rescue a person touching a live wire in the home.
 - b. Show how to render first aid to a person who is unconscious from electrical shock.
 - c. Show how to treat an electrical burn.
 - d. Explain what to do in an electrical storm.
 - e. Explain what to do in the event of an electrical fire.

2. Complete an electrical home safety inspection of your home, using the checklist found in this pamphlet or one approved by your counselor. Discuss what you find with your counselor.
3. Make a simple electromagnet and use it to show magnetic attraction and repulsion.
4. Explain the difference between direct current and alternating current.
5. Make a simple drawing to show how a battery and an electric bell work.
6. Explain why a fuse blows or a circuit breaker trips. Tell how to find a blown fuse or tripped circuit breaker in your home. Show how to safely reset the circuit breaker.
7. Explain what overloading an electric circuit means. Tell what you have done to make sure your home circuits are not overloaded.
8. On a floor plan of a room in your home, make a wiring diagram of the lights, switches, and outlets. Show which fuse or circuit breaker protects each one.
9. Do the following:
 - a. Read an electric meter and, using your family's electric bill, determine the energy cost from the meter readings.
 - b. Discuss with your counselor five ways in which your family can conserve energy.

10. Explain the following electrical terms: volt, ampere, watt, ohm, resistance, potential difference, rectifier, rheostat, conductor, ground, circuit, and short circuit.
11. Do any TWO of the following:
 - a. Connect a buzzer, bell, or light with a battery. Have a key or switch in the line.
 - b. Make and run a simple electric motor (not from a kit).
 - c. Build a simple rheostat. Show that it works.
 - d. Build a single-pole, double-throw switch. Show that it works.
 - e. Hook a model electric train layout to a house circuit. Tell how it works.