

Experiment 1: Operating a Tesla Coil

1. Objectives

- *How To Handle High Frequency High Voltage Electricity Safely*
- Measure how far out you can draw an arc.

2. Standards

- California; Content Standard 7: Investigation and Experimentation
 - a. Select and use appropriate tools and technology to perform tests, collect data, and display data.

3. Anticipatory set

- Display Photo of Nikola Tesla
- Display list of inventions attributed to Tesla
- Display diagram of Tesla coil
- Turn on coil and draw an arc

4. Teaching

- Input
 - Develop safety protocols by asking students questions regarding the safe use of the coil with the goal being that students do not leave their finger in any one place long enough to be burned
- Modeling
 - 1. Draw arc
 - 2. Use ruler to measure length in cm
- Check for understanding

5. Guided practice/monitoring

- Hold a small piece of metal in one hand.
- Plug in Tesla Coil and approach ball terminal with metal. The high frequency high voltage electrical discharge forms an arc between ball terminal and a metal object.
- Measure how far out you can draw an arc
- Record data.

6. Closure

- Ask students to describe if they “felt” the high frequency electricity
- What did the plasma discharge look like?
- Did they smell anything?

7. Independent practice