**Test Format:**

* 15 Multiple Choice/Matching
* 7 Problems (some with multiple parts)
  + Resistance calculation using the formula involving resistivity
  + Understand and be able to apply all of the formulas and rules in [Mr. Pennington’s 4 minute drill](http://mrstapleton.com/Physics%20200/Chapters%2020-21%20--%20Current%20and%20Circuits/Mr%20P%20Chapter%2020-21%204-Minute%20Equation%20Drill.pdf) (but you don’t really need 3 formulas for Power)
  + Find individual and total (source) voltages, currents, resistances, and powers.
    - In a parallel circuit
    - In a series circuit
    - In a complex circuit with series and parallel components
  + One problem requiring Kirchoff’s rules. Determine the magnitude and directions of three unique currents within one circuit.

**General Concepts:**

* Know the units for resistance, energy, current, charge, drift velocity, potential difference, resistivity, and power.
* Know what current is, and what is actually happening when current flows (i.e. electrons are moving), and be able to contrast this with the idea of conventional current.
* Be able to apply Ohm’s law and the rules for voltage, current, and equivalent resistance in series and parallel circuits (or in branches of complex circuits).
* Understand all of the rules and trends in [Mr. Pennington’s 4 minute drill](http://mrstapleton.com/Physics%20200/Chapters%2020-21%20--%20Current%20and%20Circuits/Mr%20P%20Chapter%2020-21%204-Minute%20Equation%20Drill.pdf). But he left one out… you should know that, in **any** circuit, Ptotal = P1 + P2 + P3…
* Know what kinds of changes in a circuit would make a bulb become brighter or dimmer.
* Be able to predict how making various changes in a circuit (e.g. adding or subtracting a resistor in parallel or series) would affect individual and/or total currents, voltages, resistances, and/or powers.