Lab 2: Kirchhoff, Thévenin, and Impedance Matching

1. Construct a Wheatstone bridge from 5 resistors in the 1–10 kΩ range. Measure its resistance at a few voltages (i.e. measure current and voltage). What is its resistance? Does it agree with your calculation from design exercise 2-1?

2. Construct a voltage divider similar to the one you made last week for lab exercises 1-3 and 1-4. Set V_{in} to 10 V and measure V_{TH} and Z_{TH} seen by a load resistor -- use the result from design exercise 2-2 as the basis for this measurement. Do the measured V_{TH} and Z_{TH} agree with what you expect from your calculations?

3. Use your voltage divider setup from part 2. Determine experimentally the load resistance which results in the maximum output power out of the voltage divider.

4. Set the breadboard power supply to 3 V and measure V_{TH} and Z_{TH} for this setting. Before doing your measurements, you should list the potential difficulties of such an experiment. You should also consult with the instructors before attempting it -- please do not let I_{out} exceed 1.5 A. Comment on the engineering of the power supply.