PH315 Lab. 2 Modern Physics Laboratory (2014)

Responses to the following tasks are to be entered on InkSurvey. Data is to be collected using the 34461A voltmeter

1. Change power line cycle (PLC) sample rate while using the trend display of a 1 Hz sine wave. What did you find out?
2. Change power line cycle (PLC) sample rate while using histogram display of a 1 Hz sine wave. Do the same for triangle and square waves. Which has an odd shape and why?
3. Record a sine wave on the Tektronix scope. Change the vertical resolution to 1mV/div. Explain the odd waveform.
4. Measure the voltage across a resistor. For fractions of a PLC sample duration note how the histogram looks like the sine wave histogram. Why? Why doesn't it look like this for 1 PLC? Report std dev/DC values or percent uncertainty for different measurements.
5. How does your standard deviation change as the number of samples increases for the DC or AC voltage across a resistor?
6. Measure the resistance across an apple, your skin, a resistor, and dirt. Report the std dev/resistance values or percent uncertainty for each measurement with different PLC's. Why do you think there are different percent uncertainties?
7. Measure the resistance and its histogram of the semiconductor. What happens when it is heated? Just hold it for a minute before measuring and it will get warm. Then let go and it will cool. Does this yield a Gaussian distribution of resistances? Why?
8. Measure the frequency of the function generator with errors reported as a percent. Does it vary with frequency? Why?