You will be asked to perform a series of "mini" experiments, in which you will collect data and calculate the final result. No discussion will be required; however, you must briefly describe what you are measuring or calculating. You will have the entire lab period to complete the experiments. *Notes will not be allowed during the practical (including a formula sheet), and you cannot use your smart phone as a calculator!* Equipment will be available in the labs for you to practice, and you can use KaleidaGraph any time the labs are open. *The lab practical will count as 25% of your final lab grade.* You will be tested on the following skills:

Electrical Circuits and Multimeters

- Connect a single circuit component (resistor or light bulb) to a power supply.
- Adjust a multimeter to measure current, voltage or resistance, with the appropriate measurement precision (refer to "Using a Digital Multimeter" on the Physics website).
- Connect a multimeter to a circuit to correctly measure *I, V* or *R* without blowing a fuse.
- Draw and label a proper circuit diagram, with appropriate symbols representing components.
- Calculate the resistance of a resistor using Ohm's Law.

Magnets and Coils

- Given a wire coil and an unknown magnet, determine the polarity of the magnet.
- Create a sketch that represents the apparatus examined.

Diffraction & Interference

- Given a diffraction grating or double-slit aperture with known *d*, calculate the wavelength of the light that passes through the aperture.
- Know how to calculate wavelength from a KaleidaGraph plot.
- Know when it's appropriate to use the small angle approximation.

Using KaleidaGraph to fit data

- Entering data.
- Plotting, with correct labeling.
- Determining the correct fit function.
- Finding the fitting coefficients, their uncertainties, their units and the SSR.
- Connecting the coefficients with parameters in the model equation.

Significant Figures and Units

- Expressing an experimental result (*including uncertainty*) in standard scientific notation with the proper number of significant figures and with the correct units.

Percent Difference

- Calculate the percent difference (different from percent error!) between two measured values, or a measured and theoretical value.

Reporting skills:

- Clearly labeled sketch.
- Record all data in neatly drawn and clearly explained tables.
- Units, significant figures.
- Neat and organized presentation of calculations and results (which includes showing *all* the steps of a derived calculation).
- A brief description of what you are measuring or calculating.
- Proper usage of terminology (e.g. the name of the instrument that measures current is…?)