Lab Write-up Guidelines

Your report should consist of the following sections in the given order:

**Title page:**
Name of the experiment
Your name
Partner’s name
Course name and number
Section number
Lab instructor’s name
Date experiment performed
Date report submitted

**Purpose and method:**
Short summary (1-2 paragraphs), describing what measurements were made and why. What was the goal of the experiment? Show that you understand the relationship between the experimental procedures and theory. Do not include procedural details, just a short summary.

**Theory:**
Include all formulas used (not all formulas). With each equation, provide a brief explanation, including all of the variables and their units. Center and number each equation for quick reference. Use the equation editor to make your formulas neat and readable. As an example of how to put your formulas in the report, consider the following example:

“It is common practice in laser physics to use a radius that is equal to $1/e^2$ times the maximum beam intensity. If this is the case, it follows that the radius of a beam characterized by the outline of the $1/e^2$ values, $w(z)$, at a given distance, $z$, is characterized by the equation

$$w(z) = w_0 \left[1 + \left(\frac{\lambda z}{\pi w_0^2}\right)^2 \right]^{1/2}$$

(1)

where $w_0$ is the beam radius at the beam waist (smallest spread), and $\lambda$ is the wavelength of the laser.”

**Conclusions:**
A brief discussion of the main findings of the experiment. What were your results? How do the result of your experiment compare with what the theory predicts? Do your results agree with theoretical expectations to within your uncertainties? For our purposes, we will try to limit percent error to 25%. Discuss the main sources of error.

**Data/Graphs:**
Original data sheet(s) from the experiment, as well as any revised versions with additional derived quantities. Remember to label your graphs and include units. Include a title, axis labels, and units. These should be completed in the laboratory if possible. Include slope and intercept with any straight line fitting.

**Questions:**
Answer all of the questions posed at the end of the experiment in the laboratory manual. These may be handwritten. Show your work!

*Note: Familiarize yourself with Microsoft Excel, it will prove to be a very useful tool for data analysis.*