

LABORATORY BEST PRACTICES

Data Acquisition and Manipulation:

- ✓ All raw data shall be recorded to the appropriate precision, with clearly-labeled units. For analog (not digital) measurements, a good rule of thumb is to estimate to the nearest tenth of the smallest division.
- ✓ Similar (in kind) data shall be tabulated whenever such a presentation is appropriate.
- ✓ The results of all calculations shall be carried out to the proper precision. For intermediate calculations, you must include at least one 'extra' significant digit to avoid compromising the precision of your final result.
- ✓ Show all calculations leading to any reported result. For a series of similarly obtained results, it is sufficient to do this just once.

Graphing:

- ✓ A meaningful title shall accompany each graph.
- ✓ Variable ranges and axis scales shall be chosen so that the graph occupies a *full page with little 'white space'*.
- ✓ Axes shall be labeled (name or unambiguous symbol), followed by square brackets surrounding the correct unit, e.g., v [cm/s].

Curve Fitting:

- ✓ The 'best fit' curve need not (and likely does not) pass through any single data point.
- ✓ Forcing a curve through the origin is *not* the same as adding a fake (i.e., unmeasured) data point with the values (0,0).
- ✓ In finding the slope of a 'best fit' line by hand, clearly label on the graph the rise and run values, together with the two (well-separated) points chosen to calculate them. These points should *never* coincide with actual data points.

General:

- ✓ Every laboratory report shall carry a meaningful title, and include the names of all group members.
- ✓ As much as feasible, every group member shall have a 'hands on' role in all activities (gathering data, performing calculations, graphing) leading to the final report.
- ✓ Laboratory reports shall be neatly written and smartly organized.