110X physics laboratories, Spring 2025

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`https://www.physics.smu.edu/tneumann/110X_Spring2025/`

Intro lab: Resources and first-week checklist

Resources

- Weekly worksheet with mandatory and graded pre-lab submissions and information for your required preparation, experiment introductions, uncertainty analysis summary, schedules, software links, grading info: `https://www.physics.smu.edu/tneumann/110X_Spring2025/`

Your learning outcomes today

Keep asking your instructor until you have thoroughly understood each of those terms and concepts, and until you are familiar to use the necessary software. The following labs will require that you have fully understood those topics (your checklist):

- ☐ Precision vs. accuracy in the context of measurements
- ☐ Random/statistical uncertainties vs. systematic uncertainties
- ☐ Standard deviation of a measurement and how to calculate it
- ☐ Standard deviation of the mean and how to calculate it
- ☐ Uncertainty propagation in multiple variables
- ☐ Significant figures (Uncertainties are always quoted to one significant figure)

Additionally you will need to know how to

- ☐ implement formulas in Excel, in particular uncertainty propagation.
- ☐ plot data in Excel with axis labels and units.
- ☐ export tables and plots in Excel as PDFs and/or take screenshots to embed the plots into your worksheet report.

Make use of your instructor's office hours and ask them about your graded worksheet/report or about your preparation for the following week's experiment.

Notes: