Guidelines for Laboratory Reports

Tagliatela College of Engineering

The components listed below may be selected as needed for each assignment.

Lab Report Component	Component Description
Letter of Transmittal, or Memo of Transmittal a.k.a. memo (Accompanies the report, one page, not technical)	❖ A transmittal letter (for external audiences) or memo (for internal audiences. These brief formal letters follow an employee (or lab instructor) assigned standard format. Limit to 1 page- as small as 1 paragraph, includes any anomalies that occurred.)
Cover Page	❖ A single page that normally includes title, author (s) name, names of colleagues, the course name, and the date the work was done and the date the report was written. ❖ The format and content are specified by those requesting the report. ❖ A graphic may be used to show company/university affiliation or to show major lab setups.
Abstract (formal, documents work for archiving)	❖ Consists of no more than 150-250 words. ❖ States the *major* objectives. Not in physics where research can be very open ended and not goal driven. ❖ Briefly describes the methods and materials employed, especially if they are novel or unfamiliar. For established methods, a name for the technique or key equipment is given. ❖ Summarizes *important* results and conclusions.
Table of Contents	❖ A list of section titles used in the report, with page numbers to the right.
Executive Summary (strategic document, ~5% of total length of report, at the beginning of report)	❖ Similar to an abstract but targeted to those who may be making decisions based on the content of the report. Larger audience, external sponsor. ❖ Clear and concise statement of results and conclusions. Length varies.
Introduction	❖ Lists objectives of the study in order of importance. (Not for more open ended scientific research. The psychological intent of the researcher is seldom mentioned.) ❖ Provides background on the experiment, including relevant theory on which the experiment is based. ❖ Theory may be included, equations are numbered. ❖ Citations & discussion of important previous studies.
Literature Review	❖ For thesis work where the uniqueness of the research must be established or to provide a broad context for the work. Citing relevant work can allow the report to be searched for through a citation index.

Lab Report Component	Component Description
Methods and Materials (apparatus, equipment, software) Provides only enough detail to replicate the experiment.	❖ Methods Identifies by name commonly accepted methods. Lists in order, the procedures performed. ❖ Materials Provides a description of apparatus and its components if readers would not be familiar with it. Often includes a sketch or photograph of the apparatus. Identifies the materials employed and their relevant properties. (In table format)
Data and Results Presents data and results pertinent to the primary objective or argument from experiments, simulations, models.	❖ Pertinent data are presented in formats (graphs, tables, diagrams, etc.) that reveal critical relationships (trends, correlations, etc.) ❖ "Raw" (directly measured) data can be presented if they are not too detailed to disrupt the flow of reading.
Discussion	❖ Interpret the data & results in light of what you expected, and/or make comparisons to published information. ❖ Identifies and explains any unusual or surprising results. ❖ Identifies the significant sources of error and assesses the reliability of your results.
Conclusions/Recommendations	❖ Restates significant limitations, assumptions or violations of assumptions that qualify the conclusions. ❖ Based upon results and discussion, list conclusions in **order of importance**. ❖ Assess the extent to which each objective has been met. ❖ Provides any recommendations that derive from the conclusions.
Works Cited	❖ Uses appropriate format (Council of Science Editors, IEEE …) to list sources. ❖ Includes sources used in designing the experiment, writing the lab report, discussing theory or for citing standard equations.
Appendices	❖ Provides detailed information (raw data, calculations, etc.) that are too cumbersome to include in the body of the report. These data might interest only a few readers, especially those who verify the validity of results.