# Guidelines for Lab Reports
# (Technical Report)

**A laboratory report has three main functions:**
1. To provide a record of the experiments and raw data included in the report,
2. To provide sufficient information to reproduce or extend the data, and
3. To analyze the data, present conclusions and make recommendations based on the experimental work.

**The following format is required for the organization of the *Technical Report:***

1. **Title Page or Cover Sheet:**
   This **Title Page** has the university logo, title of the lab, title of the experiment, course number and assigned lab section, your name, your lab partner's names, the date that the lab was performed, the date of submission and your instructor's name. Please make this on a separate page.

2. **ABSTRACT:**
   it consists of three parts which answer these questions:
   1. A statement of the purpose of the experiment,
   2. A concise description of the experiment and fluid mechanics principles investigated.
   3. What were your results? Highlight the most significant results of the experiment.

3. **OBJECTIVES:**
   Describe the specific actions you are being asked to perform in the lab, such as measure something, analyze something, test something, etc. Be sure to list them as such: to measure, to analyze, to determine something.

4. **SAMPLE CALCULATIONS**:
   Show calculations in orderly outline form. Include a brief description of the calculation, the equation, **numbers from your data substituted** into the equation and the result. Do not include the intermediate steps. Numbers in the sample calculations must agree with what you recorded in your data sheet. For calculations repeated many times, you only include one sample calculation. Answers should have the proper number of significant figures and units. -Use the equation editor in Microsoft Word to type the equations. Your lab instructor can give you information on using the equation editor-.

5. **RESULTS:**
   Include all tables and graphs that document your final results. Include all relevant information so that you can later refer to the numbers of tables and figures in the discussion section to support your conclusions.
   **Tables**: For each experiment, the lab manual has one or more tables for recording raw data. All numerical results should be non-dimensional or reported in SI units. This original data. **Place the name of the table on the above side.**
   **Graphs**: You must follow the guidelines in the lab manual for all graphs. It is preferred use computer software to make graphs. Those graphs must also conform to the guidelines in the lab manual. Remember that when plotting data with units, both the slope and intercept of a graph also have units. **Place the name of the graph below the graph.**

## 6. DISCUSSION OF RESULTS:

This is the most important part of the lab report; it is where you analyze the data. Begin the discussion with the experimental purpose and briefly summarize the basic idea of the experiment with emphasis on the measurements you made and transition to discussing the results. State only the key results (with units) quantitatively with numerical values; do not provide intermediate quantities. Your discussion should address questions such as:

- What is the relationship between your measurements and your final results?
- What trends were observable?
- What can you conclude from the graphs that you made?
- How did the independent variables affect the dependent variables? (For example, did an increase in a given measured (independent) variable result in an increase or decrease in the associated calculated (dependent) variable?

Then describe how your experimental results substantiate/agree with the theory. When comparison values are available, discuss the agreement using either uncertainty and/or percent differences. This leads into the discussion of the sources of error. In your discussion of sources of error, you should discuss all those things that affect your measurement, but which you can't do anything about given the time and equipment constraints of this laboratory.

## 7. CONCLUSIONS:

State your discoveries, judgments and opinions from the results of this experiment. Summarize your primary results in comparison with theory in two or three sentences. These should answer the objective of the experiment. Make recommendation for further study. Suggest ways to improve the experiment.

## 8. APPENDICES:

- Original Data Sheets.
- Reference.