

**FORMAL LABORATORY REPORTS**

\*\* Different labs may have slightly different requirements.

The work you carry out when performing a lab provides you with the opportunity to experience life as a scientist.....at least part of that life. While science involves the act of making observations, it also involves the act of drawing conclusions. These conclusions become part of a formal lab report so that others may be aware of what you think.

While there are many ways to present information, the writing of labs traditionally follows any one of only a few accepted formats. The following is one of those formats and is the one you will follow while in this course.

**TITLE PAGE**

Choose an **appropriate title** for the research/work you are carrying out and present this somewhere on the top half of the page. Don't forget that your title page should also contain the following, **all in the bottom right hand corner** : your name, the name(s) of the group members, the due date, the course code, the instructor's name and the room number.

**INTRODUCTION** (*most often Knowledge and Understanding*)

- a) **Background Information....** information about the history of the problem and theories underlying the experiment and information about the topic (review of literature)
- b) **Important Terminology/Key Terms....** new terms or scientific vocabulary used in the report that lead into the purpose of the lab
- c) **Purpose of the Research/Question...** the purpose, question or problem being investigated (this should be written in *past tense*)

**HYPOTHESIS / PREDICTION** (*Thinking/Inquiry*)

This is your educated guess based on your previous knowledge and/or research. The hypothesis is proposed before the experiment begins. Due to the nature of many classroom experiments, a hypothesis may not always be relevant, since some reports are based upon confirmation style experiments as opposed to true experimental activities.

**DESIGN, MATERIALS, PROCEDURE** (*Communication*)

The procedure is a **brief** summary of the formal procedure written in paragraph form. It is not a copy of the steps involved, but a quick summary of what was done to perform the activity. It is written in **past passive voice** (past tense and impersonal format (no I, we, they, us, you, etc.))

(eg. "The water *was added* to the test tube..." and not "Add the water to the test tube..." or "We put water into the test tube...")

Always state the **source** of the **complete procedure** so that someone wishing for more detailed information may locate it.

If a diagram of the apparatus or experimental design or list of materials used is needed, place it in this section.

**OBSERVATIONS (RESULTS)** (*Inquiry*)

The information you have collected will most often be presented in one of the following ways:

- a) chart form - raw data or information that cannot be presented by graphing
  - an appropriate title plus reference such as **Table 1.**"
  - actual chart drawn with a ruler
  - no inferences here!

(eg. not "no change" if it remains red, but "red colour"; not "oxygen produced" but "gas produced")

eg. Table 1. (**don't forget** to describe the chart here)

Angle of incidence	Angle of reflection

- b) graphing of data or diagrams/drawings of observation (most often for dissection work or botany labs)
- make sure that these have an appropriate title and reference such as **Figure 1**.
  - make sure that they are labeled
  - draw them neatly and follow instructions

eg.

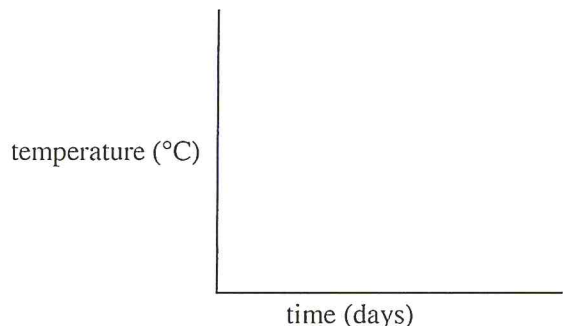


Figure 1. (don't forget to describe the graph here)

### ANALYSIS, CONCLUSION, EVALUATION (*Thinking/Inquiry*)

The conclusions become the *most important part* of any report as students become more familiar with expectations. Here you summarize the results/observations of the investigation and reach a conclusion, a statement that explains the results of an investigation. (ie. What can be implied from the data you have collected) Reaching conclusions allows you to critically analyze the results using a mix of logic, common sense, understanding and patience. (Inferences are made in *this* section.)

- Refer to your results by directly referring to a particular set of data  
eg. refer to information you presented in a chart
- Only say what you think is honestly important.....**quality** is far more important than quantity.

### SOURCES OF ERROR (*Thinking/Inquiry*)

"Human error" should be avoided. Discuss random and systematic errors possible in your experiment.

### APPLICATIONS (*Application*)

This area answers the question, "Who cares?" Describe how the knowledge/conclusions gained from the investigation relate to the real world.

### REFERENCES/BIBLIOGRAPHY (*Communication*)

The format for research papers should follow APA Citation methods.

A guide is provided here: <https://owl.english.purdue.edu/owl/resource/560/1/>

**Note! All sections should be written in paragraph form**

Lab #	Title page	Introduction	Hypothesis	Design/Materials/ Procedure	Observations	Analysis/Conclusion /Evaluation	Applications	References Bibliography