Lab Report Guidelines

Also on: http://www.atmos.washington.edu/~robwood/teaching/451/labs/Report_Writing.pdf

Title and Authors (5 pts)

- Title should be as descriptive as possible.
- Authors: Don't forget your lab partner.

Abstract (10 pts)

- Very concise summary of what was done and key results.
- If the reader only read the abstract, they should have a general idea of the purpose of your experiement and what your key results/findings were.
- The abstract must contain:
  - The Purpose
  - Key results
  - Most significant point of discussion
  - Major conclusion
- The abstract may contain:
  - Brief method
  - Brief theory

Introduction (10 pts)

- The introduction is a means to bring a diverse background of readers up to speed so that they understand the issues at hand and the relevance of the work described in the report. It should answer the following questions.
  - Why was there a need for the described activity – background material. (For temp lab, it would be useful to include a brief description of how each sensor works that you used in the lab.)
  - What was the described activity and how does it contribute to the current state of knowledge.
  - Brief overview of how it was done.

Experimental Methodology (20 pts)

- This section is critical to allow a reader to understand exactly what you did ant to thus best interpret how meaningful the results and conclusions you obtained actually are. There should be enough information so the reader can repeat the experiments.
  - Describe what instruments you used (including diagrams if helpful).
  - Describe how you validated the quality of the data from those instruments (e.g. calibrations)
  - Venue: deployment of instruments, where, when, for how long, etc.
- Do not use 1st person
  - e.g. Do not write "I measured temperature by…"
  - Write "Temperature measurements were performed by inserting the sensor into the water baths. Water baths of five different temperatures were made by…"

Results and <u>Discussion</u> (30 pts)

- Present actual data obtained using figures and tables.
- Describe the data. It is not sufficient to put data into a graph or table and not discuss it in the text.
- Describe what you think the data means. Do not use qualitative, ambiguous, or scientifically meaningless words such as "better" or "ugly". Your analysis must be supported quantitatively by your results (quantitative analysis).
- Place the data into the context of the main goal or point of the activity (hence the word "Discussion"). Discuss the meaning of the data.
- Problems with data/instruments.
- Calculations (including equations) – these should be transparent. Don't need to show the equation five times. Make equation general so it can be shown once.

Conclusions (10 pts)
(Somewhat like the abstract, except longer and more expansive)

- Refer back to the introduction. Did you accomplish goals?
- If not, why not?
- Interesting results (peculiarities)
- Broader implications. E.g. "This work implies the standard mercury liquid-in-glass thermometers in wide use may be unreliable sensors of…"

References

- If you used references, you must describe them.

Other tips

- Each Table must have a descriptive title above the table.
- Each Figure must have a descriptive caption below the figure.
- Describe figures and tables in text. Start paragraph with "Figure 1 shows a plot of T_{ASTM} versus T_{Hg}." Then say what you learned from the figure. Describe statistics.
- Define all acronyms the first time they are used.
- Always use complete sentences.
- Always include units (SI), and error for each quantity. Points will be deducted if units or error are not provided in text, tables, and/or figures.

Example:

- http://www.atmos.washington.edu/~robwood/teaching/451/labs/Technical_report_writing_example.pdf