OIT Lab Guidelines

# Sections of a Lab Report

* + Abstract: Brief description of the experiment. 3 - 5 sentences outlining the scope of the experiment and the results.
	+ Introduction:
		- Introduction: Introduce the experiment in your own words. Summarize the key concepts, show relevant equations (if any), show relevant figures (if any), answer preliminary questions from lab.
		- Hypothesis: summarize your hypothesis (predictions) in words and/or graphically.
	+ Method: describe the experimental methods in your own words, and list special equipment used. This is a good place to mention each team member’s contribution.
	+ Results: Introduce your data and include the relevant results in tables and/or graphs. Be sure to include where applicable meaningful titles, axis labels, even and appropriate axis scaling, and units. Graphs should include only the relevant data. Do not include a raw data table if it is also plotted. Summarize how error bars and/or uncertainty in measurements were determined and use appropriate significant figures. If calculations were a major part of the data analysis, show your work. Use the equation editor that comes with word processing software and put each equation on its own line much like you see in your textbook. If you aren’t sure how to do this, ask your instructor.
	+ Analysis: each experiment will have this section. Describe the key features of your results that either prove or contradict your hypothesis. Describe how the data demonstrates the principles being studied. Answer any analysis questions from the lab in your own words. What potential sources of error may have affected your results? What did you learn? If you had any difficulties with this experiment, explain briefly. Show the accuracy of a key result with either percent error or percent difference:

  

Percent error is useful when you have found an experimental value for a known constant (such as gravity). In that equation, vexp is the experimental value you found and vtheo is the theoretical value you expected to find. Percent difference is useful if you are comparing two experimental values (Ex. two experimental methods used to solve for the spring constant).

(Source: [http://en.wikipedia.org/wiki/Percent\_difference)](http://en.wikipedia.org/wiki/Percent_difference%29)

* Conclusion: Briefly summarize entire lab including all experiments. First, summarize the objectives, methods, and key results of each experiment distinctly. Then, summarize your discussions from the analysis section(s) (sources of error, difficulties, etc). You may wish to also answer these questions: Did any of your results deviate from your expectations? What was most challenging about the lab? What would you do to improve this lab? Do not include data tables or graphs in this section and do not introduce relevant results or analysis of data that has not already been stated in previous sections.

# Tips

* + Proofread your report for spelling, grammatical errors, and poor sentence structure. RUN SPELL-CHECK!
	+ Use scientific/professional language – avoid slang or colloquialisms.
	+ Avoid using subjective measures to evaluate results (e.g. “These results agree very well with our prediction”). Provide objective measures instead (e.g. “The maximum percent error between the experimental results and the theoretical predictions was 0.5%”).
	+ Lab reports do not need to be long – be concise (this is a skill that takes practice!)
	+ Tables and graphs should be easy to read, accurate, and well labeled. Only the relevant data should be included – do not include raw data of what is plotted. If you performed the same data collection 3 times, only include 1 representative graph. Introduce your data before presenting it.
	+ If you need help editing graphs in LoggerPro or plotting in Excel, let your instructor know early!

OIT lab rubric Name

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| --- | --- | --- | --- | --- |
|  | 1-Developing | 2-Competent | 3-Exemplary | Score |
| **Presentation** | Sections missing or out of order, different sections not clearly identifiable. Frequent grammar/spelling errors, writing style is rough or imprecise. Formatting is inconsistent. Poor use of tables and graphs. | Well organized and easy to follow, all sections in order and clearly identifiable. Grammar/spelling mostly correct. Language is mostly scientific. Format is mostly consistent throughout the document. Use of tables and graphs adequate. | Well organized and easy to follow, all sections in order and clearly identifiable. No spelling or grammatical errors. Language is scientific, thoughts are clear. Formatting is consistent throughout the document. Effective use of tables and graphs. | 6 |
| **Content** | Missing sections of the lab. Abstract does not summarize the objectives, methods, and key results. Intro and Data Collection sections are poorly developed, methods are not clear. | All required sections of the lab included. Abstract generally summarizes the objectives, methods, and key results but may need some improvement. Intro and Data Collection sections are mostly well-developed: objectives are clearly stated, equipment is listed, and methods are generally clear. | All required sections of the lab included. Abstract generally summarizes the objectives, methods, and key results but may need some improvement. Intro and Data Collection sections are mostly well-developed: objectives are clearly stated, equipment is listed, and methods are generally clear. | 6 |
| **Results** | Results are incomplete, incorrect, unclear, or don't match team members results. Most figures, charts, and tables missing key formatting elements, such as titles, labels, units, key, trendline and are hard to read and interpret. Raw data used for graphs might be shown.  | Results are complete and match team members results. Adequate use of figures, charts, and tables to display data. Some figures, charts, and tables missing key formatting elements, such as titles, labels, units, key, or trendline but are easy to read and interpret. Raw data used for graphs might be shown.  | Results are complete and match team members results. Excellent use of figures, charts, and tables to display data. All figures, charts, and tables properly labeled and formatted, easy to read and interpret, with proper titles and captions. Raw data used for graphs is not shown. In some instances, results offer additional information above that required. | 6 |
| **Analysis & Conclusion** | Analysis sections are hard to follow and data is not thoroughly summarized, discussion of sources of error or error calculations are inadequate or missing. Conclusion fails to summarize the entire report, and does not explain disagreements between theoretical predictions and experimental results. Concluding remarks are ill-expressed and do not demonstrate an understanding of the lab. | Analysis sections adequately summarize results, discussion of sources of error or error calculations are complete. Conclusion summarizes the entire report, and explains disagreements between theoretical predictions and experimental results. Concluding remarks demonstrate a good understanding of the lab. | Analysis sections completely summarize results, thoroughly discuss of sources of error with error calculations. Conclusion summarizes the entire report, and explains disagreements between theoretical predictions and experimental results very clearly. Concluding remarks demonstrate a solid understanding of the lab. | 6 |
| **Lab Behavior** | During lab, group did not work well as a team and/or equipment was not put away. Team members names may be missing from the front of the report or a team member's name has been misspelled. Roles of team members are missing or vague.  | During lab, group showed adequate teamwork but some members may not have participated equally. Not all equipment was put away or station fully cleaned. Team members names may be missing from the front of the report or team member's name was misspelled. Roles identified but vague.  | Group showed effective teamwork, all members had an equal level of participation (if relevant). All equipment was put away in its proper place and lab station was cleaned. In lab report, team members’ names are listed on front of report and roles of each team member is clearly identified.  | 6 |
| **Total** |   |   |  | 30 |

Comments