

PHY 183 Lab Report Rubric for Critical Thinking

Introduction				
Subcategory		Inadequate	Moderately Developed	Substantially Developed
1.1	Hypothesis	Lacks hypothesis.	Hypothesis written as “testing this idea” or “will be demonstrated”, OR is an odd hypothesis that does not make complete sense.	Has a clearly stated hypothesis.
1.2	Relevant Knowledge	Lacks review of relevant knowledge.	Review of relevant knowledge is incomplete, contains errors, or is irrelevant OR is complete but lacks connection to current experiment.	Complete review of relevant knowledge and makes connection to current experiment.
1.3	Purpose	Does not explain the purpose of the experiment.	Has incomplete explanation of the purpose of the experiment.	Completely explains the purpose of the experiment.
Apparatus and Procedure				
Subcategory		Inadequate	Moderately Developed	Substantially Developed
2.1	Duplication	Procedure cannot be duplicated as written.	Would have trouble duplicating procedure as written.	Can duplicate the experiment from procedure as written.
2.2	Relationship Between Theory and Experiment	Does explain the relationship between theory and experiment in writing.	Explanation of the relationship between experiment and theory is not complete or there are misunderstandings evident.	Explanation of the relationship between experiment and theory is complete.

Results and Discussion				
Subcategory		Inadequate	Moderately Developed	Substantially Developed
3.1	Quantity of Data	Quantity of data is insufficient for accuracy or precision (e.g. no data or skipped part of the experiment).	Quantity of data is insufficient for accuracy or precision (e.g. no data or skipped part of the experiment).	Sufficient quantity of data to obtain accuracy and precision.
3.2	Tables and Graphs	Analysis of data is incomplete.	Analysis of data is incorrect or difficult to understand (e.g. axes are switched on a graph).	Analyzes data via graphs, statistics, and curve fitting as appropriate.
3.3	Assumptions	Does not identify assumptions made in the analysis.	Identifies assumptions that are negligible in the experiment.	Identifies assumptions.
3.4	Error Analysis	Lacks error analysis.	Sources of error would have negligible effects on data. (e.g. friction, air resistance, and altitude) OR sources of error are sufficient in number and would adequately affect the data, but student does not explain how errors affect the results.	Sources of error are sufficient in number and would adequately affect the data, and student explains how errors affect the results.
3.5	Criticisms of Methodology	Has not considered possible criticisms of the methodology used.	Critique of methodology is incomplete or critique aspects that would negligibly affect the data if changed.	Critiques the process of data gathering and analysis.
3.6	Alternative Interpretations	Does not consider alternative interpretations of the data.	Alternative interpretations of the data considered are not reasonable for the given experiment.	Considers alternative interpretations of the data.
3.7	Conclusion	Draws no conclusions or conclusions which are not justified in that: --conclusions do not agree with results (e.g. high error, but still concludes theory is correct or visa versa). --student does not find percent error to compare two values when appropriate	Draws reasonable conclusions from the data, but does not convincingly connect the conclusions to the data.	Draws sound conclusions from the data and communicates a logical path from the data to the conclusion.