PHYS 330 Advanced Lab – Experimental report grading rubric

Introduction section: - Outlines the scientific purpose and objectives of the lab performed - Objective is clear & concise and demonstrates a knowledge of the independent and dependent variables and the purpose of the lab. - Introduction that includes all or most of the relevant theory and equations necessary for the reader to fully understand the experiment and interpretation of the experimental results - Adheres to writing in scientific style: clear and to the point
Procedures -A short paragraph answering the questions “What materials were used?” and “How were they used?” -List of materials is complete and steps of experiment are clear, sequential, and in complete sentences. -Picture of apparatus or diagram is included.
Raw Data - Data tables including raw data. - Columns are labeled with correct units identifiable easily. - Formatting is correct
Processed data - Data table including processed data. All graphs are included in this section. - Graph axes must be scaled, labeled and best fit lines (if appropriate) drawn correctly. - Good clear description of the data processing steps and equations used. - Show working for calculations that you’ve had to do. If it’s repeated, show it one time.
Uncertainty Analysis - Uncertainty analysis for the experiment has been carefully done and presented following correct protocols for quantitative estimating statistical uncertainties from a single measurement, from repeated measurements. How these uncertainties propagate. And overall sense of systematic uncertainties involved.
Notation and Units - The report utilizes the correct notational and units throughout so it is clear what the units are for every quantity that does have units. This is in both graphs, tables and in writing.
Questions - This section includes answers to any questions included in the lab - All questions answered complete in complete sentences and logical (concepts and quantitative) reasoning
Results and Discussion A short paragraph that includes: - Demonstrates clear and thoughtful scientific inquiry - Answers the question: “Does the data confirm or contradict the background theory” - Summary on the key uncertainties and errors involved and how they could be improved upon. - Addresses the Assumptions and limitations - Conclusion is complete and written in complete sentences - Sources of error may not include “human error” or “faulty equipment” unless fully explained.
Conclusion - Contains a few things you have learned. - Statement of the errors, percentage error and assessment of how accurate you were. - What can be done to improve the accuracy and precision of the lab - Has successfully learned what the lab is designed to teach