**Ms. Torrie’s IB Physics Internal Assessment Guide**

The following guide has been adapted from Chris Hamper and his website at www.inthinking.co.uk

Before any IA investigation, all students should examine the [IB Physics assessment criteria](https://ibpublishing.ibo.org/server2/rest/app/tsm.xql?doc=d_4_physi_tsm_1408_1_e&part=7&chapter=2). The IA investigation is worth 20% of the final IB Physics mark and is an opportunity for students to engage in the scientific process. The IA is evaluated using the following criteria:

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Personal Engagement** | **Exploration** | **Analysis** | **Evaluation** | **Communication** | Total |
| 2 (8%) | 6 (25%) | 6 (25%) | 6 (25%) | 4 (17%) | 24 (100%) |

**Personal Engagement [2 marks]**

Here the marker is looking for evidence that the student is engaged in their project. Such evidence could come in many forms:

* Statement of reason why the topic is interesting (not my favourite since it could appear to be insincere).
* Context of the research given.
* Using data in a new way.
* Unique research question.
* Interesting use of apparatus. (creativity!)
* Novel method.(creativity!)
* Adaption of equipment to suit requirements.
* comparison of different methods. (going beyond expectations due to interest).
* Use of simulations to compare results.

**Exploration [6 marks]**

Focused research question, relevant background information with highly appropriate method all factors influencing reliability considered with full awareness for safety ethical and environmental issues. This is similar to Design in the old lab rubric except with establishing context for the project. Research which relates to the unpinning physics of the project should be summarized. The following should be part of exploration

* Research question clearly stated in introduction.
* If applicable (does not apply to mathematical modelling), variables identified.
* Theoretical background explained.
* Equations derived not just stated.
* Method is described fully showing attention to detail and consideration of controlled variables.'
* Appropriate method (if it worked it was probably appropriate).
* Adaption of method to reduce errors.
* Use of different methods to reinforce conclusion.
* Use of simulations to support theoretical background.
* Mention of factors that can not be controlled.
* Mention of safety issues (not trivialized and should be directly relevant and applicable to the investigation).

**Analysis [6 marks]**

Raw data is displayed in a table and processed correctly. Uncertainties are justified and processed. Results are correctly interpreted and the impact of uncertainties is fully understood (very similar to our lab rubric DCP). Analysis should be relevant to the research question.

* Relevant raw data collected.
* Raw data is displayed in a clear table.
* Raw data table has correct units and uncertainties in headers.
* There is enough raw data to support conclusion (at least 5 values of independent variable for a linear relationship more for non linear).
* Measurement of dependent variable has been repeated (about 5 times) and mean value calculated.
* Uncertainties calculated from (max -min)/2 or percentages.
* Some processing of data (at least finding mean).
* Results used to show the impact of uncertainties (e.g. intercept, spread of data or size of error bars).
* Data used to find relationship or value.
* Uncertainty in gradient found where appropriate.

**Evaluation [6 marks]**

A detailed and fully relevant conclusion justified with **reference to accepted theory**. Strengths and weaknesses are discussed, limitations of method understood and improvements discussed. This section should include the student’s original thoughts and connection to wider world context.

* Any calculated values are expressed correctly and compared to accepted values.
* Any claims made are justified and backed up with evidence from the results.
* Shows an understanding of how the results support the theory and where it deviates from it.
* Understands how uncertainties affect the results (with evidence).
* Tries to adapt the method to reduce uncertainties or test their impact.
* Highlights weaknesses in the method (with evidence).
* Discusses how to address weaknesses (weaknesses addressed should be those mentioned).
* Discusses what the next step would be given more time.

**Communication [4 marks]**

Clearly presented, well structured, coherent, focused, and relevant with correct use of terminology and few errors.

* Correct use of physical terms.
* Organized into short sections with relevant sub titles.
* Concise and stays within the word count.
* Doesn't contain irrelevant information.
* Correct units used throughout.
* Derivations and equations correctly performed and well laid out
* Bibliography is include and references are properly referenced.