
	<p style="text-align: center;">COPLAND COLLEGE Physics – Waves 2, EM and Atomic Physics Practical Report</p>	
<p>Due Date: Monday 26th March</p>	<p style="text-align: center;">YOUNG’S DOUBLE SLIT EXPERIMENT</p>	<p style="text-align: center;">Weight: 25%</p>

Your Investigation:

In this experiment you have been given the task to investigate **Young’s Double Slit Experiment**. In the classroom there were three slightly different sets of apparatus, which enabled you to carry out the investigation. You were asked to choose one set of apparatus and carry out the investigation. Your approach to this investigation was as follows.

- 1) Collect data using a double slit of known width and spacing. NOTE: not all apparatus allowed you to determine the spacing between slits.
- 2) Vary parameters such as slit width, and slit spacing (if possible), distance of light source from slit, wavelength of light source. You may have been able to investigate other variables as well.

Your Report:

The analysis and associated discussion and calculations will need to be directed to the following areas.

- 1) A historical perspective to Young’s Experiment
- 2) Analysis of the assumptions and approximations associated with the derivation of the equations associated with Young’s experiment.
- 3) Relating the results of your experiments to the derived equations. How well do the equations predict the observed results? Has your experiment design been able to create an environment where the effect of assumptions and approximations have been minimised?
- 4) How has any other experimental work that you have carried out as part of your investigation allowed you to develop any further insights to Young’s Experiment and the diffraction and interference of light in general?

Note: These suggestions for your report are not exhaustive. You are free to include any other relevant material. However, the material that you include must be directly associated with your actual practical work. Off topic discussion will result in a reduced grade.

General:

Your report **MUST** be set out in accordance with the ***Guidelines for Writing Laboratory Reports***. This should have been issued to you at the beginning of the year. Copies of this are available on the class web site and at the College. In brief the format will need to be;

Title:

Planning A:

- **Aim:**
- **Hypothesis:**
- **Variables**

Planning B: Because this experiment had some open-ended aspects your methodology will need to be included.

Data Collection and Presentation:

Data Processing and Presentation:

Conclusion and Evaluation:

For this investigation uncertainty analysis is critical. Make sure that you approach this aspect logically and quantitatively.

Any material that you use as part of your report must be referenced appropriately. Please use the Harvard System. A web site that discusses this in detail is as follows:

<http://libweb.anglia.ac.uk/referencing/harvard.htm>

A link to this will be found on the class web site.

If you use external material to assist you understanding the work, and of course you should, don't copy large amounts of material from the sources but rather you should express these concepts in your own word in the context of the experiment that you are carrying out.

Report Presentation:

It is expected that all reports will be word-processed. Hand written reports are much less satisfactory. Diagrams should be computer generated. If this is not possible they **MUST** be line drawings clearly labelled and in black ink. You may use pencil first but this must be gone over with a black pen. All diagrams must be appropriately labelled so that it can be easily referred to in the text where appropriate. Reports must have a title page, which includes the title of the experiment and your name. All reports must be securely stapled and must **NOT** be submitted in a plastic sleeve.

The assessment rubric for this report will be found on the following page.

Internal Assessment Marking Form

Name of Student: _____ Name of Teacher _____ Date: _____

Lab Title: _____ Topic(s)/Option: _____ Hours: _____

Criterion	Aspects			Level	
Planning (a)	Identifies a focused problem or research question C P N	Relates the hypothesis or prediction directly to the research question and explains it, quantitatively where appropriate C P N	Selects relevant independent and controlled variables. C P N	ccc 3 ccp, ccn, cpp, 2 ppp, cpn,cnn, ppn, 1 pnn, nnn, 0	N/A
Planning (b)	Selects appropriate apparatus or materials C P N	Describes a method that allows for the control of the variables C P N	Describes a method that allows for the collection of sufficient relevant data C P N	ccc 3 ccp, ccn, cpp, 2 ppp, cpn,cnn, ppn, 1 pnn, nnn, 0	N/A
Data Collection	Raw data is recorded appropriately including units and uncertainties where necessary C P N	Raw data is presented clearly, allowing for easy interpretation C P N		cc 3 cp 2 cn, pp 1 pn, nn 0	N/A
Data Processing and Presentation	Processes the raw data correctly C P N	Presents processed data appropriately, helping interpretation and where relevant, takes into account errors and uncertainties C P N		cc 3 cp 2 cn, pp 1 pn, nn 0	N/A
Conclusion and Evaluation	Gives a valid conclusion, based on the correct interpretation of the results with an explanation and where appropriate compares results with literature values C P N	Evaluates procedures and results including limitations, weaknesses and or errors. C P N	Identifies weaknesses and states a realistic suggestion to improve the investigation C P N	ccc 3 ccp, ccn, cpp, 2 ppp, cpn,cnn, ppn, 1 pnn, nnn, 0	N/A

C = aspect completely fulfilled

p = aspect partially fulfilled

n = not at all fulfilled

N/A = Not assessed