Dear BSc students,

Here are some **main points** regarding you BSc report and your vivas.

- The deadline to submit your BSc reports will be on **Monday the 8th of January 2024** at 4pm.

- The BSc report should be send electronically to pa-studentoffice@soton.ac.uk as a pdf file. The name of the file should be as follows: **[Phys 3018\_Final\_report][Your Name][Title of thesis].pdf The pdf file should not be more than 5MB in size. Larger size reports may not be processed further.**

-The project report length limit should be **5000 words** from the start of the introduction to the end of the main text inclusive, not including acknowledgments (if any), and references. Examiners are not compelled to read beyond the word limit and may deduct marks for excessively lengthy reports. Your report should stand alone and you should accommodate the fact that the examiners are likely to ignore appendices.

-The overall marking of the BSc will be as following:

-Supervisor **30%**= Student performance during the project

There will be two examiners and they will evaluate only your report, summary and your viva

-Examiner 1 **35%**= Final report (20%), Final project summary (5%) and viva (10%)

-Examiner 2 **35%**= Final report (20%), Final project summary (5%) and viva (10%)

Some more details on the final assessment and the overall process:

The assessment reflects research skills such as initiative, organisation and planning, experimental or theoretical skills, the analysis and interpretation of results, literature searching and record-keeping. Your report and summary are the principal piece of evidence on which your final assessment is based, but by itself it is not the only evidence: you are also asked to present and discuss your report in an interview with two members of staff.

When your report has been scrutinised, you will be interviewed individually by the two members of staff responsible for assessing your report. Your interview ("viva") will last for about 45 minutes. The purpose of the viva is to check how well you understood what you wrote in your report and to assess what you achieved taking into account the time and resources available. The examiners will look for a good understanding of the basic physics background to the project. The general character of the interview is one of critical inquest, giving you the opportunity to demonstrate your abilities under oral examination.

It is important to realise that your project work is assessed independently of that of your partner. (Indeed, it is not necessary for you to have a partner at all, and there are some students who prefer to work on a project alone). So, your report must be written independently of your partner.

**General Points**

The value of a piece of scientific work lies not only in the discovery of new knowledge but also in the communication of the essential information to your scientific colleagues. Your ability as a scientist will often be judged by your written work.

The reader of your project report must be able to comprehend your work quickly and easily. Aim to write your project report such that it can be read and understood by an interested third year student and could form a basis for a continuation of this research.

You should aim to have the bulk of your report written by the beginning of December.

An electronic copy of your report will be retained by the School for assessment and for reference in connection with possible future projects. You may well choose to retain a hard copy for your own use.

Content

A good account of scientific work should cover the following points:

 Title

 This should contain the key words which convey what the report is about.

 Abstract

 Quoting main results, uncertainties and conclusions (length about 100 words). The abstract must be able to stand alone and tell the reader what message the report is conveying. Put the abstract on a separate page.

 Introduction

 Give a basic introduction to the subject area of the project and state the aims of your project and its significance in relation to other work. You should show that you are familiar with work done on the topic and quote relevant references to published papers.

Theoretical Background

In some cases the subject of a project is complex and it will be necessary to give a more detailed introduction to the background of your project in a separate chapter. Do not present excessive detail if you can refer to readily available publications.

Experimental Method

In a report on a project which has an experimental component, you will need to give a clear description of the experimental techniques and any development of apparatus. Remember that a diagram can be extremely helpful in making your ideas understood. Diagrams should be carefully prepared (including captions) and given at a relevant point in the text. Describe the possible limitations and accuracy of the experimental techniques.

Theoretical Method

If your project had a significant theoretical or computing component, the report will need to include a section on the theoretical method used in your work. The results of your work should be given in a separate section. It is often not necessary to list all the results of your work: try to include the relevant data which has been used in your subsequent analysis and conclusions, and generally limit showing data which is unreliable or irrelevant. This chapter should give the raw data (i.e. before any analysis).

Discussion of Results

Your report should contain a section in which the raw data is analyzed. In this section you should present derived data (for example in the form of graphs or tables) and a discussion of your results considering the initial aims, other work, theoretical predictions etc. It is essential to estimate the uncertainties in the raw and derived data. Your knowledge and skills from the data handling course should be brought into play.

Conclusions

The conclusion section of your report should reiterate the main points of your report (remember: people read the abstract, the introduction and the conclusions before the main argument). This section should contain a critical discussion of your experiments or theories and suggestions for further work.

References

Refer to publications, books etc in your report using numbers in square brackets (examples: to observations by Smith and Jones [4], a derivation is given by Kittel [5], a recent experiment [6]). Group the references at the end of your report (but before any appendices).The format for a reference to a paper in a journal is:

Surname, Initial Name *Journal title abbreviated,* **year**, *volume*, page numbers.

[4] Smith, A. B.; Jones, C. D. *J. Appl. Phys*. **1965**, *34*, 296-299

 and to a book:

[5] C. Kittel, Introduction to Solid State Physics (John Wiley and Sons, New York **1971**), 4th ed.,Chap. 3, pp 104-115.

Appendices

The readability of a report may often be improved by putting material irrelevant to the line of argument in appendices (for example: laborious mathematical derivations, print-outs of computer programs, long calibration tables). Appendices should be numbered (if there is more than one) and should appear at the end of the report.

The format given above is only a guide. The actual format of your report will depend on the type of project you are reporting and your personal style.

Layout

One-and-a-half line spacing should be used, and a 12-point font size. Use an ordinary font such as Times New Roman. Graphs and tables should be included in the text and not be grouped at the end of the report.

All figures should have a number and a title (example: Figure 1. Magnetic hysteresis of ...), and graph axes should be labelled appropriately with both the parameters and the units. A zigzag of straight lines joining the experimental points is generally inappropriate. Lines on a graph should either be a best-fit curve to the experimental points or the prediction of a theory which is being compared with the data. Error bars should normally be shown.

Equations are to be numbered consecutively throughout the report. Refer to equations by number (for example: "equation 5", or "equation 2.3" where "2" is the chapter number.)

Include a table of contents at the front of your report.

The Interview

Your introductory words will probably lead to some questions such as "Did you look at other ways of doing this?", "What work has been done before?" As projects are normally done in pairs, the examiners will want to know whether everything was done together or how the tasks were divided between you.

The major part of the viva will arise from the report, so if you have your own copy, bring it with you. The introductory section may raise questions about your knowledge of the background to the project. In the theory section they will want to know whether you understand what you have written. Are you clear about the meaning of the symbols in formulae? In the case of simple formulae, they may wish you to derive the formula and probe carefully your understanding of the basic physics involved.

As far as the results are concerned, the examiners will have seen what has been achieved. This may raise questions about the progress of the project and difficulties encountered. They will pay particular attention to your analysis of the data and conclusions. Have you shown the errors on your graphs and if not why not? Is a particular conclusion justified in view of the size of these errors?

At the end you may be asked how you see the project being taken forward by other students next year and finally whether you would like to make any other points not yet covered.

As you see, the interview aims to cover many things. If the examiners are not careful, it is easy to get hung up on one small detail and use up a lot of the time. This is clearly undesirable, because if the examiners still keep to the allotted half hour, some aspects will be

omitted. The examiner/supervisor make an independent report and assessment on a standard mark sheet. The headings uses in the assessment are:

 \* Understanding of relevant science

 \* Ability to discuss methods and results critically

 \* Clarity of explanation

 \* Understanding of the background to and the significance of the project.

Preparing for the viva is not a matter of mugging up something the night before but of doing a good job on the project throughout the year. There is no point in preparing any notes. You should reflect on what you would have to say about the topics mentioned above. Have a look through your project report to remind yourself what is in it.