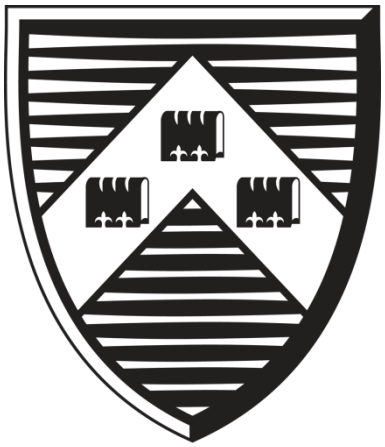
UNIVERSITY of York



Department of Physics
MPhys Projects
Student Guide
2016-2017

CONTENTS 2016/17

1 INTRODUCTION

A major feature of the MPhys degree is a project, which forms an important and substantial part (one half) of the fourth year.

In October, you may think that June is a long way off. You would be mistaken! You are strongly urged to make an early and conscientious start to your project work. Contact your Project Supervisor as soon as possible and arrange for regular (at least fortnightly and preferably weekly) meetings.

1.1 The Objectives of the Project

The MPhys project is an open-ended scientific investigation that you conduct on your own. Each project has a specific staff supervisor who will give advice and assistance at regular supervisory meetings. Project work builds on expertise and knowledge that you have acquired in your first three years. The aim is to develop your ability to design, carry out, record, and report on (in written form and orally) an extended investigation of a real problem in a research environment. The project will provide an opportunity for creativity and original thought on your part. In short, the aim is to simulate the professional activities of a graduate physicist.

1.2 The Context of the Project

The project includes a skills-related component equivalent to 12 credits of the module as a whole. This component includes a Project Review, Seminar and a Project Conference. These aspects are set out in section 2.

1.3 Intended Learning Outcomes

These can be found in the Documents section of the VLE site for the MPhys project.

1.4 MPhys Project Co-ordinator

Projects will have been allocated following examinations in Summer Term, Year 3. Responsibility for the organisation and administration of MPhys projects lies with the MPhys Projects Co-ordinator (MPC). The MPhys Project Coordinator for 2016/17 is Dr Alison Laird.

If you have any problems with your project that you do not wish to discuss with your Project Supervisor, or issues on which you do not agree with your Project Supervisor, please raise these with the MPC – or the Chair of the Board of Studies if the MPC is your supervisor – who will deal with your queries in confidence.

1.5 Submission of Work

There are penalties for late submission of the project review, notebook and Dissertation.

For submission of work with deadlines that are stated as days only (e.g. Monday, Week 3), with no specific times given, you are STRONGLY advised to hand in your work as early as possible, to avoid congestion in the Undergraduate Office. For submissions that are made via the VLE details of deadlines are provided at the submission points on the VLE.

If the Undergraduate Office is closed you will NOT be able to hand in your work that day. On the day of the deadline, if you have not handed in prior to the office closing, you will not be able to hand in your work that day and will therefore incur the late submission penalty unless there are mitigating circumstances.

The Undergraduate Office opening times are **10.00-12.00 and 13.00-16.00**.

These penalties are the same as described in the Taught Programmes Handbook.

2 PROJECT ASSESSMENT

The pro-forma and essay guidelines to be used by the academic staff are available on the intranet. These pro-forma give the guidelines the staff will use in assessing your work so you are advised to study them when working on your Project. The overall assessment criteria for the MPhys project are summarised in the table below:

Assessment	Weighting (%)
Project Notebook and Overall Progress	**25**
Dissertation	**35**
Oral Examination (viva)	**20**
Project Review	**5**
Spring Term Seminar	**5**
Project Conference – Talk + Poster	**10**

There are several skills-related components of the Project. These are: the Project Review, the Spring Term Seminar and the Summer Conference. Note that all written and oral elements of the Project described above are compulsory.

2.1 Timetable: Project diary

AUTUMN TERM					
Week	**Day**	**Activity**	**Submitted to**	**Markers**	**Pro-forma**
1	THU (by 10am)	**Deadline –** Risk Assessment	Online via the VLE		
1	THU	**Library skills session**			
1	FRI	**Dissertation writing workshop**			
4	MON	**Deadline** – Project Review	Online via the VLE		
5	FRI	Project Summary/Plan	Project Supervisor		
7	FRI	Project Review marked		S, M1	S1
10	Before FRI*	Project Summary/Plan	Project Supervisor		

* Note: Project summaries and plans should be shown to your Project Supervisor during this week, if possible, so that s/he can sign them off before the end of the week.

SPRING TERM					
Week	**Day**	**Activity**	**Submitted to**	**Markers**	**Pro-forma**
3 - 7		Seminar			S2
5	FRI	Project Summary/Plan	Project Supervisor		
10		Project work complete			
10	MON	Project Conduct Report Form available on the VLE			MPhys1
10	Before FRI *	Project Summary/Plan	Project Supervisor		
* Note: Project summaries and plans should be shown to your Project Supervisor during this week, if possible, so that s/he can sign them off before the end of the week					

SUMMER TERM					
Week	**Day**	**Activity**	**Submitted to**	**Markers**	**Pro-forma**
1	FRI	**Deadline** - Project Conduct Report Form Student's comments	Online via the VLE		MPhys1
1-3		Write dissertation			
3	FRI	Project Conduct Report Form Supervisor's comments	Online via the VLE		MPhys1
4	MON at 16:00	**Deadline** – Project Dissertation **Deadline** – Project Notebook	Online via the VLE Undergraduate Office		
7	MON	Project Notebook assessed		S	MPhys2
7	THUR/ FRI[1]	Project Oral Examination		M1,M2	MPhys3
7	FRI	Dissertation assessed		M1, M2	Aide-Memoire
8	MON - FRI End FRI	Conference talks Conference posters All marks to MPC Moderators' Panel Meeting		CP CP M1, M2	MPhys2

2.2 Project Notebook and Overall Progress

At the end of your project, your project supervisor will make his/her assessment of your project as a **whole.** Part of this is an assessment of your project notebook. In carrying out this assessment, your Supervisor will use all knowledge of the conduct of the project, in particular impressions gained at supervisory meetings. The headings under which the assessment will be made are:

- quality of the record keeping;
- effort and initiative;
- technical prowess, practical scientific skills and originality; and
- progress made.

2.3 Dissertation

The Project Dissertation will be assessed independently by markers M1 and M2 using the Project Dissertation Aide-Memoire. Following the oral examination M1 and M2 will complete Pro-forma MPhys3. They will have available the Project Conduct Report but otherwise assess the Dissertation as a stand-alone piece of work. If M1 and M2 cannot agree, their marks and comments are adjudicated by the Moderators' Panel who may bring in a third marker.

All pro-forma are submitted to the Undergraduate Office by the end of Week 7 of the Summer Term (that is, before the Conference and Oral Examination).

2.4 Oral Examination (viva)

You will be required to defend your Dissertation in an oral examination before the two markers who will have assessed your Dissertation. The oral examination will be of

[1] The time and date of oral exams may be subject to variation depending on staff availability, and a detailed schedule will be distributed early in Summer Term.

approximately twenty-five minutes duration, of which five minutes will be allowed for you to give a short summary of the main outcomes of the project and twenty minutes reserved for discussion with your markers. You should bring a summary sheet of (at most) six bullet points highlighting the principal achievements of your project. The discussion will be based on your Dissertation. It is expected that one marker will act as the expert and should lead the discussion with the second marker asking more general questions on background, relevance, etc.

The oral examination will normally take place on the Wednesday/Thursday/Friday of Week 7, **Summer Term** prior to the Conference. A detailed timetable will be drawn up by the Year 3 & 4 Undergraduate Administrator and the dates/times may be subject to variation within week 7 depending on staff availability.

The purpose of the oral examination is to ensure that you

a. have understood the background to and the relevance of the work you have carried out,
b. can give a good verbal account of it,
c. can give replies to questions that display your general knowledge of the project area and your detailed understanding of the work done.

Your Supervisor can give you further advice on this.

M2 will be responsible for timing during the Oral Examination. Immediately following the Oral Examination, markers M1 and M2 will complete the Pro-forma MPhys3 and return it to the Undergraduate Office.

2.5 Project Review

By Week 2 of Autumn Term, you should have a clear understanding of the aims and objectives of your project. At this stage, you are required to write a Project Review that describes how the project is to be organised and which gives details of time-scales.

In order to ensure that you are adequately prepared to start your allocated project you will have been required to do a literature review by your project supervisor. Preferably this should have been undertaken prior to or during the summer vacation. The Project Review will include a research plan containing a meaningful discussion of the methods and approaches that will be used in the project, project timeline and targeted milestones (in the form of a Gantt chart or otherwise) until the submission of the final Project Report/Dissertation in Term 3, Year 4. **You will have discussed the scope of the Project Review with your project supervisor before the end of the Summer Term, Year 3**.

The Project Review should address the following issues:

- General scientific background covering the motivation behind the project. You need to describe what you are going to be doing and why.
- Critical review of previous work on the topic with references.
- General research objectives of the project. This should highlight what is new about the project that has not been done before.
- Research plan explaining how those objectives are going to be accomplished. For instance, in the case of experimental projects, you can include information about the experimental techniques you are going to be using and why they are the most appropriate to tackle a specific problem. In the case of theory projects, you would need to explain why the model you intend to use is the most suitable for the type of simulation you need to do.

The Project Review should be not more than 5500 words long, not including tables, figures, references and Gantt Chart. This is a strict upper limit.

The Project Review must be submitted via the VLE on Monday of week 4, Term 1.

2.6 Spring Term Seminar

By this stage, your project will have reached an advanced stage. By way of practice for your talk at the end-of-year Conference, you will give a short (e.g. 10-12 minute) progress report on your project work to a group. Verbal feedback should be given to each presenter at the end of that week's session. A copy of the completed Pro-forma S2 will also be available two weeks after the last presentations are made.

You are encouraged to attend all the talks on the day of your presentation.

2.7 Project Conference

The MPhys Project Conference is an occasion to display the fruits of your endeavour over the past year. It takes place on Monday to Friday of Week 8 of the Summer Term.

The brief is as follows:

All MPhys students will give a talk, the time allowance for which varies from year to year depending on numbers but will include time for questions. The talk should demonstrate understanding of the fundamental physics that underpins the project, should give a clear account of what you have achieved, and discuss how the work might be extended. You should assume an audience of reasonably able physicists with no specialist knowledge of your research area.

All students are required to present a poster on their project work. The poster should give a vivid account of the objectives of the project and the essential results.

Posters must be produced to A0 size. The Department will pay for one copy of the poster to be printed by Design & Print Solutions for each student. More detailed instructions will be circulated early in Summer Term. The posters will be presented on boards 2.2 metres high by 1.2 metres wide: please note that posters cannot be mounted on these boards using anything other than Velcro hook stickers, which will be provided by the Department.

If you need help with PowerPoint, consult the manuals on the IT Services website at http://www.york.ac.uk/it-services/training/materials/msoffice/
(guides to the different versions of PowerPoint are available under 'Everyday Essentials')

An aide-memoire on the poster presentation is available at
http://www.york.ac.uk/physics/internal/learning/labsprojects/posters/
A detailed timetable will be distributed prior to Week 7 of Summer Term.

The Conference presentations will be assessed by a Conference Panel (CP), distinct from the Moderator's Panel, consisting of three members of staff.

2.8 Markers

Each project will be assessed by three markers: the supervisor S, the first marker M1 (an expert drawn - insofar as is possible - from a cognate area) and the second marker M2 (a non-expert drawn from outside a cognate area).

The involvement of a non-expert marker is intended to provide contact across different research areas to maintain uniformity of standards. This avoids independent marking units tied to specific research groups. Moderators (see below) will provide further standardisation. Since project supervisors are also likely to be acting as marker M1 or M2 for other projects, and may possibly also be acting as moderators, this is sufficient connectivity to ensure that uniform standards are maintained.

2.9 Moderators' Panel

The Chair of the Board of Examiners will appoint a Moderators' Panel consisting of members of staff (representative of theoretical, computational and experimental projects as well as research groups) to check the uniformity of standards, examine extreme marks and adjudicate in disagreements between markers. The Panel will finalise the marks and has the right to alter them. If necessary, they have the right to call on a third marker (M3). The Moderators' Panel Meeting will be held in Week 8, **Summer Term**.

Note for staff: all components of the project - Proposal, Notebook, Conduct Report, Dissertation and all marks pro-forma - must be returned to the MPC or Undergraduate Office (as relevant) by the due date, as the panel needs to have access to all of the above evidence.

3 STARTING YOUR PROJECT

3.1 Supervision

Project Supervisors will propose, organise, and support projects, usually related to their research interests that introduce the student to good practice in research. The function of the Project Supervisor is to introduce the project and to provide you with continuing advice, encouragement and assistance at regular supervisory meetings. It is expected, as the project progresses, that you will show increasing self-reliance and initiative. The Project Supervisor monitors this process whereby you shoulder increasing responsibility for the project. It is an assessment criterion.

You are required to meet with your Project Supervisor once a fortnight and preferably weekly.

3.2 Allocation of time

The Project constitutes 60 credits, corresponding to half the credit available in the fourth year. You are expected to devote on average about **18 hours per week over three terms** (24 weeks) on project work.

You are cautioned against spending excessive time on the project to the detriment of the rest of your course. Divide your time and effort in proportion to their relative credit value (especially if you have chosen course options that do not split equally between Autumn and Spring Terms).

Under normal circumstances, it is expected that the project investigation should be complete by the end of the Spring Term while the first few weeks of the summer term should be devoted to the writing of the Dissertation.

3.3 Risk Assessment and safety

In line with the department's health and safety policy all final year students are required to complete a project risk assessment. You will need to discuss your risk assessment with your

Project Supervisor as it must cover **all** significant hazards associated with your project activities. On completion, your risk assessment must be signed by yourself and your Project Supervisor, who must be a member of academic staff, to agree that it is appropriate. When done you can start work. A copy of your completed risk assessment must be retained by your Project Supervisor and you for reference should it be required in the event of an incident.

Your risk assessment must be completed by 1000hrs on **Thursday Week 1, Autumn Term otherwise you will not be allowed to enter the labs unaccompanied.**

You may need to attend health and safety training specific to your project. You are strongly advised to check the necessity for and availability of any relevant training as early as possible. If you have any queries, problems or doubts concerning health and safety matters, please contact the Department Safety Officer. Details of health and safety training courses can be found at:-

http://www.york.ac.uk/admin/hsas/hstraining/hstraining_home.htm

Completion of the risk assessment form is relatively simple and should only take a few minutes. Guidance on completion of the risk assessment form can be found in the University Policy and Management Procedure a link for which can be found at:-

http://www.york.ac.uk/admin/hsas/safetynet/Risk%20Assessment/risk_assessment.htm

Links to the risk assessment form and training courses can also be found here.

If your project involves the use of radioactive sources or lasers you have to complete a specific risk assessment for that activity and register as a user. This is separate to the general risk assessment, details of which can be found at:-

http://www.york.ac.uk/admin/hsas/safetynet/Ionising_Radiation/ionising_radiation.htm

http://www.york.ac.uk/admin/hsas/safetynet/Lasers/lasers.htm

If you are undertaking a project in theoretical physics and your work involves long periods of computer use you are required to undertake a Display Screen Equipment risk assessment, details of which can be found at:-

http://www.york.ac.uk/admin/hsas/hstraining/hstraining_home.htm

3.3.1 General

A common cause of accidents in laboratories results from working in cluttered and untidy conditions. Ensure that work areas are well organised and tidy, in particular cables, pipes, etc. must not be trailing across the floor and walkways must be kept clear at all times.

Do not interfere with or misuse anything that has been provided in the interests of health, safety for example safety guards, safety covers and safety interlocks.

Gas cylinders must be securely mounted against a wall or attached firmly to a bench with a suitable restraining device. Do not install, remove or replace regulators on top of high pressure gas cylinders. If in doubt seek advice from your Project supervisor.

3.3.2 Electrical Safety

Undergraduate students must not undertake any work which exposes them to mains electricity unless under the direct supervision of technical staff in the Electronics Workshop. Some experimental apparatus uses high voltage sources however these are invariably insulated or enclosed and do not constitute an electrical risk. All electrical equipment should be tested and labelled indicating the test date and the date after which it should not be used. Any equipment which is beyond its "DO NOT USE" date must not be used. If in doubt seek advice from your Project Supervisor.

3.3.3 Hazardous substances

If your project only involves the use of hazardous substances, this must be covered in your risk assessment in accordance with the University Policy and Management Procedure, details of which can be found at:-

http://www.york.ac.uk/admin/hsas/safetynet/COSHH/coshh.htm

3.3.4 Specialist Safety Requirements

There are special safety requirements associated with lasers and ionising radiation.
Students whose project will entail any use of radioactive sources will need to register with the Department Radiation Protection Officer to receive appropriate training. You should not handle radioactive sources until such training is completed.

Similarly, students whose project will entail any use of lasers will need to register with the Department Laser Safety Officer. If your project involves the use of lasers rated above Class II then you must receive specialist laser safety training from your supervisor prior to commencing your project. If you have any doubts about laser safety, please consult the Department Laser Safety Officer.

3.3.5 Accidents, Incidents or near misses

All accidents, incidents or near misses must be reported using the university on-line accident/incident reporting system SOLAR details of which can be found at:-

http://www.york.ac.uk/admin/hsas/safetynet/Accidents/incident_reporting.htm

In the case of minor injuries the department has a number of qualified first aiders details of which are posted adjacent to the first aid box and eyewash stations. If a department first aider is not available assistance can be obtained from the Security Centre on ext. 3333.

3.3.6 Fire

In the event of a fire, leave the building quickly via the nearest safe exit and make your way to the nearest fire assembly point. Do not stop to pick up belongings.

4 GENERAL PROGRESS

4.1 Record-keeping: the project notebook

You are required to keep a notebook/diary that details the work you have carried out. **This notebook must be a bound book with a hard cover: scraps of paper or loose-leaf files are not acceptable.** Your project supervisor will assess your notebook at the end of Autumn and Spring Term and at the end of your project. This will form part of your supervisor's assessment of your project as a whole.

For particular projects, and with agreement from your supervisor, it is permissible to keep an online blog rather than a paper notebook. In this case, the blog should be maintained in the same way as expected for a notebook. Your notebook or blog must be handed in with your Dissertation on Monday of Week 4 in the summer term. This notebook will form part of your assessed work.

NOTE - the original notebook must be submitted and NOT a copy.

4.2 Content of the project notebook

Your notebook is a personal record of your experimental, theoretical or computational work and there is no fixed format as to how you should keep it. Remember that:

(a) Your notebook should contain a proper record, in chronological order, of all relevant information in appropriate detail and clarity. It must contain a record of what you have done, why you did it, what you have discovered, and a discussion of your findings.

(b) Enter information and ideas **as the work proceeds** so that you build up a set of notes which genuinely reflects how the investigation took place - mistakes, blind alleys and all.

(c) It is **very important that graphs are drawn and tables constructed as the results are obtained.** In this way, gaps in your data and faulty equipment can be discovered early thus giving you time to make any further measurements considered necessary. If your notebook does not have graph paper then you must ensure that all graphs are firmly and permanently fixed in your notebook.

(d) If you find during the course of your work that the data you have taken is wrong, simply cancel it by drawing a line through it - do not remove the pages from your notebook. You never know, it might be correct after all!

(e) Large quantities of data stored electronically should be accessible, and its location identified in the notebook.

The good practice you acquired in previous years should be followed. You should take your notebook to your fortnightly supervision meetings. Your project Supervisor will sign and date it. By the end of **Weeks 5 and 10 of both the Autumn and Spring terms** you should **produce in your notebook a one-page summary of your progress during the previous half term**. It should also include a plan for the coming half term. You should submit the progress summary and plan to your supervisor for approval. You are advised to arrange to meet your supervisor on **or before** the Friday Week 10 project summary/plan submission, so that s/he can sign off on the summary and plan and return your notebook to you so that you have it back for work during the vacation. When assessing your notebook at the end of the session your Project Supervisor will take into account the way that you summarise your progress throughout the year.

4.3 The Project Conduct Report form

You and your Supervisor will submit a factual report on the conduct of your project at the start of the Summer term. This consists of two parts. The first part (sections A and C) is to inform markers of problems encountered during the execution of the project - especially those outside your control - that should be borne in mind by markers. If the project has proceeded satisfactorily then the Conduct Report need only state as much. The second part is to help markers identify your own contribution to the project (how it relates to earlier work, your achievements). The Conduct Report does not form any part of the assessment of

your performance. You should complete your part of the form and submit it through the VLE. It will then be passed to your Supervisor who will complete his/her part.

5 THE DISSERTATION

A word-processed PDF copy of the dissertation should be submitted via the VLE by 16.00 on Monday of Week 4 of Summer Term. You are advised to make a copy for your own use at the Oral Examination.

It is stressed that the Dissertation is an exercise in written communication and is your opportunity to convince your markers of your achievements. Market these! Also, you should not assume, apart from the Conduct Report, that markers will have any prior knowledge of your project. Therefore, the Dissertation should be written accordingly.

The Dissertation is a critical assessment of the research you have carried out. It must identify the context of the programme, detail the methods used to carry out the work, describe the results and finally assess their significance. The presentation must be scientific; that is, you should be able to justify any conclusions you draw based on your results and previous work. This justification must be quantitative and valid within the limits set by errors. You should not make qualitative assertions, e.g. 'it is obvious that' (unless it very clearly is). Your case must be tight and well argued.

The structure of the Dissertation should be ordered into sections, possibly with appendices, along the lines listed below. Please note that a dissertation provides more space than a research paper, so you should be able to provide a greater level of detail in the various sections compared to what would normally be possible in a paper.

5.1 Title Page

This must be a separate page and must contain the title of your Dissertation, your name and affiliation (i.e. Department of Physics, University of York), and the month and year of the submission of the Dissertation. The title should be a concise summary of the project and should normally be limited to about fifteen words as a maximum.

5.2 Abstract

Your Dissertation must have an abstract, which summarises the entire document. It should outline the nature and methodology of the work, and summarise the conclusions. The abstract must be self-contained and be intelligible independent from the rest of the Dissertation. A suitable length for the abstract would normally be about 250 words and should be on a separate page immediately following the title page.

5.3 Introduction

This section briefly reviews the field of research, critically assessing the weaknesses and gaps in knowledge. It introduces the particular problem to be considered, identifies the objectives, and sets them in the context of work carried out elsewhere. It does not need to be a comprehensive survey of the field of study; rather it should highlight those pieces of earlier work of particular relevance, and give a general background to the rest. It must, however, identify all the work of direct relevance to your programme. It should provide a lead into the rest of the Dissertation by briefly itemising what is to come. The introduction should be substantive but not too long. You must remember that the dissertation is not a textbook, but a research report.

5.4 Methodological sections

These sections describe in detail the methods, theory, apparatus, programs etc. you used to carry out the research. The methods must be validated, citing earlier work or specific tests you designed. You should identify critically the merits of your methods, possibly comparing them with others used elsewhere. This section should be in sufficient detail for the reader to assess the validity of the methodology used and, for example in the case of experimental projects, for the experiment to be repeated by someone else. After all, an essential aspect of the scientific method is the ability of results to be reproduced by other scientists.

5.5 Results and Discussion

The results and their careful analysis are the most important section of the dissertation. The results should be presented with an assessment of their validity (errors). Any methods used to process the results from the raw data must be described and justified. From these results, you draw your conclusions, carefully arguing your case within the limits allowed by the accuracy of your results.

5.6 Conclusions

Finally, this section draws together the conclusions from your work. These are put into the context of the objectives described in the introduction, and your success in filling some of the gaps recorded. This will lead you to identify new problems, and possibly ways of investigating them in future studies.

5.7 Appendices

It may be useful to collect some of the peripheral theory and analysis in separate appendices. Usually this work is outside the general argument, but is a significant contribution to your overall project, and where inclusion in the main text destroys the general flow of your presentation. A typical example is a piece of mathematics or a computer program.

5.8 Referencing

The dissertation must be fully referenced. All earlier work cited must be attributed in such a way that it is clear what you have drawn from outside. All references must be referred to in the text. You should use one of the accepted formats for your references, e.g. listed and numbered, in order of appearance in the text, in the form:

1) A. S. Sakharov and V. I. Kirsanov, Plasma Phys. Rep. **21**, 596 (1995).
2) S. P. Fox et. *al*. Phys. Rev. **60**, 064620-1 (1999)
3) G Dearnley and D C Northrop, Semiconductor Counters for Nuclear Radiation, F N Spon Ltd London 1996

It is recommended that you look at one of the major scientific journals (e.g. Physical Review) to see how they are referenced.

5.9 Overall structure

Your Dissertation should follow the structure set out above. The introduction and conclusions should both be substantive yet relatively brief by comparison with the methods and results sections which are the major components. The Dissertation should be concisely written, and should only include necessary material (remember you want to present your

results). On the other hand, it must be complete and not omit relevant detail, for example other work that relates to your own. It is a fine balance, with which your supervisor can help.

The Dissertation must be no longer than 8000 words in length, not including tables, abstract, figures, references, and appendices. The limit for Physics and Philosophy students is 10000 words. This is a strict upper limit.

Remember your markers must scrutinise it without becoming irritated by verbosity. Any additional material may be included for completeness in appendices. However, assessment will be primarily on the main body of the Dissertation excluding appendices. You should ensure that all tables and figures are numbered, have relevant captions, and are referred to in the text. Figures should also have properly labelled axes. The document should be single-spaced and use either Arial, 12 point or Times Roman, 12 point.

It is important that you do not write for an audience beyond the level of your peer group. You should imagine that the reader for your Dissertation is another MPhys student in your year.

Your supervisor will advise on the structure of your Dissertation and may (<u>at most</u>) skim read early drafts, but is <u>not</u> permitted to proof read drafts at any stage, especially late and near final versions of the Dissertation.

5.10 Plagiarism

This is discussed in the Undergraduate Handbook but it is worth emphasising here in the context of the Project. Plagiarism is appropriating something (be it ideas, text, figures, etc.) without acknowledging it. **<u>The University takes plagiarism very seriously so it is very important that you DO NOT DO IT either inadvertently or otherwise</u>**.

<u>Plagiarism is avoided by</u>

(a) acknowledging clearly and fully, work and ideas that originate from other people (including the source of copied diagrams) wherever in a document it occurs, and

(b) making sure that everything is written in your own words, unless you are quoting text or speech, in which case this should be indicated by quotation marks, and referenced.

6 <u>THE GOODWIN PRIZE</u>

The Goodwin MPhys Project prize will be awarded for what is judged to be the best project, taking into account both content and presentation. The prize presentation will take place at our Departmental reception on graduation day.

7 <u>CONCLUSION</u>

If you have any queries relating to the project work or the operation of the scheme, please contact Dr Laird. If you would like to suggest improvements or corrections to this document, please contact Dr Tami Grant at tamara.grant@york.ac.uk.

Please **do not forget** the importance of:-

- Starting your project work early
- Maintaining steady progress
- Regular – preferably weekly – meetings with your supervisor.

Research work can be a bumpy road with many ups-and-downs along the route. It can be frustrating (equipment failures, computer code bugs, etc). It requires perseverance and an ability to learn quickly from mistakes.

However, it is ultimately satisfying and (hopefully) fun. Good luck!