

SCHOOL OF PHYSICS AND ASTRONOMY

YEAR 3 PROJECT HANDBOOK PX3350 AND PX3315 2022-2023

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MO: D I Westwood (westwood@cf.ac.uk, WX2.10)

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YEAR 3 PROJECT OVERVIEW

The project modules extend over the Autumn and Spring semesters. PX3350 is worth 30 credits, [PX3315 is worth 20 credits](#). Students work singly or in pairs but are always assessed individually. Nominal times for undertaking project work and opportunities for general and computing support may be scheduled in “My timetable”. However, there is considerable flexibility about when you undertake project work and you should not feel constrained by the timetable. The important thing is to set aside roughly seven hours per week per 10 credits and work steadily throughout the year.

Assessment:

The project assessment is broken down into four main components or tasks, summarised below:

- 1. Interim Report and Viva** **20%/0% (PX3350/PX3315)**
You are required to submit a short/selective interim report just before Christmas. The report is assessed by your supervisor and an assessor, who will also give you a *viva voce* examination of about 20 minutes during the Guided Study Week. Interim reports are submitted via Turnitin (where they are subjected to word count and plagiarism checks) and usually form the basis of final project reports. ([This is a formative exercise only for PX3315 students](#)).
- 2. Project Report** **40%/50% (PX3350/PX3315)**
The final project report is submitted at the end of spring term. It is assessed by your supervisor and an assessor. Project reports, which must include a cover/declaration page, are submitted via Turnitin (where they are subjected to word count and plagiarism checks) and are seen by External Examiners.
- 3. Supervisor’s Assessment** **25%/30% (PX3350/PX3315)**
This mark is awarded by the supervisor based on your overall performance in the project. Evidence for this is varied and includes an electronic project diary which must be submitted regularly. Diaries are submitted via Turnitin and will be seen by External Examiners.
- 4. Oral Presentation** **15%/20% (PX3350/PX3315)**
You are required attend a conference style session and give a presentation of your project to a small group of staff and students (10-12-minute talk plus 3 minutes of questions). These are scheduled towards the end of the Spring Semester. The presentation will be assessed by two members of staff one of whom may be your supervisor.

Assessment Criteria:

Students are assessed upon how well they perform each assessed component using the associated “task descriptions” and “decile level descriptors” (Appendix 4). Both refer to “major lapses” which are identified for each task and associated with its important components. If a major lapse exists a task cannot be awarded a mark of greater than 70%. Overall, they are a consequence of (and not an addition) to the task description and marking criteria and are included to aid students and assessors alike. Minor lapses are too numerous to list, vary in significance. Their effect on the awarded mark is left to the judgement of assessors. As usual, “extenuating circumstances” can allow extensions to deadlines based on student issues. In addition, there is a separate mechanism to raise “project issues” relating to the delivery of a project - if accepted this may lead to a small adjustment in module marks.

Deadlines:

Please note the following deadlines. For the dates of teaching weeks, please refer to the Semester Calendar on the last page of the Module Catalogue, or your Coursework schedule. Both can be found in the “General Information” folder of the “UG-PHYSX-GENERAL-SUPPORT” module in Learning Central.

Agreed original aims and objectives and safety and ethics overview

When: Friday of Autumn Week 2.
Where: Turnitin through Learning Central.

Interim Report

When: 2 pm Friday of Autumn Week 11.
Where: to Turnitin through Learning Central.

Viva

When: Scheduled during Autumn Week 12 wherever possible.
Notification: via email and Learning Central in Autumn Week 11.
Where: onsite or online (tbd).

Oral Presentation

When: Scheduled during Spring Week 10.
Notification: via email and Learning Central.
Where: onsite or online (tbd).

Final Report

(+Separate, optional, appendices)

When: 2 pm Friday of Spring Week 12.
Where: to Turnitin through Learning Central.

Project diary

When: 2 pm Friday of Autumn Weeks 6 and 11.
When: 2 pm Friday of Spring Weeks 6 and 12.
Where: to Turnitin through Learning Central.

Reporting project issues affecting assessment

When: 2 pm Friday of Spring Week 12
Where: to Turnitin through Learning Central.

Deadlines are strict and late submissions (up to 24 hours after the deadline) will be capped at 40%. Submissions more than 24 hrs later will receive zero marks. Exceptions might be made where there are extenuating circumstances. Late submission of reports will be solely determined by the Turnitin system and students are very strongly advised to allow plenty of time for submission of final versions (note - these cannot be overwritten after the deadline), consider uploading early versions and to make sure they receive and keep internet receipts. University regulations dictate that no allowance can be made for internet connection problems.

Plagiarism

Plagiarism is the act of passing off the words or ideas of others as if your own and, whether intentional or not, represents a hazard in projects with potentially serious consequences. There are elements of advice within this document, however School advice on the avoidance of plagiarism is given in appendix 2 of the UG Student Handbook that can be found in the “General Information” folder of the “UG-PHYSX-GENERAL-SUPPORT” module in Learning Central.

Project Documentation:

The remainder of this handbook gives further details on the nature and performance of projects including the tasks that contribute to assessment. Appendices contain important supplementary information and guidance.

PERFORMING PROJECTS

Projects provide students with the opportunity to perform an extended scientific investigation into an area of physics. In doing so they can expect to learn about the subject area of their project, what it means to do science and to develop as independent, critically minded (scientific) individuals. In third-year projects (and their assessment) it is the performance of the processes of doing science that are of primary importance. Significant scientific outcomes are welcome but secondary.

Doing science and developing as a scientist: attributes, attitudes and values

This is the application of the *scientific method* (see also *empirical method* and *scholarly method*) with the intention of learning something new (to science). The varied projects may well require the development of different practical, computing or analytical skills, but all successful projects will involve students behaving in a scientific manner. Students should consciously consider how they can achieve and demonstrate this in their projects.

Although there is no strict definition, scientists (when acting scientifically):

- Seek new knowledge by building on the work of others' efforts, especially that published in the academic literature. (Building involves learning from, making use of and testing others work).
- Test their approaches and understanding and persevere until sure of results.
- Try new approaches to achieve better (e.g. more precise) results.
- (Especially physicists) achieve understanding through agreement between theory and measurement.
- When struggling to find meaning and correct understanding they deal with uncertainty by use of suspended judgement and critical use of the (or their) current best hypothesis.

In this they:

- Are curious and ask questions about the world.
- Are objective and use evidence-based reasoning.
- Are logical and systematic.
- Are open minded, intellectually honest, dedicated and persistent.
- Do not jump to conclusions.
- Think creatively, critically and rationally.
- Are driven by determinism, parsimony and scepticism.

In physics, more than in other sciences, evidence and reasoning are likely to be quantitative, i.e. based on the language of mathematics. Trust in quantitative data (generated by equipment or code) is based upon tests against standards or physical models and through internal cross comparisons and consistency checks.

If the above seems daunting do note that few (if any) students meet the above description of a scientist at the start of their project. However, practically all will develop significantly during their projects.

Interacting with supervisors

The role of supervisors is to help students through their scientific investigations, to encourage their development as *independent* scientists and to assess students' performances.

Students should be seeing their supervisor approximately once per week during the year and it is best to arrange a regular, weekly meeting time. Supervisors can be expected to support students through the assessed tasks and to provide feedback.

The term "*independent*", used above, might be misunderstood and so is worth considering in the context of interactions with supervisors. A student who reaches independence is the ideal, but such a student will still seek and benefit from interactions with their supervisor. The term independence relates to the personal responsibility taken for acting upon both what their supervisor and their own thoughts suggest and for demonstrating the scientific attributes, attitudes and values described above. However, independence is also something that develops with time and effort.

Although projects vary widely all supervisors can be expected to support students through the assessed tasks and to provide feedback (detailed feedback should only be provided once per assessment). Students should aim to be proactive in this process, i.e. take responsibility (e.g. discuss timings well in advance of deadlines) and act independently and scientifically.

Module organiser (and other practical support)

Although most questions can be answered, and problems resolved through the normal student-supervisor interaction part of the role of the module organiser is to support students during the performance of their projects.

Mondays 10.00-11.45 have been scheduled as "drop in" sessions". These can be arranged (westwood@cf.ac.uk) to be online, or face to face by appointment.

General AND computing support is offered by the deputy module organiser Andreas Papageorgiou.

Mondays 14.00-15.45 have been scheduled as "drop in" sessions". These can be arranged (PapageorgiouA@cardiff.ac.uk) to be online, or face to face by appointment.

The project assessor

Each project has a named assessor who, jointly with the supervisor, reads and assesses the interim and final reports and normally leads the interim viva.

The first two weeks

You should contact your supervisor as soon as possible in week 1. In your first meeting you should aim to discuss your project, schedule (~weekly) meetings and complete the “Original Aims Objectives and Safety and Ethics Overview” form. You are required to submit this form to Turnitin by the end of week 2 and before any practical project work commences.

On Monday of week 2 you are expected to attend online sessions on “Literature searching”.

If your project involves working in a laboratory, then induction to that workspace will be required before activities can commence in that space.

Autumn semester

The start of a new project can be an unsettling time for students. There are new skills to be learned and:

- Unlike taught courses the required knowledge is not tightly defined.
- Finding and reading academic articles are unfamiliar skills.
- Vital academic articles can appear to have only tenuous links to your project.
- Personal responsibility for learning tests time management skills.

Do remember that the aims at the start are primarily to:

- Get to grips with existing knowledge.
- Develop relevant research skills.
- Advance your personal understanding as best you can.

These are as important as getting the project underway and comprise most of what is assessed in the interim report and viva.

- Trust your supervisors, ask them good questions and keep working steadily.
- During autumn semester it is unusual for students to be able to achieve significant scientific independence.

Spring semester

At the start of Spring semester and following their vivas students (and their supervisors) will be very aware of their knowledge and its limits as well as their strengths and interests. This is a good point to determinedly review the initial aims and objectives, to critically re-assess the proposals made in the interim report and to plan the rest of the project.

The review is also a good point for students to look back to scientific attributes, attitudes and values and consider how they may be performed and what and where new knowledge may emerge from the project. Success here will allow students to take more responsibility, impress their supervisors and provide material for the final report and talk.

Some weeks before the end of Spring semester students should (with the help of supervisors) plan and start work on the final report and talk. At this point be aware that:

- there is usually very limited credit for obtaining “one additional final result”.
- by contrast, thinking about what “science” has been found and is important and then convincingly communicating it in report or viva contributes over half the available marks.

Safety and ethics in projects

Safety and the demonstration of safe working practices is an important part of everything we do. Adherence to well-developed safety procedures is shown through training and monitoring records.

Similarly ethics must be considered when projects involve information gained from, or associated with, other people.

At the start of their project all students complete an **original aims and objectives and safety and ethics overview**. This includes an outline of the expected working practices and highlights what needs to be addressed in more detail. It does not authorise any activities and, since projects can change and develop, neither is it definitive. While the project module organiser has oversight of project safety and ethics, the responsibility for overseeing these aspects of individual projects rests with supervisors.

Those working in laboratories should receive an induction to the laboratory. However, to perform anything that does not constitute a normal day-to-day activity requires formal documented risk assessments and training. Without these students are not allowed to commence work.

No student should perform a task unless they are confident that they can perform it safely and ethically.

Raising concerns

Students with concerns about their projects are encouraged to raise these with their supervisor and with the module organiser in a timely manner. Projects by their nature never run entirely smoothly, but it is better to raise issues sooner rather than later so that they can be addressed.

Some examples of events that it might be wise to inform the module organiser of:

- You will, or have been, away from the School for a period of more than 1 week in term time.
- Your supervisor is, or has been, away for a period of one week in which essential guidance was required, or more than two weeks where guidance and alternative provision has been put in place.

All normal routes to raise concerns (e.g. via personal tutors) remain valid.

Note: there will be opportunity to submit assessment related “project issues” forms” at project end.

REQUIRED TASKS AND THE ASSESSMENT OF PROJECTS

Although the aim of scientific investigations is to learn something new and advance science, in assessing projects it is student's performance of the processes of doing science that is of primary importance. Each of the four assessed components detailed below is defined by a task description and marked with the aid of common decile descriptors (appendix 4).

"Student performance" is judged by the supervisor only. All other assessments are made by two members of staff (usually the supervisor and the named assessor) who, with equal say, discuss the work and agree a mark. If there is disagreement the module organiser arbitrates.

Interim report and viva voce (oral) examination, (20%/0% PX3350/PX3315)

- These combined contribute 20% of the module mark. In the absence of a report or viva voce examination the maximum achievable marks are 5% and 15% respectively.
- Marks are agreed following discussions between the supervisor and the assessor.

Task descriptions

Interim report

Produce a short formal report (including an abstract) that provides an overview of the project and its status. Include appropriate aims and objectives, present a review of relevant literature and use it to explain the context of the project. Provide a summary of the relevant techniques and approaches and their theoretical basis. Provide a summary of progress (e.g. select results and analysis) and include an explanation of proposed aims and objectives for the remainder of the project.

Specific requirements and guidance

- The required cover page (available on Learning Central +see Appendix 5) includes a declaration that the work is your own and that the whole or part of the work has not been submitted previously for assessment in another module. It carries the same weight as your signature on a formal document. Please refer to Appendices 1, 2 and 4 and guidance on avoiding plagiarism.
- Reports should include a contents page and pagination.
- A whole-document word count in the range 3000-4000 is recommended but exceeding a **strict limit of 4400 words** constitutes a major lapse. Note that Turnitin word counts may differ from word processors, e.g. the later may exclude references. Saving as a pdf also increases the count.
- Include a minimum of 10 academic references, ~20 is normal. Web references may be included but are not considered part of the academic literature. Use any recognised reference style.
- In meeting the word limit students often need to be selective in the information and number of references included. Appendices should not be attached to interim (or final) reports.
- Students are advised to (determinedly) use the interim report to advance, secure and communicate their knowledge and understanding of their project.

Interim viva voce (oral) examination

In this examination, which usually lasts about 20 minutes, students can expect to be invited to give a short verbal summary of their project and the progress made in the first semester. Prompted by the interim report and/or the verbal summary, the assessor (who normally leads the interview) and project supervisor and will then ask the student to explain various aspects of the project. Possible questions might relate to context; essential theory; the adopted approach; findings etc.

The main aim is to establish the degree of student knowledge and understanding of their project.

Specific requirements and guidance

- Preparation for vivas involves making sure of your basic knowledge and its limitations, especially concerning (but not limited to) the contents of the interim report.
- Bring along a copy of your report as you will be allowed to refer to it during the viva.
- If you do not understand a question, ask for clarification. And if you really don't know the answer, it is often better to say so than to try to bluff your way out. If you cannot answer a question, it is likely that the examiners will find a different way of probing your knowledge, so you will still have an opportunity to demonstrate what you know.

Major lapses

- Significant gaps in knowledge and understanding evident in report and supported by viva.
- Absence of evidence for a significant academic literature review (web references are not considered part of the academic literature).
- Exceeding the whole-document word limit (as measured by Turnitin).

Project report (40%/50% PX3350/PX3315)

- Please refer to appendices 1, 2, 4 and 5 at the end of this document and guidance on avoiding plagiarism.

Task description

To produce a formal, structured, scientific report (abstract to conclusions) that represents the scientific investigation ultimately performed and is well explained, convincing and appropriate for a peer audience. The context of the project, literature review and required theory should be well supported by academic references. Within a coherent storyline and with clear aims and objectives, students should describe the important scientific approaches adopted, activities undertaken, information acquired, analysis performed and insights ultimately gained. The evidence included should be well judged and substantial. Analysis should use logical and reasoned arguments, be thorough and demonstrate a high intellectual level. Important findings, ultimately obtained, should be clearly identified and their implications and contribution to the field discussed in relation to the literature.

Specific requirements and guidance

- The required cover page (available electronically on Learning Central and shown in Appendix 5) includes a declaration that the work is your own and has not been submitted previously for assessment in other modules. Note that you are allowed to re-use any material from your interim report as it is considered part of the same assessment. The cover page carries the same weight as your signature on a formal document.
- Reports should include a contents page and pagination and should be structured and formatted so as to be easily read.
- Reports containing large number of acronyms benefit from the inclusion of a glossary of terms.
- A minimum of 10 academic references should be provided and 20 is usually sufficient. Appropriate web references may be included but are not considered part of the academic literature.
- A whole-document word-count range of 7000-8000 is recommended, but exceeding **a strict limit of 9000 words as measured by Turnitin** constitutes a major lapse. Note that Turnitin word counts may differ from word processors, e.g. the later may exclude references.
- There is no insistence on a particular referencing style – reports should use one, standard, style.
- A short acknowledgements section can be used to thank those who have provided help.
- Appendices should not be attached, as they will not be considered in marking, but would contribute to the (Turnitin) word count: submitted separately they may form part of the supervisor's assessment.
- It is important to find a storyline and not give a chronology. Identifying the project's important findings, before deciding upon and clearly stating the report's aims and objectives, will help in this.

Major lapses

- Insubstantial content and/or insufficient intellectual level.
- Absence of evidence for a significant academic literature review that clearly explains the project's context/area of research.
- Insubstantial, unconvincing or poorly explained evidence and/or analysis (e.g. error analysis).
- Fundamental mistakes in logic or science, or weak evidence for use of the scientific method.
- Absence of clearly expressed, important, scientific findings.
- Exceeding the whole-document word limit (as measured by Turnitin).

Student performance - supervisors assessment (25%/30% (PX3350/PX3315))

Task description

Students are expected to:

- Work consistently through the year at a level and rate appropriate for this 20/30-credit module.
- Maintain an electronic diary as a record and evidence of activities. The diary must be submitted to Turnitin at the end of weeks 6 and 11 of autumn semester and the end of weeks 5 and 12* in spring semester.
- Attend regular (typically weekly) meetings (or interactions) with supervisors.
- Make good use of interactions with supervisors by engaging in discussions and acting on the outcomes to progress the project, providing draft of the final dissertation in timely manner.
- Achieve increasing and significant responsibility and scientific independence.

Some projects may require the development and exploitation of skills. These will be considered as appropriate.

Additional data, well documented computer code, equipment design, detailed lesson plans, etc. may be provided as evidence of performance as appropriate.

Suitable and required evidence for project specific activities should be discussed and agreed with supervisors. Provision will be made to submit this electronically via Turnitin with the same deadline as the project report.

The increasing responsibility and scientific independence referred to above relates to the natural progression of projects and the changing relationship between students and supervisor. At the start of the project students will inevitably look to supervisors for guidance, direction and understanding. As it progresses students should seek to take increased responsibility and show independence of thought and action by using their growing understanding and insights to direct the project themselves. By the start of Spring semester an independent student may be using their understanding e.g. by suggesting possible directions for the project, acting on these ideas - all whilst using their supervisors' guidance to maximise their progress.

Specific requirements and guidance

- Guidance on the content of project diaries is provided in appendix 3. The submission deadline for the final diary is the same as for the final report.

Major lapses:

- Failure to satisfy any of the common expectations of students' performance listed above.
- *With respect to submission of diaries, only the failure to submit the final version (week 12 of spring semester) is considered a major lapse.

Oral presentation (15%/20% PX3350/PX3315)

- Last year presentations were online. It is expected that they will revert to being on site, in person again for 2022_23, but details will be confirmed closer to the time.

Task description

Students are required to attend (the entirety of) a conference-style session in which they and their peers give 10-12-minute presentations and answer questions (for 3 minutes) based on those presentations. Presentations should aim to communicate selected but significant project achievements or outcomes. To this end they should be logically structured with a clear storyline (aims, context, background, supporting theory, methodology, results, outcomes and their significance, conclusions). A successful presentation will be technically correct and result in the audience (of peers) having gained clear and significant insights into the project.

Presentations should be delivered in a professional, engaging manner and use of visual aids is expected e.g. uncluttered PowerPoint slides perhaps supplemented by short video clips or physical props as appropriate.

Specific requirements and guidance

- Being selective of content is important, it allows a clear story to be developed and key information reinforced. Trying to include too much (a common issue) is likely to lose the intended peer audience and may produce a fundamentally confused talk and so lose experts too.
- Use of cue cards etc is allowed but should not be intrusive - the most natural presentations go without. Reading directly from a script is strongly advised against.
- Interacting with the slides is advised and so incorporating your cues (but not too much text) onto slides is worth exploring.
- Do remember to include references to credit the work (e.g. figures or videos) of others.
- Presenters are advised that making eye contact with the audience is beneficial to engaging an audience.
- Remember to speak rather more slowly than you would in ordinary conversation.
- Note that, since projects evolve, students are not bound by their original project titles or aims.

Major lapses

- Failure to explain the aim of the presentation and the background and context of the work.
- Lack of clear storyline and progression.
- Failure to clearly convey significant project outcome(s).
- Misjudging the level of the talk – too low (e.g. too simplistic or insufficient content) or too high (e.g. not understandable by peers or having too much content).
- The presence of significant technical inaccuracies.
- Non-professional or non-engaging (e.g. poor visual aids, inaudible, intrusive reading from script).
- Failure to attend the entirety of the session.

APPENDIX 1: SUBMITTING REPORTS TO TURNITIN

Introduction:

You are required to submit project reports, diaries and any appendices as electronic copies to the relevant assignment in the project module in Learning Central. You are strongly advised to submit reports in pdf format and diaries are required to be submitted as pdf's.

How to submit a document to Learning Central:

In brief, the project module in Learning Central e.g.:

21/22-PX3315 PHYSICS PROJECT\\

has an Assessment tag on the left-hand menu and when you left-mouse-click on that you will be presented with the various assignments in the main window. Left-mouse-click on the View/Complete link under the Assignment name. The Submit button should now be displayed along with additional assignment information. Click Submit to go to the file submission screen. The submission screen requires you to complete two final steps. First enter the title (or short title) of your project in the submission title box and then click Browse and locate your work on your PC. Click Upload to submit your pdf file. Learning Central will add your name to the submission.

A confirmation screen will be displayed. Double check the text to make sure you have uploaded the correct file (don't worry that this preview version of your work will be formatted in a different way from your original document; your formatting should be preserved in the version that we will see). Click Submit to complete the submission process.

If your submission was successfully completed, you will receive an acknowledgement. You are strongly advised to retain a copy of the "digital receipt" as proof.

Also Note:

There are several things you should note:

- You can submit your work after the submission deadline specified in the Project Handbook, but work recorded as late by Turnitin will be treated as late under University rules.
- Multiple submissions are allowed prior to the deadline.
- There is a 100 MB limit to the size of file submitted to Learning Central. If this causes a problem, please contact the Module Organiser.
- Learning Central only accepts files in Word, WordPerfect, PostScript, PDF, HTML, RTF and plain text format. Submission of pdf documents may be required for other types (but may increase the Turnitin measured word count).
- Turnitin and Learning Central will identify possible cases of plagiarism. However, the final decision regarding plagiarism will be made by the School, not by Learning Central.

APPENDIX 2: WRITING PROJECT REPORTS

Introduction

Students reaching this point in their degree have received training and have practice in writing scientific reports and will be familiar with the guidance present in the PHYSX General Support Module in LC. When it comes to project reports some things are a little different and are explained below.

A bit more freedom

In years 1 and 2 we were quite prescriptive about how we expected reports to be written and demanded: past tense, passive voice, and no subjective statements. These rules match well to the nature of science, help students overcome the many pitfalls of scientific writing, continue to serve many people very well, but are not absolute. With more scientifically mature students and a large number of assessors these demands are formally relaxed in project reports. In principle this will allow students to write more elegant English. However, there are dangers. The use of different tenses to describe the same process and subjective statements that convey vague or non-scientific meaning will, quite rightly, continue to be noticed.

In a similar fashion the traditional abstract, introduction, methodology, results, discussion, conclusions format will almost certainly continue to serve you well. Variations are allowed (the abstract and conclusions must be retained) but it is advisable to consult closely with your supervisor in such cases.

A bigger challenge

The amount of material to build into a significant and coherent report with clear aims and objectives and a good storyline is much larger than in any before. Consequently, doing yourself justice will take time as well as effort.

Planning and organisation will be beneficial: consider this with your project supervisor well in advance of the submission date.

One approach is to draft a one- or two-page outline identifying the main sections with key words and then flesh this out in consultation with your supervisor to the point where you have a rough draft of the whole report. If you are confident of your aims and objectives at this point many sections may well be obvious to you. If you are less sure, this process may help to clarify your thoughts. BEWARE of simply reproducing your chronology (i.e. what you did in your project). This lead to reports written without scientific aims and consequently ultimately lacking in scientific outcomes and meaning.

Your supervisor will provide feedback on a single near-final draft as long as it is submitted in good time (staff have other commitments, meaning that they will not necessarily be able to devote sufficient time to this task if left too late). Their approaches vary: some might read and comment on the work as a whole, others might concentrate on the scientific content. However, you should not expect supervisors to proof-read your final report and the final submission is, of course, entirely your responsibility.

The scientific literature, referencing and avoiding plagiarism

Perhaps the biggest change compared to previous years is the necessity to read, make sense of and use the literature relevant to the field under investigation.

As ever considering your audience (your peers) is productive. You can assume that any reader will have the basic knowledge of physics or astrophysics that you had when starting the project. Such generally accepted knowledge ($E = mc^2$, for example) found in standard texts needs at most only brief

introduction and its source does not need a reference. By contrast specialist information found in scientific papers will require more explanation and should be referenced.

When using sources of information do not do so word for word, i.e. do not copy-paste, as this is plagiarism. To avoid plagiarising it is sometimes acceptable to quote the source using inverted comma's, however this is only appropriate when the information is subjective, and it is important to convey the original author's meaning. For the most part avoid plagiarism by first reading and comprehending the original text before writing "in one's own words" in such a way as to match-to and support your storyline.

You are reminded about the importance of avoiding Plagiarism. Please see Appendix 2 of the Undergraduate Student Handbook available in the UG-PHYSX-GENERAL-SUPPORT module, "General Information" folder in Learning Central:

- If you are unsure about what constitutes plagiarism, make sure you discuss this in detail with your project supervisor.
- If you have a partner working on the same or a similar project it is strongly suggested that, to avoid the (conscious or unconscious) possibility of plagiarism, you do not exchange written material.

The usual stuff still applies

Do not try to show how clever you are by putting things in your report that you do not understand. Unfortunately, this is a common mistake. If you use terms in your report, or even phrases from scientific papers, that you do not properly understand, it is almost always obvious. Even if your understanding of your project is rather poor, just put in your report the material you understand.

Again, a general point about writing English, always use the simplest phrase or word. Avoid jargon.

APPENDIX 3. ELECTRONIC PROJECT DIARY - GUIDANCE

Purpose of diaries

Maintaining a real time record and evidence of activities is an important part of the scientific process. A good diary can also improve the performance and outcomes of projects, for example by capturing advances in understanding and acting as an organisational tool.

Content of diaries

The project activities that should be recorded fall into four main categories: “meetings” (with supervisors or others); “notes on reading” (the literature etc); “central project work” (e.g. experimental work, progress with coding), “understanding and thoughts” relating to current and future work.

As in the teaching laboratory diary structure is vitally important – remember to date all entries and provide titles for sections and sub-sections. Likewise, diaries will, ideally, be generated in real time.

Photographs and scanned text can be included but students are strongly advised against simply scanning in handwritten notes – **mixed diaries are fine**. This negates the experience of writing and using an electronic diary.

For guidance, a total diary word count in the range 6000-10000 is suggested.

2018_19 diary word counts averaged ~1500 words per half semester (~6000 words in total).

Software Packages

Word processing packages are the most obvious tool to use, although projects that involve a lot of coding may want to consider alternatives such as Jupyter Notebook. Students are advised to discuss the issue with their supervisors at the start of their projects

Multiple submissions

. In some cases students may need to convert diaries to an easily readable format (e.g. pdf).

Please submit your (current) full diary each time – do not split it by period.

If you are determined to scan handwritten notes it will be necessary to include some typed works (to satisfy Turnitin).

A strict deadline applies only to the final submission. If earlier submissions are or might be late do inform your supervisor (in good time). This evidences a professional attitude and approach.

(The requirement to submit electronic diaries at different stages of the project should not involve significant effort – provided diaries are progressed in real time.)

Assessment

Aside from the formal requirement for the on-time submission of a final diary, the contribution of a diary to the assessment of student performance continues to be left to the discretion of individual supervisors.

APPENDIX 4. DECILE LEVEL DESCRIPTORS

Table. The descriptors and descriptions used in assessing all project tasks

| Decile range | Descriptors | Level Descriptions |
|--------------|---|--|
| 90-100% | Outstanding | The assessed work is as good as could reasonably be expected from a student at this level. It is uniformly excellent in meeting the task specifications. It contains no major lapses and very few (if any) minor lapses. |
| 80-89% | Excellent | Work of very high quality, but not quite as good as could reasonably be expected from a student at this level. It is uniformly very good and sometimes excellent in meeting the task specifications. It contains no major lapses and few minor lapses. |
| 70-79% | Very good | Taken as a whole the work is very good in meeting the task specification. It contains no major lapses but does contain a number of minor lapses. |
| 60-69% | Good | Taken as a whole the work is good in meeting the task specifications. It may contain a small number of major and minor lapses, or no major lapses but significant minor lapses. |
| 50-59% | Satisfactory | Satisfactory work taken as a whole. It is likely to show significant variability in meeting the task specifications. It is likely to contain a number of major and minor lapses. |
| 40-49% | Pass (BSc & MPhys) Near Pass (MSc) | Adequate work taken as a whole at undergraduate level, but not for postgraduate MSc's. It is likely to have significant deficiencies in meeting the task specifications. It is likely that the work will reveal substantial gaps in understanding and have significant major and minor lapses. |
| 30-39% | Fail | Insufficient relevant content, serious errors/omissions/lapses. |
| 20-29% | Insufficient | Little relevant content, extensive errors/omissions/lapses. |
| 10-19% | Unsatisfactory | Very Little relevant content, extensive errors/omissions/lapses. |
| 0-9% | Poor | Essentially no relevant content, extensive errors/omissions/lapses. |

Note that the pass mark for undergraduate modules (BSc and MPhys) is 40% whilst it is 50% for postgraduate modules (MSc)

Notes on decile level descriptors

The level descriptions above indicate that to award a mark greater than 70% (i.e. of 1st class standard) there should be no "major lapses". Major lapses are therefore important in determining the mark awarded however they are not, in general, a restriction of marks over and above those defined in the task.

For example, a report based on a "poor/superficial experimental investigation" will not be amenable to "detailed analysis" and therefore to "finding thorough and convincing conclusions". Inevitably marks will disappear from various points in the "report mark and feedback sheet" such that the total will be less than 70%. The point of including the term in the descriptors is to help authors and assessors.

(Exceptions – exceeding word limits).

APPENDIX 5: FORMAT OF THE COVER SHEET

Note that the cover sheet is available electronically on Learning Central. You should use the data from the Section A Assessment form to complete the cover sheet (the fictitious details in red).



SCHOOL OF PHYSICS AND ASTRONOMY

YEAR 3 PROJECT REPORT SESSION 2021-2022

| | |
|-------------------|--|
| Name: | John Smith |
| Student Number: | 1234567 |
| Degree Programme: | BSc Physics |
| Project Title: | Example of a project title – print what appears on your assessment sheet: a more appropriate title if there is one |
| Supervisor: | |
| Assessor: | |

Declaration:

I have read and understand Appendix 2 in the Student Handbook: "Some advice on the avoidance of plagiarism".

I hereby declare that the attached report is exclusively my own work, that no part of the work has previously been submitted for assessment in another module, and that I have not knowingly allowed it to be copied by another person.