



University of
Salford
MANCHESTER

Joule Physics Laboratory

Final Year MPhys Students'

PROJECT GUIDE

2023-2024

1. PROJECT OBJECTIVES AND STRATEGY

The Objectives of the Project

There are a number of related objectives to project work:

1. To learn and gain knowledge and experience by working independently, with appropriate guidance.
2. To undertake practical and theoretical work in order to achieve a specified goal.
3. To take part in the planning and management of the project in order to achieve the required objectives.
4. To develop the skills and abilities defined in the strategy of approach below.

In total, to simulate the professional activities of a graduate physicist.

The Strategy of Project Studies

In order to meet these objectives there is a well-accepted route to problem solving which students are advised to adopt. This route is detailed below.

1. Problem identification and specification.
2. Analysis of available knowledge, techniques, constraints and resources.
3. Synthesis of the relevant components of this information to indicate possible routes to problem solution.
4. Evaluation of these possible routes, leading to a decision on the optimum route to be adopted.
5. Production of a planned timetable of goals to be reached at various stages in the activity in order to meet the problem specification.
6. Execution of this plan with modifications made for obstacles to progress not foreseen at the outset.
7. Careful recording, at each stage of the Project, of the results achieved and evaluation of their importance.
8. The achievement of the planned goal.
9. Comparison of the achievement reached with the initial specification and the planned achievement.
10. Communication of the entire Project activity for assessment in terms of the report requirement and the project interview.

Students are expected to keep a journal log to record ALL work undertaken, results obtained, ideas, etc. This journal must be available to the supervisor(s) when required. (See page 5 for more details).

Criteria for Project Assessment

In order to give you some guidance as to the level of achievement that we expect for different categories of mark, a detailed list of the criteria used for assessing all the different elements of your project are given later in this guide, along with the detailed marking scheme.

2. SAFETY AND ASSESSMENT OF RISKS IN FINAL YEAR PROJECTS

PROJECTS CANNOT COMMENCE UNTIL A HEALTH AND SAFETY FORM HAS BEEN SUBMITTED ON BLACKBOARD

The importance of safety in both the home and work environments is reflected in legislation such as the Health and Safety at Work Act, the Control of Substances Hazardous to Health (COSHH) and the Electricity at Work Act. It is clear that the responsibility for safety falls both upon the employer and employee performing the work.

As a student you are not strictly classed as an employee but the University does expect you to acquaint yourself with any hazards inherent in the work you do and to minimize any danger to yourself and others. The majority of students will enter industry after graduation, and in this case you will certainly be expected to become familiar with and to observe safety legislation. This could easily include performing a risk assessment of your particular area of work. If an accident occurs, either to you or to someone else, it is vitally important to be able to prove that the question of safety has been seriously addressed and that all reasonable steps to minimize the risks have been taken.

The purpose of completing the risk assessment is to identify hazards and quantify the level of risk they pose. The assessment then identifies what existing control measures are in place and allows for additional measures to be identified if required. You must include an *assessment of risks as part of your project documentation*.

How to fill in the project risk assessment form

Additional information and the form can be found on Blackboard.

The risk assessment form should be completed with the help of your supervisor. It is the responsibility of the supervisor to ensure the risk assessment is suitable and sufficient and that risk assessments are reviewed should any significant changes to the project be made.

Complete the cover sheet and Initial Risk Assessment, as this will help you decide which extra assessment pages may be required depending on the nature of your project.

Should this assessment return ‘Adequate’ risk ratings for the proposed work and your supervisor is in agreement then no further action is required.

If your project consists only of software development, computing, or theory, then you must make this clear on the initial risk assessment document by writing for example **SOFTWARE ONLY**. Other project students must complete all the remaining relevant sections.

Once completed, this form should be submitted to Dr Heather Yates, via Blackboard

KEEP A COPY FOR YOUR FILES.

If during the course of the year you have any queries or reservations about the safety aspects of your project, the *Safety Officer (Amanda Tilley)* will be pleased to discuss them with you.

3. ALLOCATION OF PROJECT AND PROJECT SUPERVISION

Allocation

The project allocation process starts with the circulation of documents outlining the expertise of staff. Working from this list, students should decide on an area of physics that interests them and then discuss this with the appropriate member of staff. Once the student has decided which project he/she wants to do, this *must* be agreed with the member of staff concerned, who will then become the project supervisor.

To formalize this process, the student will be required, in consultation with their supervisor, to fill out the ***Project Specification Form***. This must be signed by the student, by the supervisor as confirmation that the project specification has been discussed and agreed, and finally by a second supervisor, whose role is a) to confirm that the project is realistic and suitable, and b) to be an alternative point of contact for the student in the event that the supervisor becomes unavailable at any time.

Once completed, this form should be submitted to Dr Heather Yates, via Blackboard.

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Supervision

The primary function of the Supervisor is to define, introduce and provide the student with advice throughout the project period. This will include encouragement and aid in defining, planning, executing and reporting the project. The student will be expected to make regular, weekly contact with the supervisor to discuss progress and future plans. **At least once every two weeks there must be a more formal meeting** the date of which is recorded. A summary of the meeting must be recorded in your project journal, along with comments from your supervisor.

It is the student's responsibility to arrange and attend these formal meetings, and failure to do so may have implications regarding the final supervisor mark obtained.

It is particularly important that as the project progresses students become self-reliant and show as much initiative as possible. This includes the acceptance of self-responsibility and input of initiative and effort, since these are assessment criteria. The Supervisor will carefully monitor this process of disengagement.

4. ETHICAL APPROVAL

THIS MUST BE SUBMITTED BEFORE THE PROJECT STARTS

See Appendix I and Blackboard for more detail and app link.

Students are required by University regulations to complete an on-line ***Ethical Approval Form***, in consultation with their supervisor. This in most cases will be to formally confirm a review has taken place of the ethical aspects of the activity so ethical clearance can be obtained. As most physics projects do not involve human participants, human tissue/fluids/DNA, animals, potentially hazardous material the answers to the questions will be 'no'.

5. PERFORMANCE OF THE PROJECT

Allocation of Time to Project Work

Projects this year may be formally timetabled. Students will be expected to spend an appropriate amount of time on project work over the two trimesters; this should average out to not less than **12 hours per week**.

However, bear in mind the balance between the project and the rest of your course. The relative weighting in marks between project and examinations should also be a guide. Divide your time and effort in proportion.

Project Journal

Throughout the project period each student will be responsible for keeping a record of his or her work in a project journal. This is found on the Blackboard module site and is accessible by student and supervisor.

The project journal should contain a proper record in a chronological format of all relevant information, recorded in appropriate detail and clarity. The project journal should provide details of scientific papers read, experimental details, coding design/reasons for modification, data obtained plus any other information that is deemed important to the project such as evidence of calculations and reasons for taking particular courses of action.

The project journal should also include details of each summary/meeting with your supervisor, including date, progress reported and agreed details of future work. Your supervisor will give you verbal and written feedback on your progress, effort and initiative at these meetings.

The project journal will be inspected weekly by your supervisor, at the progress interview (at the end of trimester 1) and at your informal interview with the external examiner.

6. RESEARCH PROPOSAL

The research proposal is a piece of work contributing 30% towards the 'Research Methods' assessment. The guidelines are adapted from the Engineering & Physical Sciences Research Council (EPSRC) and is based on your project topic with an extended literature review. Details will be given in the timetabled Research Methods seminars, as well as available on the Blackboard module site.

7. PROGRESS REPORTING

You will be expected to report your progress to a panel of physics staff during the last week of trimester 1 (dependent on timing of exams). A slide presentation should be provided to give a 10 minute overview of your project. You should describe the aims of the project, background research, progress to date and plan of work to be carried out in Trimester 2 with an approximate timescale. Mark criteria are available on the Blackboard module site.

8. FINAL REPORT

A copy of your final report must be submitted via Blackboard towards the end of trimester 2, which will be followed by a presentation and interview by a staff panel.

Remember that there are penalties for late submission

Details for the preparation and submission of the project report are given in Appendix II.

You should consult your supervisor about the format of your report, but as a general principle, a report is like a longer version of a formal laboratory report. It should be aimed at a reader with a good scientific background, but someone who knows nothing about the details of your work (such as the external examiner). Do not include elaborate detail in the main body of the report, but you may include it in appendices if you wish (which will not be included in the **6000 word limit**). For theoretical/computational projects; calculations, program listings etc. are generally put into an appendix, although short sections of programs, for example important algorithms, may be included in the main text.

The project report **could typically** include the following sections but if you are conducting a theoretical or computer based project then discuss the layout with your supervisor:

Title page, Abstract and Acknowledgements

Introduction

The background to the project, why the project was undertaken, what it set out to achieve.

Theory and Literature Review

The established theory of the subject and previous work on which the project is based. This section will generally not contain any original material.

Experimental/Procedure

The general details of what you did in your project. In the case of computational or theoretical projects, development details would go here.

Results and analysis

This important section will present the results of your work, possibly in the forms of tables and/or graphs of data, and any analysis. In the case of development projects, especially computational, this section should indicate what the developed system does, with screen dumps wherever possible.

Discussion/conclusions

This section should summarise what was achieved with reference to the original aims, and if appropriate suggest further work.

References & Bibliography

In the appropriate format.

Appendices

If appropriate. Include program listings, any fine detail, large amounts of raw data etc. Basically you cannot assume that the examiners will not read appendices in detail, but your supervisor may want to refer to them.

9. PLAGIARISM

THE UNIVERSITY TAKES PLAGIARISM VERY SERIOUSLY, it is very important that you do not plagiarise, inadvertently or otherwise.

What is Plagiarism?

The definition of plagiarism is the taking of work or an idea and passing it off as your own. This includes any text, diagrams, tables, graphs etc. that have been previously published (this includes information from internet). The most common types of plagiarism include (but are not restricted to):

- Copying another individual's work, with or without their consent/knowledge, and presenting this as one's own work.
- Quoting or summarizing the work of another author without acknowledgement and appropriate referencing.

Plagiarism is avoided by:

- acknowledging clearly and fully by referencing work and ideas that originate from other people. This includes the source of copied diagrams.
- making sure that the dissertation is written in your own words.

Information regarding the formatting of references and bibliography can be found at:

<https://www.salford.ac.uk/skills>

The Blackboard submission sites include a declaration confirming that the work submitted is your own, with all sources duly acknowledged.

Assignment 1

By submitting my work here I declare that:

- this work is my own
- the work of others used in its completion has been duly acknowledged
- experimental or other investigative results have not been falsified
- I have read and understand the University Policy in the Conduct of Assessed Works (Academic Misconduct Procedure).

Anyone suspected of plagiarism will have his/her report run through the plagiarism detection software: **Turnitin**.

If you are found guilty of plagiarism, the University will take appropriate disciplinary action, which may result in expulsion from the University. The Policy on the Conduct of Assessed Work (Academic Misconduct) is available at the main University website at:

<https://www.salford.ac.uk/askus/topics/admin-essentials/academic-misconduct>

10. VISIT OF THE EXTERNAL EXAMINER

The External Examiners may visit individual students to discuss their project work towards the end of the second trimester. This is not a formal interview or an examination, its purpose is for the External Examiners to familiarise themselves with the subject, aims and some of the results of your project. This will help them in making their assessments of the final reports in preparation for the final Examining Board in June.

You will be expected to provide an abstract (approximately 300 words) in advance giving an overview of your project. At the interview you may bring any other information that you feel will be of use when discussing your project.

11. THE PROJECT ORAL INTERVIEWS

Formal oral interviews on the work of the project and the project report will take place very shortly after the end of the final examinations. An exact date will not be known until the examination schedules are set. This interview will play a major part in the assessment of your project.

Interviews are conducted by a project panel that will include your supervisor and other members of academic staff who will not have come into contact with you during the course of the project. In this way a more objective assessment can be achieved of your effort and performance.

Students should approach the interview in a professional manner, as though they were promoting a product or idea, or attending a job interview.

Approximately, 30 minutes are allocated for the interview. Students will be expected to give a 10 minute presentation (video or 'live'). All students will then be asked questions by members of the panel, based both on the presentation and the project report. The questions will not be designed to trip up the student, but merely to determine what effort the student has put into the project, and his or her depth of understanding of the project topic.

The video should be in MP4 format and can be recorded with voice over in MS-Powerpoint or alternative software such as Screencast-o-matic. Software and help guides are available from Salford University Library with a range of help on presentations (oral and written) and use of IT software.

<https://www.salford.ac.uk/library/know-how/collaborate-ultra>

[Presentations and Videos | University of Salford](#)

12. PROJECT POSTER DISPLAY

In addition to project report, the oral presentations and the project interviews, you will be required to produce a scientific poster display of your project. Each student will be provided with a display board on which to display brief details and results of the project.

The poster should fit onto an A1 board (100cm × 75cm). The style of the poster is left to you, but it should be in portrait orientation, contain the title of the project and your name, introduction with aims and objectives, results and discussion, and finally conclusions and comments on future work. If you are not sure about what to include on your poster, then contact your supervisor.

13. ALLOCATION OF MARKS

The marks available for Project work are allocated as outlined by the example proforma below, with the supervisor and the project interview panel each determining half the marks. Note: this proforma is only given as a guide to show how marks are allocated.

Student Name:		Supervisor Name:		Reader Name:	
Project Title:		Supervisor	Reader	Panel	Average
Assessment of Project Work	Progress reporting			/20	
	Initiative Shown	/20			
	Overall Effort	/20			
	Progress made relative to apparent difficulty	/40			
TOTAL SUPERVISOR %		/100%			
Assessment of documentation	Journal	/100	/100		/20%
	Report: Knowledge and understanding of subject Analysis, discussion and conclusions Presentation	/40	/40		
		/40	/40		
		/20	/20		
		/100	/100		/50%
Interview	Understanding of project content			/100	/30%
TOTAL SUPERVISOR/READER/PANEL %					/100%
Presentation	Research Proposal (30%)			/100	
	Oral (40%)			/100	
	Poster (30%)			/100	
TOTAL PRESENTATION %				/100%	
		Supervisor Mark		Presentation	Panel
FINAL PROJECT MARKS		/35%		/30%	/35%

14. CONCLUSION

This document has attempted to outline what is required to successfully completing your final year project. If you have any questions relating to the operation of the module contact Dr Heather Yates.

APPENDIX I – Ethical Approval Process

Additional Information can be found on Blackboard.

The ethical approval online process should be completed with the help of your supervisor. The link to the app is found [here](#).

Note that taught projects/dissertations are classified as either Type 1, 2 or 3 in terms of their ethical implications. These categories are defined as follows:

Type 1: routine project work. No further ethical approval required following Supervisor sign-off.

Type 2: routine project work involving human/animal subjects/tissue where ethical issues have been considered and appropriately addressed. Ethical approval will be required from both the Project Supervisor and a member of the Ethical Approval Panel for Taught Programmes.

Type 3: projects where there is a significant ethical dimension. Ethical approval will be required from both the Project Supervisor and two members of the Ethical Approval Panel for Taught Programmes. This process is managed by the R&E Research Centres team.

All students must complete all of the following forms before starting a project:

- Project Specification
- Risk Assessment form
- Ethical Approval Application (on-line)

**REMEMBER: YOU CANNOT START YOUR
PROJECT BEFORE THESE FORMS HAVE BEEN
SUBMITTED**

APPENDIX II – PREPARATION OF PROJECT REPORT

1. A copy of your report (in .pdf or .docx format) must be submitted via Blackboard. It should have a header page prepared according to the template available on Blackboard, to show your name, project title, year of study and the name of your degree programme. It is examinable material and becomes the property of the University. **You should keep a copy for reference and this copy should be brought with you to your project interview.**
2. The length, not including abstract and appendices, should be not greater than **6,000 words**. It must be stressed that this is an upper limit, not a target; there will be no advantage in submitting a report that is longer than is necessary to fully describe your project work.
3. Each copy should be *typewritten (12 point Times New Roman font for body of text and 14 point for titles, section headings, etc)* on plain A4 size paper. The Report should be presented in clear and well-constructed English.
4. The first page should be a **title page**, including the date and the words: “This report is presented in partial fulfillment of the requirements for the award of the degree of B.Sc. with Honours in (*course name*)”. The second page should comprise an **ABSTRACT** (maximum 250 words) that concisely states the **objectives and results obtained**. This may be a revised version of the one submitted earlier for the External Examiner’s visit.
5. The third page may contain an **acknowledgment** of the part played by those who assisted with the progress of the project.
6. The **MAIN REPORT** (maximum 6,000 words). This should be a self-contained document that chronicles the work done and the achievements of the project. In addition to an introduction and statement of the aims of the project, it should contain a discussion of the possible methods of achievement of those aims and a description of the proposed solution including, for example, the equipment needed and used. The complete software or experimental design of the work undertaken should be described, the results obtained evaluated, and conclusions drawn and expressed, and you should make clear what part of the report refers to your own work and what is summarising previously available data or theoretical derivations.
7. The report should be 1.5 line spaced for easy reading. (The appendices and supplementary material can be single spaced if you wish.)
7. Include a list of **REFERENCES** to previously published work or other communications. Each research paper, book, diagram or other source of information (e.g. manufacturer's data) that has been referred to in your report **must** be referenced in the text. Remember to give credit to all previously available data on your topic. References should be listed in order of their appearance in the text, at the end of your report. References should be written in the form shown in:

<https://www.salford.ac.uk/skills>
9. Pages must be numbered. Figures, graphs, tables and photographs should be numbered and placed at the appropriate point in the report. With the advances of technology, recent reports have tended to include an excess of photographs and diagrams (often in colour) that do not add materially to the presentation. Do not get carried away with technology unless it adds significantly to your report.

IMPORTANT PROJECT DATES Final Year MPhys

w/c 18th September 2023 (week 1)

Confirm project details and supervisor.

Start completing the following documents:

Project specification form (available on Blackboard)

Risk assessment form (available on Blackboard)

Ethics App (available on-line)

Project plan

Friday 22nd September 16:00 Deadline for **submission of project specification** form
(to confirm project and supervisor)

w/c 25th September (week 2)

Meeting with supervisor to check the following:

Ethics Application submitted.

Risk assessment form to be completed and **submitted via blackboard**.

Project plan to be discussed.

Friday 29th September 16:00 Deadline for **submission of Ethics and Risk Assessment**.

w/c 9th October 2022 (week 4)

Formal meeting with supervisor

Full project plan, including timescales, full set of aims and objectives, synopsis of background work done to date to be **submitted to supervisor via Project Journal**.

Friday 13th October 16:00 Deadline for **submission of plans into Journal**.

Friday 3rd November 16:00 (week 7) – Deadline for **submission of Research Proposal** via Blackboard.

Friday 8th December 2023 (week 12) 16:00

Deadline for **submission of presentation slides and Trimester 2 action** plan via Blackboard.

w/c 11th December 2023 (week 13)

Oral Presentation of progress and interview - marks allocated.

(Students will be expected to demonstrate progress made). Project journals must be up to date.

Friday 8th March 2024 (week 25) 16:00

Project abstract to be **submitted via Blackboard** (for external examiners' visit).

w/c 18th March 2024 (week 27)

Formal meeting with supervisor to discuss draft copy of project report.

Visit of external examiners (Schedule provided once date agreed)

Friday 19th April 16:00 (week 31) – Deadline for **submission of project report** via Blackboard.

Submission of completed Journal for marking.

Late April/Early May 2024 (exact date to be determined when examination timetable is known)

Oral presentation & interview + poster presentation