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1. Introduction

The purpose of the handbook is to accompany you during the preparation of your project for the completion of your Master's programme in the School of Physics, Engineering and Computer Science at the University of Hertfordshire. The successful completion of your MSc Project, your final project report and demonstration is worth 60 credits.

It is necessary for the award of a Master's level qualification to demonstrate your ability to bring together a variety of skills, experience and knowledge derived from different sources. The main purpose of the Master's project is to allow students to extend the principles and concepts they have learnt during study of advanced modules, and apply that knowledge in the context of a substantial piece of independent work.

You are expected to work on a practical investigative or development project. You should be trying to answer some research questions. There needs to be an appropriate balance between research and development and you should demonstrate that you have acquired the skills to apply the knowledge gained from your research to your practical work.

The project is a showpiece opportunity for you to demonstrate what you know about current research and practices in your field of study and demonstrate your skills in selecting and using appropriate techniques and tools employed in these areas to conduct a practical investigation into a particular problem. It is a self-directed piece of work, conducted with minimum supervision, that demonstrates your ability to plan and manage a substantial piece of work, and direct your own efforts. You are expected to be thorough in your work, and in particular, identify and tackle any difficult or challenging aspects of the problem you are trying to solve. It is not just the quantity, or even the quality of work, that is considered when grading the project, but the level of difficulty and the scope of the problem being addressed.

The aims of the MSc Project are to enable you to

1. Select and use appropriate tools and techniques in order to conduct a practical investigation or solve a problem, and critically evaluate your own work.
2. Demonstrate that you can work independently with minimum supervision, plan your work effectively, and present the outcome of the work in written and oral form.
3. Draw on what you already know about the subject area in order to identify further areas of study, and extend your knowledge by making critical use of the technical and scientific literature and other materials, and conceive original ideas of your own.

1.1 Useful information on the module

1.1.1 Recommended reading

- "Projects in Computing and Information Systems: A Student's Guide", any edition, Christian W Dawson, Addison Wesley.
- "Thesis Projects: A Guide for Students in Computer Science and Information Systems", any edition, Mikael Berndtsson, Jörgen Hansson, Björn Olsson and Björn Lundell, Springer.

1.1.2 Canvas

Where possible, distributed materials for this module will be put onto Canvas in the module area for 7COM1039 Advanced Computer Science Masters Project. All the other masters' project modules are slaved to this site, so those students registered on other project modules will be redirected automatically.

1.2 Supervision

You must advise the module leader if you have already agreed supervision with a staff member, otherwise the module team will assign a supervisor to you.

You cannot necessarily expect that your project supervisor will be an expert in your chosen field, if s/he is then you can consider it a bonus, but they will advise and support you on the project; to help you to manage it, and as an academic advisor. **However, they will not tell you what to do, nor will they take responsibility for your mistakes**. **The supervisor's role is not to contribute to any part of the project for you.**
The individual project supervisor is a valuable resource and you should use them wisely since the resource is limited. Therefore, you should make sure you meet with them regularly at a time that is mutually convenient for both of you. For these meetings to be beneficial, you will need to do some work every week, or else you won't have anything to discuss with your supervisor.

A typical meeting with your supervisor should approximately last 15 minutes each week for one-semester (full-time) projects and every fortnight for double-semester (part-time) projects. However, there are variances that depend on your needs. Your supervisor may take some annual leave during the course of your project. Supervision meetings could be scheduled with you individually, or as a group.

It is a general observation that students who do not meet with their supervisors regularly do not achieve good results in their projects.

2. The Process

2.1 Getting started on your project and how it is assessed

The project is an individual, rigorous, critical and complex piece of work. It is not an assignment set by a tutor, where you mainly provide information that is coming from someone else's research with your personal critical thinking. It is not just a piece of software development. You are expected to study what other people have done, and more importantly generate information yourself and develop expertise in your area of study.

Depending on your study mode, the MSc Project is carried out over an extended period and you should dedicate approximately 600 hours over one or two semesters -- the equivalent of 43 hours a week for one-semester (full-time) projects; for double-semester (part-time) projects, the equivalent of 21.5 hours per week on your project work. It is very important to plan ahead your work and not leave it to the last few weeks. Your participation is imperative. You should never forget to be working full-time on your project. Please avoid taking leave in general. If you must be absent, then plan with your supervisor in advance and adjust your schedule.

Always keep in touch and keep up!

There are eight different project modules, but only TWO really different kinds of project; investigative or development. You must do the type of project specified by the award you seek.

Learning outcomes for ALL students

1. be able to plan and manage a substantial body of work, identify any risks inherent in their chosen approach, and work independently with minimum supervision;
2. be able to both critically evaluate and discuss the outcome of their project work in written and oral form
3. be able to articulate the broader contexts of their work in relation to legal, social, ethical, and professional issues, and assess the economic impact of their project.

2.1.1 Investigative project

This type of project requires you to work on an investigative and practical project. It applies to those of you who study Software Engineering, AI with Robotics, Networking, Cyber Security, Data Science with Analytics or Advanced Computer Science.

"This type of project involves a thorough investigation of a particular area; improving your understanding of that area, identifying strengths and weaknesses within the field, discussing how the field has evolved, and acknowledging areas suitable for further development and investigation. This kind of project will involve some form of literature search and review. A research-based project may well have to do more than establish the field of study." (Dawson, 2009)

You **must** have a specific research question or hypothesis to investigate.

Investigative project learning outcomes

- be able to critically evaluate advanced literature in topics relevant to their chosen project;
- be able to refer to the findings of other academic writers to justify their chosen approach to the development of a solution, and to evaluate the outcomes of their project work;
- be able to combine their knowledge of the subject, their reading of research papers and the outcome of their own investigations to conceive original ideas of their own.

AI with/and Robotics project (7COM1036/86)

- be able to undertake a **practical** piece of work that demonstrates that they can apply their knowledge and skills to the design and development of computerised solutions to a particular problem within the domain of computer science.

Computer Networking Principles and Practice project (7COM1037)

- be able to select and use appropriate techniques and tools employed in computer networking, distributed systems, and system security in order to conduct a **practical** investigation into a particular distributed systems or system security problem.

Software Engineering project (7COM1038)

- be able to select and use appropriate software engineering models, methodologies, measures and tools in order to conduct a **practical** investigation or solve a particular software engineering problem.

Advanced CS project (7COM1039)

- be able to select and use appropriate techniques and tools employed in computer science in order to conduct a **practical** investigation of a particular advanced computer science problem.

Cyber Security project (7COM1070)

- be able to select and use appropriate techniques and tools employed in cyber security in order to conduct a **practical** investigation into a particular cyber security problem.

Data Science and Analytics Masters Project (7COM1075)

- be able to select and use appropriate techniques and tools employed in data science and analytics in order to conduct a **practical** investigation into a particular data science and analytics problem.

Computer Networks and Systems Security Project (7COM1077)

- be able to select and use appropriate techniques and tools employed in computer networking, distributed systems, and system security in order to conduct a **practical** investigation into a particular distributed systems or system security problem.

2.1.2 Development project

*If you are on the "crossover" award, the requirements are significantly different.

The development project "includes the development of, not only software and hardware systems, but also of process models, methods, algorithms, theories, designs, requirement specifications, and other interim documents. Examples of software development projects include database systems, multimedia systems, information systems, and web-based systems. For some developments (notably software) you will be required to include requirements documentation, designs, analyses, and fully documented test results along with user manuals or guides. Depending on the nature of your course, the focus for a development project may vary.

Whichever kind of development project you tackle, it is unlikely that the development of a product would be acceptable on its own. In addition, you would normally be expected to include a critical evaluation of the product as well as the development process used. Critical evaluation emphasises the distinction between the academic qualities of your work from technical ability alone." (Dawson, 2009)

Development project learning outcomes

1. be able to demonstrate a deep understanding of different approaches to modelling, design and programming;
2. show how these approaches might affect the nature of solutions to computational problems and critically evaluate their deployment in appropriate contexts.
3. be able to refer to the findings of other academic writers to justify their chosen approach to the development of a solution, and to evaluate the outcomes of their project work.
4. be able to undertake a **practical** piece of work that demonstrates that they can apply their knowledge and skills to the design and development of complex computerised solutions to a particular problem within the domain of computer science.

2.2 Ethics approval

If you are planning to use other people in your project, you MUST apply to UH for Ethics Approval. You will need to get ethics approval before running a survey, conducting interviews, or getting people to evaluate your system. However, if the questions you propose to ask are noncontroversial, and you promise to keep the responses anonymous, this should be a formality, but not trivial, **BUT** it takes some time. Allow plenty of time.

To get approval, you need to complete some forms, write a statement that explains in detail what kind of questions you will ask (-- it would be better, and speed up the process, if you could provide the actual questions). You should email all the documents to your supervisor to check **before** submitting for the Ethics Approval.

Your application will be reviewed by the university's Ethics Committee. They have many forms to look at, so you need to give them enough information to decide quickly. You should apply at least three weeks in advance. For example, do not just say "conduct a survey" or "interview some clients", because you haven't told them enough to let them judge whether there

might be a problem with what you propose to do. You should explain the purpose(s) of the survey/interviews (e.g. to determine functional requirements, or to obtain feedback on the quality of the user interface) and say what the questions will be about.

Read the ethics notes on Canvas for further guidance and find the relevant links for your application. Breaching ethics rules can result in failure!

2.3 Project management

You should always have in mind that this is your project and you set the agenda for it. You should expect to learn new things while working on your MSc Project and not just complete something you could have done as an undergraduate. You are responsible for your work and management and you need to manage the time you spend on your project including the time you spend with your supervisor.

After all your time management is very important for the outcome of your work. You need to concentrate on your aim, define appropriate deadlines, and also plan on what you are working on and reading each day. It is important not to be over optimistic and have a plan. You can divide the time you have available into weeks and keep a note of whether you are on schedule or not. You should expect parallel processes in your project plan and also allow enough time for writing up your report, instead of planning to write up everything at the end.

You could try planning forward at the end of each day, so that you have a diary for the following day. Often you may need to re-plan and re-organise in order to take account of the actual state of your project. However, there is no need to submit revised plans since you should use this for the organisation and management of your own project.

It is a wise idea to prepare and maintain weekly progress reports. A weekly progress report will help you to get the most out of your meeting with your supervisor as well. This might include what you have done, learnt, troubleshot, planned for next week. It will also help your project supervisor to focus on important issues on your next meeting, while it will force you to be clear about what you have achieved, and to be honest about any problems you are having. When the problems are fixed, they can be described under what have been done and learnt as one of your achievements.

It is a good practise to keep it short, so that it fits on one A4 sized page. Small tasks are best and you should keep it measurable, e.g. I wrote 6 lines of code or I read 270 pages of the book, “C++ in 21 days”. Examples of non-reasonable achievements are: reading about VPNs, learning VB, thinking about the design, or started on implementation.

Be aware of the Serious Adverse Circumstances (SAC) rules and procedures, as you cannot get extra time to finish without SACs, nor a better mark than the work deserves (even with SACs). If you are applying for a SAC, do it as soon as possible.

2.3.1 Further guidance

- If your project involves building a system, make sure you leave time for evaluation.
- Planning helps
- Also, writing a weekly progress report really helps.

- To reach your goal, you do something (a “task"), and, at the end, have something to show (a “deliverable") that demonstrates you have met your objective.
- ALWAYS maintain back-up copies of the most recent version of your work in MORE THAN ONE location.

2.3.2 Project Journey

As part of your project management you are required to maintain a project journey that acts as a journal for your project. It is a journal that records the details of every meeting you have with your supervisor, outlines your actions for your next meeting and identifies the work you have undertaken form your previous meeting aims to provide structure in the way you manage your work. Your project journey also acts as a measuring item to demonstrate your engagement on the project. Therefore, you are recommended to share it with the supervisor on a regular basis. Your supervisor could use it to monitor your progress in your project work.

A template for the Project Journey in Appendix E.

3. The Project

3.1 Instructions on the Detailed Project Proposal (DPP)

You should select a topic you are REALLY interested in, AND which is relevant to your programme. Don't forget that you will need to dedicate 600 hours on this project. You can find some project ideas on the module site, but you may also propose your own project. You could search for ideas in past dissertations, journal articles, research reports, books, media, discussions with academics and experts in the field. You are strongly encouraged to discuss your idea with (potential) supervisors. Your proposal can, and maybe should, change after submission. However, the more detailed the better, even if it is guesswork!

You should arrange to meet your supervisor as soon as possible and discuss your proposal with them. It **is** acceptable to be wrong about a few things during this stage.

The project proposal has no marks (0%) allocation. However, you are strongly encouraged to invest time in the preparation of this proposal. A complete project proposal will give you a structured plan on how to work on your project, and is of great help to your supervisor.

The preparation of your proposal should comprise of extensive reading on your chosen topic that will allow you to develop plans for a literature review. Some questions that will help answering while working on your proposal are the following:

- Does your project rely on data, information or code that will be difficult to access?
- Are you planning to do something that will not help your grade?
- Are you expecting the supervisor to tell you what to do for your project?
- Is it realistic in terms of time?
- Is it the right kind of project?
- Does your proposal include some kind of investigation/ development?
- What will you learn?
- What is **your** contribution?
- What question are you answering?

The project proposal also forms a plan to your work. You should be able to tell from your lists of tasks what you will do on your project, e.g. "I will investigate...". It should also include what this will involve, and it should lead you to your Project Plan. A template for your project proposal can be found in Appendix A.

You should make sure you start the work on your project immediately after you submit the proposal and always consult your supervisor about major changes to your plans.

3.1.1 Detailed Project Proposal (DPP) presentation

- The same font should be used throughout. We would prefer you to use 12-point Times, though any reasonable alternative (such as Arial) will be accepted (except for mathematical formulae, where you may use whichever font is most appropriate, and program code examples, where you should use a non-proportional font such as Courier).

- Lines should be single-spaced, with between 1/2 a line and a whole line of extra space after each paragraph.
- Margins: at least 20 mm left and right; 25 mm top and bottom.
- No more than three pages in length, excluding the cover sheet, contents list, bibliography and any appendices.

3.2 Instructions on the Interim Progress Report (IPR)

You should have done about 260 hours work on your project by the time you submit your Interim Progress Report (IPR). In other words, you are nearly half way through your project. We expect you will have made significant inroads into your **practical** investigation, as well as carrying out background research. You should prepare a written report on the progress you have made. This report should not be aimed at your supervisor (who should already know what you are doing), but at a technically competent reader who knows nothing about your project, such as the independent marker. Say how far you have got: tell us what you have completed, why you have done it. Discuss any problems. The report should be numbered in one continuous sequence.

The Interim Progress Report (IPR) weights 5% of your overall grade and you will receive marks based on the quality of the project, the quality and amount of the practical work, your report structure and the presentation of your report.

The submission must ONLY be via Canvas. You will receive feedback from your supervisor.

The IPR should include the following sections:

3.2.1 Section 1: Introduction and overview

It is suggested that this section should be about 2-3 pages long in total, and you may add any appropriate section or sub-section headings you wish to this list. You may reuse parts of your Detailed Project Proposal (DPP) if appropriate [and in turn you may re-use parts of the Interim Progress Report (IPR) in your final report]. Describe the research question your project sets out to address as well as your proposed practical investigation. Describe any technical work that you are undertaking as part of that investigation, such as the construction of data-sets or software/hardware apparatus. Say what tools and techniques you are using for your investigation, experimentation, and evaluation of your work. You should list the specific deliverables you intend to produce during your project: design, documents, programs, questionnaires, databases, test plans, experimental designs, results, etc.

3.2.2 Section 2: Progress to date

It is suggested that you write about 2-3 pages and add an appropriate section heading and any necessary sub-headings. Describe the progress you have made so far i.e. what you have done. Be specific. Problems encountered or anticipated and steps taken/to be taken to solve them. Explain the supporting evidence you can provide for the work you have done, the documents that demonstrate your achievements, and include these documents as appendices.

3.2.3 Section 3: Planned work

This section is expected to be about half to one page in length. Again, add an appropriate section heading and any necessary sub-headings. List the major tasks that need to be completed for the project to be a success, from start to finish (including any you have already completed) with target completion dates. Explain what each task means and what deliverables it will produce. Say how you will judge the quality of your project work and how you intend to evaluate the process through which you have gone. Don't forget to include time for writing up the final report and preparing for the demonstration/presentation after submission.

3.2.4 Bibliography

List any sources that you cite in your report. You should also list any sources that you have used, even if not cited directly. Use the Harvard system for your in-text citations, and for your references, producing one list, ordered by author surname (whether the material is drawn from books, journals, web pages, forums or blogs, or is a piece of software).

3.2.5 Appendices

Include supporting evidence as appendices to your report. These should be numbered (Appendix 1, Appendix 2 etc.) and each should start on a new page and be given a title. Your tutor is not required to read the appendices but may refer to them for evidence to back up your claims.

Typically, appendices will include evidence of design, investigative or practical work (e.g. formal specifications, code, questionnaires, and so on). At this stage, it will mostly be work-in-progress, and it is fine for this to be handwritten. You may scan documents and include them with your submission if you wish; but you may not wish not to spend too much time on tasks like scanning handwriting notes. Instead, you could take the materials to your next project meeting so that your supervisor is aware of the progress you have made.

3.2.6 IPR report presentation

The report should be prepared as follows:

- The same font should be used throughout. We would prefer you to use 12-point Times, though any reasonable alternative (such as Arial) will be accepted, (except for mathematical formulae, where you may use whichever font is most appropriate, and program code examples, where you should use a non-proportional font such as Courier).
- Lines should be single-spaced, with between 1/2 a line and a whole line of extra space after each paragraph.
- Margins: at least 20 mm left and right; 25 mm top and bottom.
- The whole report is expected to be no more than eight pages in length, excluding the cover sheet, contents list, bibliography and any appendices.

3.3 Instructions on the Final Project Report (FPR)

After your IPR report submission, you should have done another 340 hours of work on your project, amounting to about 600 hours of effort by the time you submit your project report. The final project report is worth 95% of the overall assessment for the module; Please allow plenty of the time to the collation, writing, editing and formatting of the report and supporting documents, and the preparation and time given to a demonstration and face to face (or online) discussion of your work with your assessors.

You should be aware from the outset that FPR and your explanation of your work is the primary evidence used in the assessment - and it is this assessment of your abilities to conduct and deliver a project that is key. You should assume that your audience has the level of knowledge of a good Masters' student who has taken the same modules as you. Keep this in mind when writing about background technical information and do not present large amounts of material that such a reader would already know, or that could be read in a standard textbook. Reference the textbook in your bibliography and keep the information you present specific to the project work that you have done.

Any software product, model, or artefact that you may have produced during your project is not the focus of the assessment. The project module is about assessing your abilities as a student in your discipline area.

Do not underestimate the time it takes to produce your report. You may want to get your supervisor to read part of it to comment on your style before you submit. You may need to redraft the FPR several times. Don't forget that internet/computing facilities could become unavailable at short notice at critical times. Allow plenty of time and have backup plans.

3.3.1 FPR report presentation

The report should be prepared as follows:

- Approximately 10,000 words in length
- The bibliography and appendices are not included in the word length.
- Do not use the cover sheet (So NO assignment briefing sheet).
- The same font should be used throughout. We would prefer you to use 12-point Times, though any reasonable alternative (such as Arial) will be accepted, (except for mathematical formulae, where you may use whichever font is most appropriate, and program code examples, where you should use a non-proportional font such as Courier).
- Lines should be single-spaced, with between 1/2 a line and a whole line of extra space after each paragraph.
- Margins: at least 20 mm left and right; 25 mm top and bottom.
- Pages should be numbered in one continuous sequence.

3.3.2 Assessment process

The submission of the final project report must ONLY be through Canvas.

3.3.3 Marking process

Two markers will independently assess your work.

- If the grades they award differ by 10 the most, the grades will be averaged, combined with the grade for the Interim Progress Report (IPR), and presented to the Board of Examiners for approval.
- Where the markers differ 11 or more marks, the standard School procedure will be followed to resolve the difference.

3.3.4 Plagiarism checking

This assignment must be completed individually. Be aware of the University's policies on plagiarism and collusion: these are severe offences with severe penalties. Regulations governing assessment offences including Plagiarism and Collusion are available from:

Structure and Assessment Regulations - Undergraduate and Taught Postgraduate Programmes (AS14) - Apx 3 - Academic Integrity and Academic Misconduct

Direct URL: https://www.herts.ac.uk/__data/assets/pdf_file/0007/237625/AS14-Apx3-Academic-Misconduct.pdf

Turnitin is enabled on Canvas for you to check the similarity of your report with other resources. A 'mock' submission point will be set up to allow you to upload and check the similarity report on Turnitin before your (real) final submission. Any 'mock' submissions are not stored in a repository and you may re-submit multiple times.

3.3.5 Project Demonstration

You must give a live demonstration of your work to your supervisor and second marker who will ask questions about your work. This demonstration is part of the formal assessment process and counts 20% of your final project mark. It is your responsibility to agree a time and date for this with your supervisor (who would contact the 2nd marker on your behalf). It should normally take place after both markers have assessed the report and you must arrive on time and be well-prepared for your demonstration.

Please consider the following project demonstration guide:

1. All students are required to give a demonstration or other presentation of the work they have produced for their project. You will have 10 minutes to show your work. If you go on longer than 10 minutes you may be interrupted. Then there will be 10 minutes for answering questions. The time is very short so you will need to plan and should discuss how best to present your work with your project supervisor. **Please do not attempt to do a PowerPoint presentation telling us about what you did: you need to show us the actual work.** Suppose, for example, that the main deliverable from your project consists of an extensive set of test results and analysis of those results. We would not want to be told what you did, we would want you to present the actual results, and talk us through them.

2. The assessment will be carried out by your supervisor and the second marker for your project, who will both attend your demonstration.
3. Subject to Covid rules, you may use one of the university computers (please make sure the lab is going to be free at the arranged time for your presentation beforehand) or your own laptop.
4. We cannot provide networking facilities for your laptop machine beyond what is normally available in the area where your demonstration takes place. But in general, it is perfectly acceptable to demonstrate a networking, client-server or web-based project using the loopback address 127.0.0.1 (localhost). If one or two features (such as automated email to another machine) cannot be demonstrated for sound technical reasons that is unlikely to be a problem unless they are at the core of your system.
5. [NOTE - THIS IS SUBJECT TO VID REGULATIONS] If you need to use specialist software that is not installed in the general laboratory area then you could consider to approach Library and Computing Services Helpdesk about getting the software installed on one of the UH machines. THIS NEEDS TO BE DONE AS SOON AS POSSIBLE. Please be aware, however, that we cannot permit the installation of software for which neither we, nor you, have a valid license (if the software is being installed under your license you will be asked to prove that you have one).
6. If you miss the demonstration this is like missing an examination. If there is a good reason for missing the appointment for your demonstration, there may be an opportunity to reschedule the demo, but if this happens you will need valid and documented serious adverse circumstances (SAC) presented to the Board of Examiners in the usual way.

3.3.6 Late submissions

Standard penalties will apply to late submissions.

If you submit your report late, the standard lateness penalty will be applied. If you submit more than five days late you will get zero for your final submission.

If you do not give a demonstration you will be treated as having failed to submit evidence to back up the claims made in your report. If you wish to put forward serious adverse circumstances (SAC) in mitigation of late submission, or failure to attend the demonstration, then you must complete the Serious Adverse Circumstances (SAC) form with documentary evidence of the circumstances. This should be done as soon as possible, and in any case before the meeting of the Board of Examiners who will consider the matter.

Even if your serious adverse circumstances (SAC) are accepted, your project cannot be marked according to the schedule described here unless it is received on time; if it is submitted substantially later than the due date, demonstrations and assessments may be deferred to the assessment period at the end of the next semester.

3.4 Final project report supporting structure

3.4.1 Title Page

Please use the template provided (see Appendix B).

3.4.2 Abstract

The abstract should be a statement up to half a page in length describing the subject matter of the project report and the main findings and conclusions presented in the report. A reader should be able to decide what the report is about by reading this alone.

3.4.3 Acknowledgements (if any)

3.4.4 Contents page

The table of contents must show the chapters of the report, with the title of each and the page number on which each chapter begins. If your chapters are organised in sections, with a title for each, show these sections on the contents page as well. Do not go to greater detail than sections, as the table of contents should fit on a single page.

3.4.5 Chapter 1: Introduction to the project

This chapter should introduce the project. Say what the project was about, such as what are the research questions you were attempting to address, give some brief background information (sufficient to 'set the scene') and list the objectives you were trying to achieve by doing the project. These should be based on what you said in your project plan, but they may have changed since the plan was submitted; any changes should be explained later in the report, probably in the overall evaluation of the work.

This chapter should also introduce the report. Give a very brief statement of how your report is structured, including what is in each chapter (and the most important appendices), just to help the reader gain an idea of how you have presented your work.

3.4.6 Collection of main chapters

How to present these will depend largely on the subject of the project, but here are a few points of advice:

(a) You may assume that your readership has the level of knowledge of a good Masters' student who has taken the same modules as you. Bear this in mind when writing about background technical information and do not present large amounts of material that such a reader would already know or that could be read in a standard textbook. Simply reference the textbook in your bibliography and keep the information you present specific to your own work. Explain how any background material you present has been used in your project.

(b) The main chapters of your report are where you describe your achievements. Instead of just listing the tasks that you carried out diary-style, in the order you did them, it is better to organize the chapters around topics.

(c) In these chapters, you should tell the reader what you have done, why you did it, what results you obtained, what you think you have achieved (including the problems you have overcome), how you calculated the commercial risk for your project and how you managed it, and how you went about evaluating your work (criteria applied, tests performed, and so on). Be sure to present the results of your project work properly.

(d) It is important to present in the written report information about your work that will not be conveyed at the demonstration. As an example, depending on the nature of your project and the way you approached your work, this might include:

- Discussion of methods that were considered and the reasons for choosing one method over another;
- Use of software tools (what inputs you supplied, how you configured them, what outputs were produced);
- Presentation and discussion of intermediate results, for instance of a program which was progressively refined or extended;

3.4.7 Chapter X: Discussion and evaluation chapter

The extent to which you demonstrate the ability to reflect upon your work is very important. In this chapter, you should summarise your main findings/results and evaluate what you have achieved and how you went about it. You may find it more convenient to include an evaluation of your work in the chapters where it is presented and summarise that evaluation here. What is crucial is to have a critical self-evaluation of the extent to which you have achieved the things you set out to do. Assess the extent to which you met your objectives. You will not be penalised for acknowledging that you failed to achieve everything you set out to do, and especially not the more advanced things, but you certainly would be criticised if you gave the impression of not having noticed that you had failed to meet an objective.

You should have a short section on management of the project (usually one to two pages), including how you planned to allocate time at the start of the year and how it worked out in practice. Additionally, you should demonstrate you have considered the commercial and economic context of your project.

3.4.8 Bibliography and referencing

After the final chapter, and before any appendices, list any sources (books, journals, web pages etc.) that you cite in your report. You should also list any sources that you have used, even if not cited directly. Use the Harvard system for your in-text citations, and for your references, producing one list, ordered by author surname (whether the material is drawn from books, journals, forums or blogs, or is a piece of software). A guide to the Harvard referencing system is provided at http://www.studynet.herts.ac.uk/ptl/common/LIS.nsf/lis/busharvard

The University provides an online "Library SkillUP" tutorial on citing sources and referencing that you should work through. It is available at http://www.studynet.herts.ac.uk/ptl/common/LIS.nsf/lis/citing_menu

3.4.9 Appendices

The appendices to your report provide supporting evidence of the quality and quantity of the work you have done. Your appendices should contain any specifications, design documents, survey forms and results, screen shots, and other documentation produced as part of your project. Without this supporting evidence, it is possible that the markers will take the view that you have not done everything you claim to have done.

However, the appendices are only there to back up the claims made in your report. Markers can only be expected to look at those parts of the appendices you draw their attention to in the main body of the report. They are not obliged to read the appendices in detail, though they may do so. If you think it is important to draw the markers' attention to a document, or a part of a document, tell them where to find (don't just say "the code for this is in appendix 3", give a page number, and/or other information that makes it clear how to find it; better still, include the relevant fragment of the code in the body of your report).

Any program code written by you must be presented in the appendices. But do not include code that is machine generated, or that comes from a different author, unless it is necessary for the reader to understand the work you have done. If you do include code that you did not write yourself, it is your responsibility to make clear which parts of the program are your own and which parts are not. If you present automatically generated code, or the code of another programmer, as if it were your own, you may be accused of plagiarism.

Do not include copies of any web pages that you have referred to, unless it is necessary for the reader to see them to make your point: just put the citation details in your bibliography.

Samples of the work that is presented in the appendices may (and probably should) be included in the body of your report to illuminate a point or for discussion purposes.

3.5 Issues for the assessors and characteristics of each grade

The following factors will be considered in marking projects:

- The size and complexity of the task;
- Critical appraisal of your own work: the clarity of your explanation of the work you have completed; the evaluation of the extent of your achievement; the evaluation of your management of the project including the use you made of the project plan(s); your assessment of the success of the project overall and your identification of possible remaining or future tasks;
- Communication skills: structure of the report; coherence; quality of writing; quality of presentation.
- Background reading and the results of text-based research;
- Problem definition;
- Quality of solution: design and implementation; experimental work;

- Quality of approach: suitability of method, choice of tools and skill in using them;
- Testing; analysis and evaluation of end-product(s) and results.

The first three factors are important in any project; the remaining ones may vary in relevance. We expect all students to be able to explain their work and show an appropriate level of understanding of any technical material they have used or developed. Such explanations and demonstrations of understanding should be evident in the written report and during the presentation and demonstration: a body of work that is not backed up by evidence of understanding is likely to achieve a poor grade.

3.5.1 For a numeric grade of 80 or above

We expect the work to be truly outstanding.

3.5.2 For a numeric grade between 70 and 79

We expect the work to be of an excellent standard. We expect to see evidence that you understand how the concepts and principles underpinning the subject area of your degree are relevant to your project work, that you have made well-reasoned choices of appropriate tools and techniques and applied them in a thoughtful manner.

There should be evidence of substantial achievement of very high quality, and your report should demonstrate that you can explain and critique what you have done, why you did it, what you achieved by doing it, and how your work might be improved or extended.

We expect all major issues, including the really hard and perhaps un-resolvable ones, to be properly evaluated and commented upon in the project report. We are not looking for an original contribution to knowledge, but we expect you to have unearthed and addressed all the complexities of the problem, and not to have avoided any difficulties. We expect the report to be well-structured, coherent, well-written and free of significant grammatical errors.

3.5.3 For a numeric grade between 60 and 69

We expect the work to be of a very good standard.

We expect to see a broad-ranging and thorough investigation of the project topic, with a methodical presentation of all the main issues. There should be evidence of a substantial quantity of work of a high standard, in which you have brought to bear relevant principles and practices and chosen and applied appropriate tools and techniques.

We expect to see evidence that you appreciate how your project work is related to your other studies.

We expect you to evaluate properly all the main points arising in the work. We also expect you to show that you are aware of the limitations of the work, and to recognise and comment on aspects of it that would merit further study. We would expect your report to be well-structured, coherent, and largely free of grammatical errors.

3.5.4 For a numeric grade between 50 and 59

We expect the work to be of a good or at least satisfactory standard.

We expect to see evidence that you have taken a methodical approach to the work, and that you have undertaken practical work of reasonable scale and at least to an average standard.

We also expect you to demonstrate an understanding of the principal issues in your project work, and to show that you can describe what you have achieved, and that you can explain the things you have done and why you have done them. We expect your report to be coherent and largely free of grammatical errors.

Appendices

All appendices are on Canvas under the relevant sections

Appendix A: Detailed Project Proposal (DPP) Template

Detailed Project Proposal (DPP)

Student Number:	Student Name:
Course:	
Supervised by: (if known)	
Type of Proposal:	

Working Title of the Dissertation

1. Hypothesis
2. The Problem / Short description of your idea
3. The project aim(s)
4. The project objectives
5. How you plan to conduct your research
6. Project plan
7. References/ Bibliography

Appendix C: Sample - MSc Interim Progress Report (IPR): feedback and Scores

Student name	
Student registration number	
Module code-instance	
MSc Project Award	
Marker name	

1. Background research (maximum **15**)

0	4	8	12	15	**Score**
Little or no evidence of literature review	Limited review, overview of few relevant papers with no critical appraisal	Satisfactory review, concise review of relevant papers, limited critical appraisal	Good, concise review of relevant papers, some critical appraisal, set into context of project	Excellent review, concise critical review, set into context of project	

2. Summary of progress to date (maximum 15)

0	4	8	12	15	**Score**
Little or no evidence of progress	Inconsistent, some evidence of progress but lacking continuity	Satisfactory summary of progress, little implementation work	Good summary of progress, some implementation of work	Excellent summary of progress, substantial implementation work	

3. Consideration of ethical/legal/professional and social issues (maximum **20**)

0	5	10	15	20	**Score**

None submitted, or irrelevant	Naïve/superficial consideration of ethical/ legal /professional/social issues	Most but not all ethical/ legal/professional/social issues considered	Very good consideration of legal/ professional/ social issues. Some awareness of University procedures in relation to ethics approval demonstrated	Excellent consideration of legal/ professional/social issues, and knowledge of University procedures in relation to ethics approval demonstrated	

4. Project plan (maximum **10**)

0	2	5	8	10	**Score**
Little or no evidence of project planning	Some evidence of project planning but too vague	Satisfactory, concise and coherent project planning with some defined tasks and timelines	Good, concise and coherent project plan. Clearly defined tasks and timelines with minor errors	Excellent, concise and coherent project plan with clearly defined tasks and timelines	

5. Appendices (maximum **10**)

0	2	5	8	10	**Score**
No appendices	Appendices provide little evidence of progress	Appendices provide some evidence of progress	Appendices provide good evidence of progress e.g. record of supervisory meetings, source code, screenshots	Appendices provide excellent evidence of progress e.g. record of supervisory meetings, source code, screenshots, version control, test plans	

6. Referencing (maximum **10**)

0	2	5	8	10	**Score**
Little or no coherent referencing and use of technical terms	Incomplete referencing and use of technical terms, frequent mistakes	Satisfactory referencing and use of technical terms, minor mistakes	Good use of referencing and technical terms, occasional mistakes	Excellent referencing and use of technical terms,	

7. Report structure and coherence (maximum **10**)

0	2	5	8	10	**Score**
No discernible structure. No presentation of ideas	Lacking structure, Few clear ideas presented	Writing is mainly clear with some structural issues. Ideas presented with some issues in clarity	Fluently written with very few errors. Very minor structural errors. Ideas presented with excellent clarity	Lucid presentation high clarity. No structural errors. Ideas presented with exceptional clarity	

8. Readability, grammar and spelling (maximum **10**)

0	2	5	8	10	**Score**
Very difficult to follow. Many grammar/ spelling errors.	Argument difficult to follow. Patchy presentation, frequent errors in formatting compromising meaning and readability. Poor spelling and grammar.	Satisfactory presentation, minor errors in spelling/ grammar and formatting, but text conveys meaning.	High standard of production, infrequent production errors, clear and labelled diagrams. Very minor grammar/spelling errors.	Outstanding standard of production, report set out in clear and attractive format. No grammar/ spelling l errors.	

TOTAL SCORE	

Please note, the Interim Progress Report is worth 5% of the overall assessment for the module.

Marker's comments
