ICT PROJECT GUIDEBOOK

MODULE LEADER: DR. SHAZIA A AFZAL

SHAZIA.AFZAL@DBS.IE

Revision History

Version 1: Paul Kelly

Version 2: Patrick O'Callaghan

Version 3: Niall Larkin

Version 4: Dr. Shazia A Afzal

Contents

Introduction

This module requires the learner to investigate, propose, design, implement, test, document and present a project appropriate to their ICT specialisation.

The project is a capstone module providing learners with the opportunity to apply the skills and knowledge acquired during the taught elements of the programme. The project will involve the analysis of a substantive issue or opportunity and subsequently the production of a report for the solution of the issue or opportunity.

It is envisaged that the learner will produce a useful artefact product or process, with significant challenges and depth, which will enhance his/her future job prospects.

A project proposal must be submitted in Block4, outlining the project aims and objectives and providing a work plan.

An assessment of the proposal will be carried out and must be passed before work can officially commence on the project.

To ensure progress and formative feedback, the student will submit an interim report for assessment. It is also expected at this stage that project plan will have been completed, that the project will be fully scoped and that the deliverables, a working prototype will be available for demo and timelines for the remaining part of the project will be clearly defined. It is also expected that a significant evidence of literature review and research activity will be detailed in the interim report.

In completing their projects, students are required to work independently, under the supervision of an assigned supervisor, who will provide advice and guidance as required. Students must meet with their Supervisor on a regular and timely basis. Meetings can be supplemented by email, messaging or Skype sessions.

The final artefact and final project report must be submitted as per the Project Assessment and Marking Scheme, including Schedule and Wordcount. The project supervisor and a second marker will assess both of these components of the project. The learner will also be required to make a presentation of their project to a group of their peers as well as the module leader, his/her supervisor and a second reader.

ICT Project must meet the learning outcomes.

Learning Outcomes:

On successful completion of this module, learners will be able to:

1. Prepare a project proposal clearly identifying a set of requirements and the scope of the project.

2. Develop a detailed project plan and manage the project to completion

3. Demonstrate independent self-motivated learning.

4. Critically evaluate the work undertaken and to place it in the context of related work. 5. Produce a project report with a corresponding presentation and demonstration.

Note: A pass mark will be awarded to a project meeting all learning outcomes.

Project Proposal

Project Topics

An idea for the project topic may come from a student's own interest in a particular area or from ideas suggested by a lecturer, an external organisation or other sources.

It is important that the student confirms the appropriateness of a topic with a supervisor and the module leader as early as possible.

The module leader may refer the proposal to the DBS Ethics Committee.

Project Proposal

Before officially starting the project, a student is required to write a project proposal, which will be assessed by a supervisor and a second marker. The proposal must receive a 'Pass' status before the student officially commences work on the project.

The proposal content and format should contain the following:

- A cover sheet containing the project title, student's name, e---mail, student id, stream, date and the name and signature of the approving supervisor.
- The student's personal learning objectives.
- Project scope and objectives:
- The scope and objectives of the proposed project should be well defined and achievable.
- A clear technical specification of the project.
- Equipment and critical resources required to complete the project.
- A Project Plan.
- A weekly schedule, indicating the proposed project's 'milestones', which must be clear, concrete and achievable.
- References and bibliography in Harvard referencing style.

Submission of Project Proposal

An electronic copy of the proposal must be submitted via Moodle by time and date specified.

The supervisor will be assigned and will e--mail the student with a response to the submitted proposal ordinarily within one week of the supervisor being assigned. Format of the response will be as follows:

• 'Pass and Proceed': the student may officially start work on the project

• 'Conditionally Accepted': the student must modify the proposal. The proposal must be re---submitted within five working days of this notification.

• 'Rejected': the proposal is unacceptable and a new proposal must be submitted within a week of this notification.

Project Meetings

Student---Supervisor Meetings

It is expected that the student will meet his/her supervisor roughly two to four times during the duration of the project work. Normally meetings will last between twenty and thirty minutes. Additionally, group or clinic meetings can be arranged.

Arrangement of these meetings is the responsibility of the student and should have a real and useful agenda. Aside from a review of project work, it is the student's responsibility to bring meaningful project issues to the meeting. Before a meeting the student should have an agenda of items to discuss with his/her supervisor. The supervisor and student will agree on the work to be done before the next meeting using a Project Meeting Log maintained by the student.

Project Reports

Interim Report and Demonstration

The interim report is a major milestone in the project life cycle and will be guided/specified by the supervisor. An electronic copy must be submitted via Moodle as per the schedule. The interim report details the progress to date in addition to the plans for the completion of the remaining work in the project.

The report content may be specified by the supervisor but should minimally contain the following:

- **Title Page :** The title page should contain the following information:
- The name of the Institution: Dublin Business School
- The course title: Higher Diploma in Science in Computing
- The course stream
- The title of project
- "Interim Report"
- The name of the author
- The author's student id
- The author's e---mail address
- The name of the supervisor
- The submission date

Acknowledgments A brief paragraph or two acknowledging professional advice and help in submitting the report.

Table of Contents : List of contents, including tables and figures, with page numbers.

Introduction : The introduction provides the reader with an overview of the project.

A good introduction will inform the reader what the project is about without assuming any specialist knowledge and without detail that may obscure the overview. The reader is assumed to be knowledgeable but not necessarily an expert in the field of the project. The introduction should anticipate and combine main points described in more detail in the rest of the report.

The Introduction contains:

• the aims of the project;

• the scope of the project;

• the approach used in carrying out the project;

• assumptions, if any, on which the work is based.

Background The purpose of the background is to provide the reader with the information that they may not know but which they will need in order to fully understand and appreciate the rest of the report.

The following is an indicative list of items that should be included in the background section:

- the context of the project;
- the anticipated benefits of the system;
- typical users of the project product;
- any theory associated with the project;
- the software development methods used;
- any relevant/similar existing software/hardware

Specification and Design

The Specification and Design section should give the reader a clear picture of the system to be developed and why it is being developed it in a particular way rather than in another way.

In brief:

- Specification: To inform the reader what the software system is required to do.
- Design: The top-level details of how the software meets the specification.
- Extensive use of diagrams, such as entity-relationship and UML diagrams will be included in this section to elaborate the design

Project Testing and Evaluation: It may include product verification according to the spec and unit testing, etc. Any weaknesses should be discussed. A review of status of the project in terms of the proposed goals and project plan.

Demonstration of Progress : Ability to illustrate and demonstrate how the artefact will work and key features it will have. (This has to be done by means of slides, screenshots, mock---up, diagrams, models, sample code, prototype of working software, etc.)

Future Work :

Suggestions on refinements or changes in direction from original project proposal should be made here. These must be justified.

Appendices

Any code, specifications which should be included in the report should be included in appendices. User manual can also be included here.

Final Project Report

This report is the permanent record held by DBS of the student's work and is therefore a most important milestone in the project life cycle. The report builds on the interim report and demonstrates a student's capacity to conceive a project idea, conduct research on and implement that idea.

The final report should be submitted electronically. For wordcount, etc, see schedule included.

The final report content should minimally contain the following:

- **Title Page** The title page should contain the following information:
- The name of the Institution: Dublin Business School
- The course title: Higher Diploma in Science in Computing
- The course stream
- The title of project
- "Final Report"
- The name of the author
- The author's e---mail address
- The author's student id
- The name of the supervisor
- The submission date

Abstract This is, at maximum, a quarter page summary of the project.

Acknowledgments A brief paragraph or two acknowledging professional advice and help in submitting the report.

Contents List of contents, including tables and figures, with page numbers.

Chapter 1: Introduction

Further refinement and additions to the introduction in the interim report.

Chapter 2: Background/Literature Review

Further refinement and additions to the background section in the interim report.

Chapter 3: Specification and Design

Design of the artefact should be discussed in this chapter which is augmented by diagrams.

Chapter 4: Implementation

The student should discuss the implementation details here. It includes software and version of software used. Any algorithm developed during this process may be discussed. Any coding snippets can be discussed. *Please note, full code should be included in appendix not in this*

chapter.

Chapter 5: Testing and Results

This chapter contains a clear description of testing and the results of the project. The chapter also contains a description of the results of the final tests carried out on the product.

An important section in this chapter is the *critical evaluation* of the final project, where the student demonstrates the ability to critically evaluate the work done, the shortcomings in the project and so on. Objectivity is important when writing this chapter.

Chapter 6: Conclusions and Future Work

A review of what the project achieved, a final review of the project in terms of the proposed goals and project plan.

- Any changes from the interim report should be discussed and justified.
- The student should reflect on the learning experiences gained in doing the project and its relevance to on--going progress as a learner and future practising IT professional.
- This section should also provide a starting point for another student to continue the work.

References and Bibliography

Harvard referencing style.

Appendices

Note: Well--documented code listings should be included in an appendix, not in the main body of the report.

Roles and Responsibilities

The Student

- The responsibility for the academic and industrial quality of the project is the student's alone.
- The student should arrange to meet with his/her supervisor as necessary and agreed.
- Before a meeting with a supervisor, the student must prepare an agenda.
- After each meeting with a supervisor, the student must present their meeting log and sign it. An email can be considered an as an electronic signature.
- All submissions must be the sole work of the student and the student must avoid plagiarism by acknowledging the work of others. In this regard, students must be familiar with the DBS Plagiarism Policy.

The Supervisor

Should recognise that he or she plays a key part in the process of delivering a Project and is there to provide advice and guidance on that process, especially in the early stages.

Advises on the project proposal. This involves checking that the project is realistic, manageable in size, ethically acceptable to DBS Ethics Committee and within the ability of the learner. The proposal must also have the potential to be developed into a project, which could reasonably be expected to be appropriate to the award.

Assign a grade to the project proposal.

The supervisor should make time available for students, with opportunities for one--to--one contact, clinics, or electronic communications. It is not a requirement for each student to meet the supervisor each week. It is preferable that the student requests a meeting when necessary and beneficial.

At each meeting the supervisor directs and advises on the work done and the work to be undertaken before the next meeting.

After each meeting with a student, a supervisor should sign the meeting log as presented by the student. An email can be considered an as an electronic signature.

- Advise student in preparing the interim report.
- Assess the interim report.
- Help the student apply good project and time management techniques to the process of delivering the ICT Project.

- Advise student on the technical aspects of the project, but will not be involved in detailed matters such as debugging code or setting up equipment.
- Give guidance, on request, to the student in preparing the final report and presentation.
- Assess the final report, presentation and project product.

Supervisor---Student Relationship

The academic and professional working relationship between student and supervisor is an important factor in the successful completion of the project. Both student and supervisor should foster this relationship by employing common courtesy, punctuality, conscientious work practice and mutual respect.

The Second Marker

Assess and assign a grade to the project deliverables

- project proposal
- interim report
- final project
- project product

The Moderator

Where grade assigned to the project deliverables by a supervisor and second marker are different, the module leader will assign a moderator to assign a third set of grade.

The module leader will take into account the three sets of grades in deriving at a final mark.

The Module Leader

- Ensure students are informed of the acceptability or otherwise of their project proposals.
- Assign supervisors.
- May refer project proposals to the DBS Ethics Committee.
- Liaise with supervisors on the progress of each student.
- Assign second markers and moderators as required.
- Attend a representative sample of final project presentations for quality assurance purposes.
- Moderate a representative sample of projects to ensure fairness and consistency of marking across all projects.

Project Assessment and Marking Scheme, including Schedule and Word count

Submission	**Title**	**Weight ***	**Word count ****
ONE	Project Proposal	5%	1000
TWO	Interim Report	10%	1500
THREE	Project Arefact	50%	N/A
FOUR	Final Report	20%	6000
FIVE	Presentation	10%	***

* 5% will also be awarded for overall Management of the process of delivering the project. See marking scheme below.

** Word count excludes bibliography, appendices, instructions for demos, etc and is subject to a maximum tolerance of ±10%.

** Word count does not apply to Presentation, but Presentation/Demonstration must not exceed a 15 minute time slot, including setup and close-out. (Presentation room and facilities will be made available in advance).

* Project Management Marking Scheme 5%.

Marking Elements	Weighting
Planning of project and timeline	1%
Management of schedule	1%
Progress of delivery	1%
Frequency and accuracy of communications	1%
Self-activation, motivation and determination	1%

This reflects how well the student managed the project in terms of meeting agreed deadlines and contribution to the project. This assessment component carries a weighting of 5% of the final project mark.

0-20% Did not meet regularity with supervisor. Did not meet project 'milestones'. Did not complete agreed work in weekly meeting logs or no meeting logs. Did not contribute any ideas to project. Poor time management skills. Showed no pro-activeness, initiative or enthusiasm

21-40% Met regularly with supervisor. Met some of the project 'milestones'. Completed some of the agreed work in the weekly meeting logs. Contributed some ideas to the project which needed to be refined by the supervisor.Good time management skills. Pro-activeness, initiative and enthusiasm were lacking.

41-60% Met regularly with supervisor.Met most of the project 'milestones'.Completed most of the agreed work in the weekly meeting logs.Contributed some independent ideas to the project, some of which had to be refined by the supervisor.Very good time management skills.Showed good pro-activeness, initiative and enthusiasm.

61-80% Met regularly with supervisor Met all of the project 'milestones'. Completed all of the agreed work in the weekly meeting logs. Contributed many good independent ideas to the project, few of which had to be refined by the supervisor. Excellent time management skills. Showed very pro-activeness, initiative and enthusiasm

81-100% Met regularly with supervisor Met all of the project 'milestones'. Completed all of the agreed work in the weekly meeting logs. All ideas to the project were considered excellent by the supervisor. Excellent time management skills. Showed excellent pro-activeness, initiative and enthusiasm

The Project Proposal 5%

This is a mandatory component of the assessment and carries a weighting of 5% of the final project mark. This component must achieve a pass mark of 40% before a student is given official permission to start work on the project.

Marking Scheme	**Weighting**
Introduction/Context	20%
Scope and Objectives	20%
Proposed technical solution	20%
Proposed Implementation plan	20%
Ref and Bib	20%

The Interim Report 10%

This assessment component carries a weighting of 10% of the final project mark.

	Weighting
Introduction, Background /Literature Review:	**15%**

The extent to which the student has clearly understood and stated the aims of the project. Suitability of literature review as it relates to the project with evidence of critical understanding.

0-20%: Poor or irrelevant references with no evidence of critical understanding.

21-40%: Adequate references but no evidence of critical understanding.

41-60%: Good references with good critical understanding with some gaps.

61-80%: Very good references and clear evidence of very good critical understanding with some minor gaps.

81-100%: Evidence of considerable reading and original interpretation. Exceptionally coherently presented background research interleaved with student's own comments and constructive criticisms demonstrating an excellent critical understanding.

Specification and Design: **20%**

The extent to which the specification and design is clear and meets the aims of the project.

0-20%: Poor specification and design that will not meet the project aims

21-40%: Either specification is not relevant or the design is not relevant. Main design decisions are described, but the justifications are not convincing.

41-60%: Adequate specification and design with some misunderstandings or design flaws. The high-level structure of the product and its design are adequately presented. However, they are too brief to serve the purpose.

61-80%: Very good specification and design. The high-level structure of the product and its design are clearly presented. The main design decisions are described, but some justifications are not convincing. Some design flaws that may be easily fixed.

81-100%: Excellent specification and design. Exceptionally clear analysis and specification of the problem being solved. Exceptionally well presented account of the design and high-level structure of the product.

Testing and Evaluation: **10%**

The extent to which testing and evaluation of the product has being carried out.

0-20%: Little or no evidence of testing and evaluation.

21-40%: Testing and evaluation has many major gaps with many inconsistencies and flaws. Most of the testing and evaluation needs to be redone.

41-60%: Adequate testing and evaluation with some major gaps that can be corrected.

61-80%: Very good testing and evaluation with some minor gaps that can be corrected.

81-100%: Extensive testing with close to faultless evaluation of the product.

Progress and Future Work: **20%**

A review of status of the project in terms of the proposed goals and project plan.

0-20%: Poor progress with no concept of future work.

21-40%: Fair progress with a good idea of work to be done. However, progress needs to be improved and greater clarity and feasibility needs to be brought into the future work plan.

41-60%: Good progress with clarity and feasibility of future work plan.

61-80%: Very good progress with a well thought out future work plan.

81-100%: Excellent progress with an excellent well planned future work schedule. There is no doubt that the student is working well and will achieve a high final grade.

Report Quality: **15%**

Evaluation of how well-written and well-organised the report is.

0-20%: Poor standard of writing with poor organisation of the material making difficult reading.

21-40%: Good standard of writing and organisation but with grammatical, spelling and citation errors.

41-60%: Very good standard of writing and organisation with few grammatical, spelling and citation errors.

61-80%: Very good standard of writing and organisation with good grammar, spelling and citations. With corrections is of a publishable standard.

81-100%: Excellent standard of writing and organisation. The report is easily read and is of a publishable standard.

Difficulty Level of Project: **20%**

This is a measure of how substantive, challenging and difficult the project is.

0-20% Topic is not challenging and almost no innovation is required.

21-40% Topic is not very challenging but some innovation is required.

41-60% Topic is challenging and requires innovation and good design skills.

61-80% Topic is very challenging and requires innovation and very good design skills.

81-100% Topic is exceptionally challenging and difficult for this level.

The Final Report 20%

This assessment component carries a weighting of **20%** of the final project mark.

	Weighting
Introduction, Background / Literature Review:	**15%**

The extent to which the student has clearly understood and stated the aims of the project. Suitability of literature review as it relates to the project with evidence of critical understanding.

0-20% Poor or irrelevant references with no evidence of critical understanding.

21-40% Adequate references but no evidence of critical understanding.

41-60% Good references with good critical understanding with some gaps.

61-80% Very good references and clear evidence of very good critical understanding with some minor gaps.

81-100% Evidence of considerable reading and original interpretation. Exceptionally coherently presented background research interleaved with student's own comments and constructive criticisms demonstrating an excellent critical understanding.

Specification, Design and Implementation:	**25%**

The extent to which the specification and design is clear and meets the aims of the project and originality of code.

0-20% Poor specification and design that will not meet the project aims. Very poor coding.

21-40% Either specification is not relevant or the design is not relevant. Main design decisions are described, but the justifications are not convincing. Poor coding.

41-60% Adequate specification and design with some misunderstandings or design flaws. The high-level structure of the product and its design are adequately presented. However, they are too brief to serve the purpose. Adequate implementation.

61-80% Very good specification and design. The high-level structure of the product and its design are clearly presented. The main design decisions are described, but some justifications are not convincing. Some design flaws that may be easily fixed. Good implementation.

81-100% Excellent specification and design. Exceptionally clear analysis and specification of the problem being solved. Exceptionally well presented account of the design, high-level structure of the product and good coding practices.

Testing and Evaluation: **10%**

The extent to which testing and evaluation of the product has being carried out.

0-20% Little or no evidence of testing and evaluation.

21-40% Testing and evaluation has many major gaps with many inconsistencies and flaws. Most of the testing and evaluation needs to be redone.

41-60% Adequate testing and evaluation with some major gaps that can be corrected.

61-80% Very good testing and evaluation with some minor gaps that can be corrected.

81-100% Extensive testing with close to faultless evaluation of the product.

Report Quality: **25%**

Evaluation of how well-written and well-organised the report is.

0-20% Poor standard of writing with poor organisation of the material making difficult reading.

21-40% Good standard of writing and organisation but with grammatical, spelling and citation errors.

41-60% Very good standard of writing and organisation with few grammatical, spelling and citation errors.

61-80% Very good standard of writing and organisation with good grammar, spelling and citations. With corrections is of a publishable standard.

81-100% Excellent standard of writing and organisation. The report is easily read and is of a publishable standard.

Difficulty Level of the Project: **25%**

This is a measure of how substantive, challenging and difficult the project is.

0-20% Topic is not challenging and almost no innovation is required.

21-40% Topic is not very challenging but some innovation is required.

41-60% Topic is challenging and requires innovation and good design skills.

61-80% Topic is very challenging and requires innovation and very good design skills.

81-100% Topic is exceptionally challenging and difficult for this level.

The Presentation 10%

This assessment component carries a weighting of 10% of the final project mark.

	Weighting
Topic introduced clearly and at the right level	**20%**
Key points conveyed clearly and logically	**20%**
Quality of Slides	**20%**
Effective demonstration of product	**20%**
Questions answered well	**20%**

The Project Product/Artefact 50%

This assessment component carries a weighting of 50% of the final project mark.

	Weighting
Functionality, including the level of difficulty	**40%**
User Interface	**15%**
Performance/Efficiency	**15%**
Stability	**10%**
Implementation Quality	**20%**