## Important Dates (all subject to change)

|  |  |
| --- | --- |
| **Final Dissertation Handed in to main office and submitted to Turnitin by** | Tuesday 9th May 2017 4 pm |
| **Final Dissertation submitted to Turnitin by** | Wednesday 10th May 2017 4pm |
| **Demonstration and Expo Day** | Thursday 11th May 2017 |

## Project System Demonstration

Each student will be required to give a demonstration of their completed system to their Supervisor and to their Assessor on Thursday 11th May 2017 (demonstration day). The supervisor and assessor will assign a mark to the system produced, based on how it has met the project goals and on the quality of the product. If a system is incomplete but partially demonstrable then marks may be awarded for the completed portion of the system. Local employers from industry may attend system demonstrations. Demonstrations provide an opportunity for you to bring your work and skills to the attention of employers.

Title of Dissertation

A dissertation submitted in partial fulfilment of

the requirements for the degree of

BACHELOR OF ENGINEERING in Computer Science

in

The Queen's University of Belfast

by

Saoirse McCann

9TH May 2017

**Declaration Cover Sheet (Declaration of Academic Integrity)**

Attached to the end of this document

**Acknowledgements**

To those who have helped the author during the project and the preparation of the dissertation and to anybody who has given financial support.

**Abstract**

A summary (100 words) which provides an outline of the subject matter and the results, findings and/or conclusions of the dissertation.

**Contents**

A complete list of chapters, sections, appendices etc. with page numbers.

**Main Text**

The main body of the dissertation as described below organised as a sequence of chapters each normally containing several sections. The main text should not normally exceed 40 pages (it may be less).

**References**

A list of references to documents (books, papers, web pages etc.) which are referred to in the main body of the text. Use the IEEE citation style as detailed here <https://www.ieee.org/documents/ieeecitationref.pdf>

**The first citation should be the URL to the software code repository which should contain the code and any other resource required to run the software.**

**Appendices**

These should include as appropriate:

(a) A User manual giving details on how to use the software, including details of input data, output formats and error messages.

(b) Test results, if appropriate.

(c) Other information which is not convenient or appropriate to include in the main body of the dissertation.

(d) Minutes of the Project meetings.

**The Main Text**

**The Examiners will be looking for quality rather than quantity in your dissertation.** You should try to keep the main text of your dissertation as concise as possible. Spelling should be correct, sentences grammatical, and formulae, figures and tables accurate. All figures, tables and appendices should be given numbers and headings. Your writing should be precise, concise and fluent. Avoid the first person (i.e. say what was done, rather than that you did it). Some dissertations may be organised differently from that headings given below. In particular, some parts might have more emphasis than others for some projects Further advice will be available from your supervisor. Below is a sample of what might be expected.

**1.0 Introduction and Problem Specification**

Background material should be given which introduces the problem area, its context and background. You should identify the particular problem under consideration along with information about the problem area that enables the reader to understand the problem scope and nature. If your project involves a particular domain, algorithm, method theory etc., you may describe it in the introduction (alternatively or additionally, it may be described later, if appropriate). For best marks the student should show that they have systematically researched and fully analysed the problem, synthesising the relevant information.

**2.0 System Requirements Specification**

You should provide a precise description of the system developed. These may have been written much earlier but for the dissertation they should be updated to match the final system delivered. You should list any assumptions made about the problem and any system constraints. Overall your requirements, functional AND non-functional should be complete, clear, accurate, feasible and objectively verifiable. Content depends on your project but could include:

* A complete set of function definitions (as use cases if preferred), as far as possible written so as to be testable
* Measurable and testable non-functional requirements
* Description of interfaces required such as with other software or systems
* Any specific user interface requirement
* User characteristics

The target to aim for here is that your requirements could be the basis for a contract or handing to external developers to complete.

**3. Design**

This section should describe the design of your proposed system. Normally this several parts, depending on your project:

1. Architectural Description of the system – textual and/or diagrammatic. This could be a simple diagram showing the components and how they relate or it could describe the choice of architectural style or pattern used.
2. User Interface Design (if applicable). Show sketches of the design or screenshots with explanations of choices made, if necessary.
3. Software System Design.

The role of each component and the interfaces between components should be described. There should be a clear correlation between your design and your specification.

The design should be linked to requirements and, where applicable give a critical discussion of key design decisions/styles/patterns used. There might be a data model, a UI design, details of external interfaces, and of other important issues e.g. concurrency, event handling, error and exception handling, security, data persistence. No particular notation or tool is mandated.

**4. Implementation and Testing**

You should describe any languages, packages, and libraries etc. that are used in the development of your system. There is no need to describe your code in detail. You may highlight data types and implementation techniques that are of special interest. If appropriate, you may provide:

1. Choice of implementation language(s)/ development environment(s)
2. Use of software libraries;
3. Key implementation decisions
4. A description of how some important functions and algorithms were implemented.
5. A description of how each component is implemented.
6. Discussion of Test Approach e.g. unit testing, system testing, regression testing etc; Test cases described; Testing tools used. Evidence that testing coverage was complete.

Program code can be accessed by the assessors via the git repository **so there is no need to print code listings**. It is recommended that you comment code appropriately. Programs should be written in a clear style with good program structure and well-defined data structures. The program code should reflect its design.

**5. System Evaluation and Experimental Results**

Different projects will have a different emphasis. In all cases you are expected to provide empirical results and to draw conclusions from those results. You may use your software to generate experimental results. Be sure to describe the methodology of your evaluation or experimentation. An experiment is typically described in terms of its goals, the hypotheses being tested, the subject of the experiment, what is being measured and what is controlled, the results obtained and the analysis and interpretation of those results. Alternatively, you can assess the product in terms of how it compares with other similar products and/or in terms of user feedback (e.g. via a survey) or some measurable quality aspect such performance efficiency or reliability. Your supervisor can guide you on what is appropriate, but typically the very best projects have shown results that could be publishable with little or no work or show an exemplary empirically based evaluation of a software product

**6. Conclusion**

A general summary evaluation of the success of the project should be given with respect to criteria identified in the introduction. A discussion of the significance of your experimental results may be appropriate. Do they agree with other previous work or ideas? How does your system compare with similar ones? An evaluation of the hardware/software environment and language used may be presented, if appropriate. Draw conclusions on the process used in the project as well. What went well? What did not go well? What are the strengths of your solution or conclusions? What are the weaknesses? Suggestions for further work should also be discussed. You can be critical and draw a negative conclusion. Not all projects will be successful. A well-explained failure is as an acceptable an outcome as a spectacular success. Assessors are looking for excellence in a critical appraisal of the work and a convincing argument for the significance of contribution in the context of wider work.

Any publication of results of the student's work is left to the discretion of the supervisor.

## What You are Required to Submit: A Summary

1. TWO copies of your bound dissertation to the CS main office before Tuesday 9th May 2017 4 pm**.** (max. 45 pages)**.**
2. An electronic submission of your dissertation via Turnitin (details of how to do that by email/qol) by Wednesday 10th May 2017 4pm.
3. The Demonstration Day to Supervisors and Assessors will be held on Thursday 11th May 2017. **All students are required to attend demonstration day.** Details of the schedule will appear closer to the time.
4. A submission is not considered valid unless the Dissertation is handed into the Reception in the Computer Science building and the project register is signed. Dissertations must not be left in a lecturer's pigeon-hole. Dissertations must not be left with another member of university staff.

## Dissertation Submission Format

**Two** spiral bound copies of your dissertation. Your name and the course title should be written on the **front cover**.

**Document Layout – Documents not conforming to this will be returned.**

Documents must:

* be prepared using a word processor.
* Use Times Roman 12pt font.
* Have a page number on each page
* Have a Justified Layout with 2.5 cm (one inch) margin on all sides
* Must have a line spacing: 1.5 lines

Please read your submissions carefully and check document spelling using spell checking tools. The main text **should not** exceed 45 pages.

**Additionally, you are required to submit a pdf version via the Turnitin web service. More details of how to do this will follow. This is to check for plagiarism. Be aware that this service detects and highlights any text that is similar to existing sources.**

## Background Reading

Supervisors may provide references to suitable background material for the project. However, it is the student’s responsibility to read around the area using books, articles and web based material. There are various search tools available via the library site (Use the Article search to obtain research papers). Google Scholar is also very useful.

## Use of other resources

* You must not make any use of any projects which are available online unless approved by your supervisor (any such projects should be referenced clearly). Project submissions will be checked for plagiarism (via the Turnitin).
* DO NOT copy text from other sources unless placed in quotes and cited.
* Even if you write something in your own words but it is based on an existing source, please place a citation in the document to the source.

**SCHOOL OF ELECTRONICS, ELECTRICAL ENGINEERING and COMPUTER SCIENCE**

**CSC3002 – COMPUTER SCIENCE PROJECT**

**Dissertation Cover Sheet**

A signed and completed cover sheet must accompany the submission of the Software Engineering dissertation submitted for assessment.

Work submitted without a cover sheet will **NOT** be marked.

Student Name: Student Number:

Project Title:

Supervisor:

**Declaration of Academic Integrity**

Before signing the declaration below please check that the submission:

1. Has a full bibliography attached laid out according to the guidelines specified in the Student Project Handbook
2. Contains full acknowledgement of all secondary sources used (paper-based and electronic)
3. Does not exceed the specified page limit
4. Is clearly presented and proof-read
5. Is submitted on, or before, the specified or agreed due date. Late submissions will only be accepted in exceptional circumstances or where a deferment has been granted in advance.

**I declare that I have read both the University and the School of Electronics, Electrical Engineering and Computer Science guidelines on plagiarism - http://www.qub.ac.uk/schools/eeecs/Education/StudentStudyInformation/Plagiarism/ - and that the attached submission is my own original work. No part of it has been submitted for any other assignment and I have acknowledged in my notes and bibliography all written and electronic sources used.**

*Student’s signature* *Date of submission*