

| CM2603 Data Science Group Project<br>Thesis Specification (2022/2023) |  |
|---|--|
| Module Leader   | Prasan Yapa  |
| Stage   | Year 2   |
| Unit (Group/Individual)   | Group  |
| Weighing  | 70%  |
| Qualifying Mark   | 40   |
| Learning Outcomes Covered in this Assignment:                         | Develop necessary skills to collaborate within a team<br>Present an analysis of the user centered design process, cognitive aspects, modelling, and prototyping used to produce applications related to Data Science with a reflection on legal, ethical, professional, and social issues. |
| Handed Out Date   | 1 <sup>st</sup> Week   |
| Due Date  | 10 <sup>th</sup> Week  |
| Expected Deliverable  | Report [No word count]   |
| Method of Submission  | A report in pdf version and respective coding in zip format should be submitted to the Moodle  |
| Method of Feedback and Due Date                                       | A viva-voce examination  |
| BCS Criteria(Pending) Met by this Assignment                          |  |

### Penalty for Late Submission

Coursework received late without valid reason shall not be accepted and shall receive no grade, but shall count as one of the assessment opportunities prescribed in paragraph 9 of **RGU Academic Regulation A4 section 4.3**.

It is recognized that on occasion, illness, personal crisis or other valid circumstances can mean that you fail to submit and/or attend an assessment on time. In such cases you must inform the School of any extenuating circumstances through a **Coursework Extension Form** or a **Deferral Request Form**, with valid evidence for non-submission of an assessment up to a maximum of five working days after the assessment submission date. This information will be reported to the relevant Assessment Board that will decide whether a student should be allowed to reattempt without penalty (a deferral). For more detailed information regarding University Assessment Regulations and accessing forms, please refer to the following website: [www.rgu.ac.uk/academicregulations](http://www.rgu.ac.uk/academicregulations)

### Grading

Marks will be awarded for the coursework based on the provided Grading Grid. These marks will be mapped onto a grade scale from A-F as determined by the individual module coordinator.

## Thesis Structure

The thesis structure can be divided into 3 main sections.

Part 1 – Coversheet to List of Glossaries (For numbering use lowercase roman letters)

Part 2 – Introduction to Conclusion (90 pages maximum)

Part 3 – Appendices (Numbered using uppercase roman letters, 20 pages maximum)

### Part 1

1. Cover Page
2. Declaration Page
3. Abstract + Keywords
4. Acknowledgement
5. Table of Contents
6. List of Figures
7. List of Tables
8. List of Glossary

Page numbering starts from Declaration Page, and it should be numbered using lowercase **Roman Numerals**.

### Part 2

1. *Introduction (10 pages maximum)*
  - 1.1 Chapter Overview
  - 1.2 Problem Domain / Background
  - 1.3 Problem Definition
  - 1.4 Research Motivation
  - 1.5 Existing Work
  - 1.6 Research Gap
  - 1.7 Contribution to the body of knowledge
  - 1.8 Research Challenge
  - 1.9 Research Questions
  - 1.10 Research Aim
  - 1.11 Research Objectives
  - 1.12 Project Scope
    - 1.12.1 In Scope
    - 1.12.2 Out Scope
    - 1.12.3 Prototype Diagram
  - 1.13 Resource Requirements
    - 1.13.1 Hardware Requirements
    - 1.13.2 Software Requirements
    - 1.13.3 Data Requirements

#### 1.13.4 Skill Requirements

- 1.14 Chapter Summary
- 2. *Literature Review (15 pages maximum)*
  - 2.1 Chapter Overview
  - 2.2 Concept Map
  - 2.3 Problem Domain
  - 2.4 Existing Work
  - 2.5 Technology/Approach/Algorithm Review
  - 2.6 Tools and Techniques
  - 2.7 Chapter Summary
- 3. *Methodology (3 pages maximum)*
  - 3.1 Chapter Overview
  - 3.2 Research Methodology
  - 3.3 Development Methodology
  - 3.4 Project Management Methodology
  - 3.5 Chapter Summary
- 4. *Software Requirements Specification (15 pages maximum)*
  - 4.1 Chapter Overview
  - 4.2 Rich Picture
  - 4.3 Stakeholder Analysis
  - 4.4 Selection of Requirement Elicitation Techniques
  - 4.5 Discussion of Results
  - 4.6 Summary of Findings
  - 4.7 Context Diagram
  - 4.8 Use Case Diagram
  - 4.9 Functional Requirements
  - 4.10 Non-Functional Requirements
  - 4.11 Chapter Summary
- 5. *Social, Legal, Ethical and Professional Issues (2 pages maximum)*
  - 5.1 Chapter overview
  - 5.2 SLEP Issues and Mitigation
  - 5.3 Chapter Summary
- 6. *System Architecture & Design*
  - 6.1 Chapter Overview
  - 6.2 Design Goals
  - 6.3 System Architecture Design
  - 6.4 System Design
    - 6.4.1 Choice of Design Paradigm
    - 6.4.2 Component Diagram
    - 6.4.3 Class Diagram
    - 6.4.4 Sequence Diagram
    - 6.4.5 UI Design
    - 6.4.6 User Experience

- 6.4.7 Process Flow Chart
- 6.5 Chapter Summary
- 7. *Implementation*
  - 7.1 Chapter Overview
  - 7.2 Technology Selection
    - 7.2.1 Technology Stack
    - 7.2.2 Data Selection
    - 7.2.3 Selection of Development Framework
    - 7.2.4 Programming Language
    - 7.2.5 Libraries
    - 7.2.6 IDE
    - 7.2.7 Summary of Technology Selection (Tabular Format)
  - 7.3 Implementation of Core Functionalities (Use Pseudocodes. Don't copy paste code segments)
  - 7.4 Chapter Summary
- 8. *Testing*
  - 8.1 Chapter Overview
  - 8.2 Objectives and Goals of Testing
  - 8.3 Testing Criteria
  - 8.4 Model Evaluation
    - 8.4.1 Confusion Matrix (Accuracy/F1Score/Precision/Recall)
  - 8.5 Benchmarking
  - 8.6 Functional Testing
  - 8.7 Module and Integration Testing
  - 8.8 Non-Functional Testing
    - 8.8.1 Accuracy Testing
    - 8.8.2 Performance Testing
    - 8.8.3 Load Balancing
  - 8.9 Limitations If Any
  - 8.10 Chapter Summary
- 9. *Evaluation*
  - 9.1 Chapter Overview
  - 9.2 Evaluation Methodology and Approach
  - 9.3 Evaluation Criteria
  - 9.4 Self-Evaluation
  - 9.5 Selection of Evaluators
  - 9.6 Evaluation Results
  - 9.7 Limitations
  - 9.8 Evaluation on Functional Requirements
  - 9.9 Evaluation on Non-Functional Requirements
  - 9.10 Chapter Summary
- 10. *Conclusion*
  - 10.1 Chapter Overview

- 10.2 Achievements of Research Aims & Objectives
- 10.3 Utilization of Knowledge from the Course
- 10.4 Use of Existing Skills
- 10.5 Use of New Skills (Technical skills should be given preference)
- 10.6 Achievement of Learning Outcomes
- 10.7 Problems and Challenges Faced
- 10.8 Deviations
- 10.9 Limitations of the Development
- 10.10 Future Enhancements
- 10.11 Achievement of the contribution to body of knowledge
- 10.12 Individual Contribution
- 10.13 Chapter Summary

Page numbering starts from Introduction – Chapter Overview, and it should be numbered using **Arabic Numerals**.

### **Part 3**

*Appendix Part 1:* References (not bibliography) – References are the ones which correspond to the citations in the document, referencing style is Harvard reference, not included in the 20-page count.

*Appendix Part 2:* Any Other Details Relevant for the Project. (20 pages maximum)

Numbered using uppercase **Roman Numerals**.

### **General Guidelines**

*Page Size:* A4

*Margins:* 4.0 cm from Left and 2.5 cm from Top, Bottom and Right

*Line Spacing:* 1.5

*Fonts:* A conventional font type must be used, and text should be in **Times New Roman**.

- *Chapter Heading:* All Capital—14 Font size, Bold
- *Section Heading:* Sentence case-14 Font size, Bold
- *Sub-Section Heading:* Sentence case-12 Font size, Bold
- *Body Text:* Sentence case - 12 Font size
- *Tables and Illustrations:* Font size may be varied while maintaining legibility

**APA Referencing Style** should be used for Figures and Tables.