MIDLANDS STATE UNIVERSITY

FACULTY OF SCIENCE AND TECHNOLOGY

COMPUTER SCIENCE DEPARTMENT

HCSE236 / HCSCI240 GUIDELINES
HARDWARE/MACHINE LEARNING BASED
REVISED MAY 2025

Preamble

Students are expected to produce a fully functional project that has an accompanying documentation that clearly outlines the architecture of the product i.e. if software system is developed, it should have an accompanying system manual, user manual and a comprehensive help page/section in your documentation.

Supervision

Students must ensure that upon the approval of their proposals they collect and hand them over to the allocated supervisors. Candidates are encouraged to work with their supervisors and meet the suggested deadlines. No student is expected to proceed to the next chapter of their Documentation without the approval of the preceding chapter by the supervisor. After every chapter the supervisor and the student are required to sign a supervision form, as a way to authenticate the completion of a chapter. Candidates will only be allowed to defend their projects after their supervisor has signed the final draft of the research on the Approval page.

Documentation Style

There are two ways that you can use to present your headings sub headings

1) **Bold ONLY**
2) Underline ONLY

(NOT BOTH)

A candidate is supposed to choose ONE way of presenting sub headings. The style must be consistent throughout the Documentation document. Each Main heading MUST start on a fresh page and must be **BOLD**

MAIN Headings should be of font size 14 and Sub headings of font size 12. E.g **Chapter 4: Design Phase (14)** Introduction (12). The font style used in the document must be consistent as recommended.

Each and every table, diagram, graph, chart etc MUST be **numbered** and **Labelled**. The numbering must depend with the Chapter in which the item is in Eg diagram in Chapter 1 can be numbered as **Figure 1.1: Organogram**. Note that the First **1** denotes the chapter in which the diagram falls under and the Last **1** tells us about the count of the diagram in the chapter, so literally **Figure 1.1** means the figure is in Chapter **1** and its diagram number **1**. This means that the next diagram must have a **.2** suffix, thus **Figure 1.2**, and the labelling of course is the description of the diagram in question. **Table captions** should be at the top of the table and **Figure captions** at the bottom of the figure. This must be consistent throughout the document.
Note that * Each and every heading, sub heading must be numbered.

The Structure of Page Arrangements for the Project Documentation

The sequel of pages and their hierarchical arrangement play a pivotal role in structuring the project report properly and interlinking the vital elements of the report in the best possible format.

Therefore, the best structure and format that has been devised after extensively selecting studying, analyzing and structuring myriad and versatile project reports include the following sequel of elements:

1. First Cover Page
2. Second Cover Page
3. Abstract
4. Declaration
5. Approval or Certification
6. Acknowledgements
7. Dedication
8. Table of Contents
9. List of Figures
10. List of Tables
11. List of Symbols (optional)
12. List of Abbreviations / Acronyms
13. Body of the Project (Chapters)
14. References
15. Appendices

In the above structure, the first nine pages are known as preliminary pages, and are usually numbered with the Roman numerals as i, ii, iii, iv and so on, except the title page as shown in the next section.

NB. ***Each of the topics above must have a different page and must be paginated using lowercase Roman Numerals except for the*** **COVER PAGES**

All the contents of the project report should be in 'Times New Romans' font, and the size should be 12 throughout. All the text should be left with the 'justified' option with line spacing of 1.5, but for the Captions single spacing should be opted.

Cover pages

All the first letters of each word on the title page must be capitalized, and the title page should not contain page numbers. The other aspects of the title page like the title should be like a report, and should contain the name of the organization to which the project is intended to be submitted.

Next, the course name should be followed by the student's name, his roll number, guide's name and designation, and at the end of the title page, organization's logo and address should be written, as shown in the above figure.

The first and second cover pages are found at the end of this document.

Abstract

Abstract represents a summarized report of the complete project in a very concise and informative format covering main objective and aim of the project, the background information, processes and methods used, and methodologies implemented, followed with a brief conclusion of two to three lines talking about the results and scope of the project.

The entire abstract of a project report should be written in about 250 to 350 words, and therefore, should not exceed any further.

Declaration and Approval

The declaration is a statement written by the student who declares that he or she has sincerely completed his or her project. The declaration statement concludes with the signature of the student.

NB: No alterations should be made to the declaration statement.

I, **Student Name**, hereby declare that I am the sole author of this dissertation. I authorise the **Midlands State University** to lend this dissertation to other institutions or individuals for the purpose of scholarly research.

Signature: …… Date: ……

Approval

The Approval page is also a confirmation from the head of the department, guide, and external examiner about their acceptance of the project. The approval page is endorsed with the signatures of the heads confirming their approval of the project.

NB: No alterations should be made to the approval statement.

This dissertation, entitled **"Title of Project"** by **Student Name** meets the regulations governing the award of the degree of **BSc Honours in Programme Title** of the **Midlands State University**, and is approved for its contribution to knowledge and literary presentation.

Supervisor's Signature: ……. Date: ……

Acknowledgements

The acknowledgements page depicts the gratitude, respect and thankfulness of the student towards the people who helped him in pursuing the project successfully and ensured successful completion and implementation of the project. In this page, the author expresses his gratitude and concern by using praising and thanksgiving words.

Dedication

The dedication, as the name suggests, allows you to dedicate your research to someone (or multiple people). A dedication is basically a personal tribute to someone or a group of people.

Table of Contents, List of Figures and Tables

Table of contents provides a complete sketch of the title, subtitles, headings, topics and the project elements that are involved in those headings. In other words, different sections and their titles are included here.

The whole project report in a nutshell is made known in the table of contents section, and therefore, it should include the titles of the first, second and third level headers, and must give a clear picture of the report to the reader.

Similarly, a list of figures and tables helps the reader to locate diagrams, charts and tables in the document, and therefore, it should be numbered accordingly by chapter and page number. It is not necessary to indicate page numbers for symbols and abbreviations used in the document.

The Main Body of the Report

Students are expected to use reported speech/past tense when documenting. The main body of the project should comprise several chapters with the corresponding titles, and each page within these chapters must be numbered in numerals as page numbers. The usual way of presenting these chapters is given below.

Chapter 1: Introduction

This chapter should contain brief background information about the project, the methodology implemented for problem solving and the outlines of the results and future scope of the project. It rarely contains drawings and graphical illustrations. Could consist of the following heading but not limited to these:

1.1 Introduction

- This briefly introduces the topic and highlights what is to be covered in the chapter.

1.2 Background of the study

- This gives a brief description of researches or systems which have been implemented before in the area of study including the current system being investigated.
- Must give a preliminary literature review
- Identify gaps in previous studies and or shortcomings of previous studies

1.3 Problem definition

- Should be one short paragraph that clearly states the problem.
- 5-7 lines

1.4 Aim

- Overall goal of the research or project undertaking.
- Should be a single statement outlining the aim

1.5 Objectives

- Note that objectives must be Specific, Measurable, Achievable, Relevant, Time sensitive (S.M.A.R.T) and seek to address the problems identified
- Should be phrased in a way they start with the word "To"
- Objectives should be derived from the actual functionality of the system
- Minimum number of 3 distinct objectives
- Maximum number of 5 distinct objectives
- Inputs (eg. data capturing) and outputs (eg. reports) should not be part of the objectives. Only processes should be put as objectives

1.6 Limitations

- Highlight any hindrance in conducting the research project and steps taken to address them

1.7 Delimitations

- Highlight the restrictions, assumptions and or boundaries of your research undertaking

1.8 Development Instruments

- Highlight the hardware and software tools to be used

1.9 Work Plan

- Expected timeline and show the Gantt chart

1.10 Justification / Rationale

- Provide reasons or rationale why you are carrying out this research, the business value and the importance of the results as well as its contribution to the existing body of knowledge.

1.11 Summary

- Summary of the chapter
- Also highlight what will be found in the next chapter

Chapter 2: Literature Review

Evaluate the current work with the previous ones. It depicts how the current implementations overcome the previous problems and limitations of the solution. It must be clear and simple to understand. Use the funnel approach. Could consist of the following heading but not limited to these:

2.1 Introduction

This briefly introduces the literature review, gives definition of terms or concepts to be used in the research and highlights what is to be covered in the chapter.

2.2 Analysis of Study or Related Work

N.B: This is an example sub topic, it will depend on the author, area of study.
Students are expected to provide an analysis of usage of systems at International, Regional and local levels.
Critically review literature on existing solutions in the problem domain to help identify any gaps which one can target with the proposed work. It depicts how the current implementations overcome the previous problems and limitations of the solutions. It must be clear and simple to understand. Use the funnel approach.

2.3 Gaps Identified

- Indicate the gaps which have been identified in the analysis of study which the project wants to address.

2.4 Proposed Work

Briefly explain the proposed work as a possible solution to any of the gaps identified.

2.4.1 Feasibility Analysis

2.4.1.1 Technical Feasibility

2.4.1.2 Economic Feasibility

In brief focusing on proposed financial costs and foreseen financial benefit

2.4.1.3 Social Feasibility

2.4.1.4 Operational Feasibility

2.4.1.5 Overview of Feasibility Study

2.5 Summary

- This is a summary of the main points discussed in the analysis of study and researcher identified gaps.
- Highlight what will be found in the next chapter

Chapter 3: Methodology

This chapter explains the hardware components and software tools to be used in depth (i.e. the basic theoretical information about each and every software or hardware component to be used needs to be explained). The system architecture, activity diagrams, flow chart diagrams, algorithm design and circuit design are also included in this section. If the research involves gathering information from users the tools to be used should also be discussed here. The research approach to be followed can also be explained however this is optional.

3.1 Introduction

- This briefly introduces the section, gives definition of terms or concepts to be used in the methodology and highlights what is to be covered in the chapter.

3.2 Hardware and Software Requirements

- This describes the hardware devices or components to be used and mentions their specification.

- This also describes the software to be used in linking the hardware components or as subsystems of the full design.

3.3 Proposed System Architecture

- This highlights the proposed full hardware and or software interaction in the form of an architecture.

3.4 Process Analysis / Data Collection and Preprocessing

- This explains how activities are going to occur when implementing the proposed solution in the form of activity diagrams.
- In the case of machine learning based, highlight the datasets available which can be used in creating training and test datasets as well as the data preprocessing requirements / procedures, if any.

3.5 Algorithm Design

- This explains the specific custom-made or standardized method to be applied in the proposed solution with justification for choice of method. This can include pseudocode and flow charts.

3.6 Circuit Design / Model Designing

- This explains the overall circuit architecture to be implemented and clearly shows all relevant hardware components arrangement or full code in an appropriate programming language showing how the model was built.

3.7 Simulation Results / Model Training and Validation

- This shows the simulations done to evaluate hardware system performance with the simulation results being recorded for further analysis, OR the model training and validation runs made and the results showing the model's training and validation performance in terms of accuracy and loss.

3.8 Summary

- Summary of the chapter.
- Introduce the next chapter.

Chapter 4: Results and Discussion

This section explains the implementation carried out in terms of coding or simulations or experiments done. The results obtained need to be explained in depth and illustrations from actual implementation shown. Also indicate the testing procedure and evaluations made to the hardware or software components. The results can also be indicated in tables, figures or graphs etc. The chapter should have a conclusion which summarizes the results obtained. Sub-headings can include the following but not limited to these:

4.1 Introduction

- This briefly introduces the section and highlights what is to be covered in the chapter.

4.2 Test Procedures / Model Testing

- This describes the actual implementation or experiments carried out in testing the proposed solution to evaluate its performance in the intended tasks. Should also illustrate actual circuit set up, code snippets or simulation procedures.
- In the case of a model, this describes the model testing procedure highlighting the size of the test dataset (not the dataset used for training and validation). Should also

include the code, in an appropriate programming language, used for conducting the model test runs.

4.3 Results Presentation

- Present results from testing procedure. Results can be in different forms: Images, graphs, tables, etc.
- Also include a comparative analysis of results or system/model performance with those of existing solutions in the problem domain.

4.4 Discussion of Findings

- This focuses on evaluating the findings obtained from implementation and testing. A comparison with covered related work results and other standardized benchmarks is a necessity.

4.5 Summary

- Summary of implementation and results obtained.
- Introduce the next chapter

Chapter 5: Summary, Conclusion and Recommendations

This section summarizes the whole report by highlighting all the chapters. It mentions the significance and the importance of the project while highlighting the achievements made in reference to the objectives set out in chapter (1) one. This chapter also includes the recommendations which can be made to the applicable audience or future work which the researcher (or other researchers) seeks to pursue.

5.1.Summary of Results

- Summarizes research results

5.2.Significance of Project

- This describes how the project has or will impact the specific audience and society at large. It also seeks to answer the questions; What are the research's contributions to the existing body of knowledge? Have objectives been met? And what challenges were encountered during the research?

5.3.Conclusion

- Draw overall conclusions for the entire project while mentioning if it was a success or failure and justify. Give your personal opinion on this.

5.4.Recommendations and Future Work

- Describe the recommendations for implementation/deployment of the proposed solution by target users or other researchers, system updates/upgrades, scheduled maintenance plan(s), user support and system performance feedback, etc.
- Also mention what you intend to improve on in future undertakings with regard to your project.

Referencing

The project report must be considered as a very standard report, and therefore, it should follow all rules, guidelines and protocols of gathering and presenting information, and implementing that and drawing conclusions out of it.

All these activities require appropriate and authentic sources of information, and that particular information must be referenced or cited according to the copyrights and other guidelines using the IEEE Referencing Style. Therefore, to make the report original, it should be free from plagiarism and must follow standard citations and guidelines of citations to represent the reference names.

References should not be more than 10 years.

Wikipedia is not an academic website so don't include information from that site,

educational sites have an extension .edu, ac , etc eg http://nile.wpi.edu

Appendices

The appendices of a project report should be written in Times New Roman format of font size 12, and it should contain the information which is appropriate and added to the main text like the user manual, program code, raw data, and data gathering instruments. Sub-headings can include but not limited to the following:

Appendix A: User Manual
Appendix B: Code Snippets
Appendix C: Data Collection Guides
Appendix D: Turnitin Similarity
Appendix E: Turnitin AI Writing Report

Final Stage

- Documentation Binding
- Oral presentation (40%)
- Documentation document (60%)

These are the exceptional and very informative guidelines about drafting a project report along with a very simple, user-friendly project report format for those students who are earnestly seeking project report format.

DISSERTATION/PROJECT TITLE

BY

FULL NAME (REG NUMBER)

AND

FULL NAME (REG NUMBER)

DISSERTATION/PROJECT TITLE

BY

STUDENT NAME (REG NUMBER)

Submitted in partial fulfilment of the requirements for the degree of

BSc Honors in Programme Title

Department of Computer Science

in the

Faculty of Science and Technology

at the

Midlands State University

Gweru

Month Year

Supervisor: **Supervisor Name** (optional)