THE TECHNICAL UNIVERSITY OF KENYA

PROJECT GUIDELINES FOR (SCIT)

PROJECT A: PROPOSAL WRITING

(CHAPTER ONE – CHAPTER 4 AND INCLUDE CONCLUSION AND REFERENCES)

The students shall select and effect a project under supervision of SCIT. The Trade project shall be Computer research based project to identify and analyze a computing problem, design and implement a system for an organization. The students shall submit a trade project proposal. The student shall time to time submit each section / phase to the supervisor. This shall be graded by coursework. This project prepares the students for the real world market

Proposal writing is intensive and extensive, it should also be informative and persuasive as you are to educate the reader as well as convince them that what you are presenting as a solution is practical and appropriate.

Problem statement should be clear and practical. Student should be able to explain the methodology of solving the problem

The effectiveness of the proposal is to show your ability in explaining the nature, context and scope of the project.

The proposal is written in future tense because this is what the learner intends to do in the future which are approved by the supervisor, then handed over to the director of school of computing and Technologies in two copied ahead of presentation.

PROJECT B: COMPLETE PROJECT

Covers (chapter one - chapter Eight)

[This is the second and final phase of the trade project work. The student shall submit a report of the entire work carried out over the project period. Students shall give a complete constructed and tested model, prototype, as a final product of the project work. The students will be expected to demonstrate the project to the panel of lecturers (examiners). The grading will use the documentation (report) and the demonstration.]

The project report Documentation is written in past tense because this is what the learner has done and the product developed in the project which are approved by the supervisor, then handed over director of school of computing and Technologies in two copied ahead of presentation.

PROJECT PAPER SECTIONS

1 TITLE PAGE / COVER PAGE

Should have the correct title, student details, and the degree programme with a statement on what the project should fulfil

TECHNICAL UNIVERSITY OF KENYA

FACULTY OF APPLIED SCIENCES AND TECHNOLOGY

SCHOOL OF COMPUTING AND INFORMATION TECHNOLOGY

DEPARTMENT OF COMPUTER SCIENCE AND INFORMATICS

PROJECT TITLE

PRESENTED BY:

STUDENT NAME:

REG NO:

SUPERVISED BY:

PROPOSAL SUBMITTED TO THE SCHOOL OF COMPUTING AND INFORMATION TECHNOLOGY IN PARTICIAL FULFILLEMENT FOR THE BACHELOR OF / DIPLOMA IN TECHNOLOGY IN COMPUTER TECHNOLOGY PROJECT OF THE TECHNICAL UNIVERSITY OF KENYA

SUBMISSION DATE:

7 January 2021

2 DECLARATION PAGE (On a New Page)

The page contains the student's declaration of the originality of the Project Report.

This declaration page **must be signed** by the student.

3 DEDICATION PAGE (OPTIONAL) (On a New Page)

Students may include an optional dedication for the Project Report. The dedication must be brief, not more than one paragraph and must not contain any number, chart or photograph.

4 ACKNOWLEDGEMENT PAGE (OPTIONAL) (On a New Page)

Here you have the opportunity to thank the various people who have helped in the development of the project. It might include specific individuals who have given information, offered insights, or generally been supportive. Gratitude may be expressed to groups of people, like those who were studied, or fellow students.

5 List of Abbreviations (On a New Page)

Consist of descriptions of word that are abbreviated or truncated or shortened in the document.

6 List of Figures (On a New Page)

Section consists of list of the figures or Illustrations such as diagrams, photographs, drawings, graphs, charts, maps etc used in the report indicating figure no, its title and page no found.

7 List of Tables (On a New Page)

Section consists of list of the table used in the report, indicating table no, its title and page no found.

8 Abstract (On a New Page)

9 TABLE OF CONTENT (On a New Page)

Table of content identifies the contents and organization of document. It is made up of

• section headings

• page numbers

The table of content **SHOULD BE GENERATED** using the respective word processor.

CHAPTER ONE: INTRODUCTION

Chapter one should consist of the following sections

1.1 **Introduction:** Introduction of the project area
How it operates and how the problem exists

1.2 Background of the Study

This is usually detailed background information about the project/ research area and about the client. It should be clear on what business the client is involved in and how operations are currently conducted.

1.1 Background: Give a background of the organization i.e. when it was started, reasons for starting, where it is located, how it started (history) and its growth for it to require a system. Include organizational chart

1.2 Overview of existing system: Discuss how the existing system operates outlining all the procedures which have to be followed. This section presents and summarizes the problem you intend to solve and your solution to that problem. Clearly support your statement with documentation and references, and include a review of the literature that supports the need for the study. Outline the problems / disadvantages in existing system.

1.3 Overview of the proposed system: Discuss how the proposed system will operate outlining all the procedures which have to be followed. This section presents and summarizes the benefits of the proposed system.

1.3 Problem Statement(s)

This is a statement of the problem the project is intended to address. It should clearly show the problem in the light of the project research and its contribution to the solution. Ideally it should originate from the way the organization currently performs its functions. Each

problem should be stated clearly with a brief explanation on how it arises from the functions be undertaken.

1.4 Objectives: -

Clear, concise "SMART" objectives should be provided including project/ research and system development related objectives.

(S - Specific, M - Measurable, A - Achievable, R- Realistic/Relevant, T- Time bound/boxed.

The supervisor should guide the student on the minimum and maximum number of objectives as per his/her project. Key words like Investigate, develop and analyze should be used to list objectives

1.4.1 Project Goal (Major Objective)

Overall Goal: This gives us an overall picture of what your project seeks to address. A statement that will address the solution of the problem statement

1.4.2 General Objectives

Gives the general objectives of the proposed system citing the section to cover in the project documentation

1.4.3 Specific Objectives

Give the specific objectives of the proposed system i.e what you want your system to achieve in terms of functionality.

1.5 Justification

Student should justify their project by indicating the interestingness and challenge that the project presents, the timeliness of the idea, the possible advantages that realization of such a project would bring.

Describe the value the proposed system will add stating the beneficiaries and how they will benefit from the system. Show clearly the need for the system and how it will address the existing challenges in the domain area.

1.6 Scope of the Study

A brief description of the project scope – what will be covered and what will not and why?

Define the scope of the proposed system and ensure it is not too wide or too narrow. The scope should be practical and achievable within the set timelines.

The scope should be part of the departments in the organizational structure and achievable within the set timelines e.g. Registration dept and Finance dept.

1.7 Limitations of the proposed system

These are the constraints that may hinder you from achieving the objectives of the proposed system within the stipulated time in the project schedule. E.g. Lack of finances, time constraints, lack of programming knowledge etc

1.8 Project Risk and Mitigation

This section should contain a list of project risks and the mitigations to these risks.

1.9 Project Schedule

A brief description of the project work breaks down structure. Project Gantt and Network diagram clear showing the Critical path should be included in the appendix section.

This can be showed on a gantt chart where you are to give an overview of when you are to carry out the specific steps in your project from the ideation of the project to final writing of your final report. (Shown in the Appendix)

1.10 Budget and Resources

This should generally address all the envisaged resources that will enable the development of the system to succeed. The key items are hardware, software, human and any other costs that will be incurred.

CHAPTER TWO: LITERATURE REVIEW

This consists of what has been done in the area of study; related work to your study and why you are not adopting or accepting their results for your study. Students are advised to use papers that are peer reviewed as they have validated solutions. Google Scholar is a valuable tool where you can get up to date works from different scholars. There should be in a chronological order and

should not span more than 3 years (latest research). What the researcher intends to do to bridge the gap.

The literature review should **not** be just a compilation or reproduction of the works of others. It requires the student to examine and comment critically on the literature relevant to the student's project area or area of research.

2.1 **Reviewed Similar Systems**

Identify similar systems that have been developed to address similar problems

2.2 **Tools and Methodologies used in Reviewed Systems**

Discuss the tools and methodologies of the reviewed systems stating the advantages and disadvantages of each.

2.3. **Gaps in the existing systems and the proposed solution**

Identify the gaps and problems of the reviewed systems.

2.4. T**he proposed solution**

Explain how the proposed solution is going to address the problems of the reviewed systems and bridge the Gap.

CHAPTER THREE: METHODOLOGY

The methodology chapter should describe a model/framework under which the system will be developed. It should address at least the following areas:-

- The exact techniques used to collect facts and data
- Tools used to analyze the data and the processes
- Tools to implement and test the system
- Time schedule and project cost
  - State the reasons for choosing the methodology.
  - Describe the tools that will be used in the methodology –Entity relations, flowcharts, DFD etc
  - This is a work plan that explores your research questions, the methods to be used, the population samples, experimental and control groups, the data collection techniques and statistical analysis. This section of the proposal should explain the details of the proposed

plan. Be specific on what you will be doing. The reasoning behind this research opportunity is to make sure that you have a meaningful experience.

- Describe the possible forms of the final product, contribution e.g., publishable manuscript, conference paper, innovation, system, simulation etc. Be specific about how you intend to share your results or project with others and the value it will add. This section may also include an interpretation and explanation of results as related to your question; a discussion on or suggestions for further work that may help address the problem you are trying to solve; an analysis of the expected impact of the scholarly or creative work on the audience; or a discussion on any problems that could hinder your creative endeavor.

3.1 Methodology and tools

Describe the methodology used showing clearly all the phases. E.g. Evolutionary, waterfall, SSADM

3.2 Source of data:

Primary and secondary

3.3 Data collection Methods

Describe Methods of data collection and tools that will be used for collecting data for the project such as interview, questionnaire, record / document inspection, observation, participation etc

3.4 Resources required / materials

Hardware and Software specification

Hardware Specifications

The servers to host the application, Memory requirements, Processor speed, Hard disk capacity

Software Specifications: Operating system to be used and antivirus, if any.

CHAPTER FOUR: SYSTEM ANALYSIS AND REQUIREMENT MODELING

The chapter should address at least the following areas :-

- Description on how the current system works using system analysis modelling tools such as flow charts, DFDs, Use cases, UML etc.
- How the facts and the data gathered including the methods used
- Requirement definitions and modelling of the current system and proposed system
- Requirement definitions and specifications of the project

4.1 Introduction to the system analysis

4.2 Objectives of the system analysis

4.3 Problem definition

4.4 Feasibility Study

Using different types of feasibility study carry out technical, economical, operational and schedule feasibility study on the current and proposed system to find out if proposed system is viable and possible.

Write feasibility study report to show that the project is feasible according to the feasibilities carried above.

4.5 4.5. System analysis tools

Discuss the design tools that will be used in the proposed system. E.g. *DFDs*, *Context Diagrams*. These tools should be the ones within the methodology.

4.6 System investigation

4.6.1 Introduction

4.6.2 Data collection

Gather data using various methods discussed in methodology include interviews, questionnaires, Observation, record inspection, participation etc to collect data from the existing system that is used in designing and developing the new system.

Develop tools for data collection and use them to collect data as you document in the project write up.

4.6.3 Fact Recording

Introduction to Fact recording methods: Forms, Narratives, Diagrams

Use forms to record the Program requirements: Requirement definitions and specifications of the project

Fact Recording: Program Requirement will include input requirements, output requirements, process requirements, file requirements, system requirements, and personnel requirements that forms the requirement definitions and modelling of the current system and proposed system

Use system flowcharts in record the activities in the entire system

4.7 System analysis

Analyse the program requirement in current and existing system to find out if requirements in the current system can be used in the development of the new system.

-Use forms to analysis the Program requirements: Requirement definitions and specifications of the project

-Use system analysis modelling tools such as system flow charts, DFDs, Use cases, UML to analyse the requirement definitions, specifications and modelling of the current system and proposed system

Use Diagrams to represent the data flow in the program (existing and proposed system)

Context Diagrams, DFDs to record the Program Requirement using data flow between data sources, processes, and file requirements

CHAPTER FIVE: SYSTEM DESIGN

This section should consist of a description of the system design, database design (conceptual, logical and physical) using an appropriate modelling tool.

5.1 Introduction to system design and nature of the system

5.2 Objectives of System Design

5.3 Program Design Tools

Discuss the design tools that will be used in the proposed system. E.g. *ERDs, ELH*, *data dictionary* , Algorithms - Pseudo codes *, flowcharts*. These tools should be the ones within the methodology.

5.4 Logical Design

5.4.1 Logical Data Design: - Relational Data Analysis / Normalization to generate tables

5.4.2. Entity Attributes Relationships – For all tables

5.4.3 Entity Life History

5.5 Physical Design Description

5.5. 1 Data Dictionary

5.5. 2 File/Database Design – For All Tables

5.5. 3 Input Screen Design - For All Table Entries

5.5. 4 Output Screen Design – For All Reports

5.5. 5 Code Design – For All Record Keys

5.5. 6 Block Diagram/Structured/Modular Chart – Hierarchical Chart Of Modules Or Activities

5.5. 7 Process / Program Design / UML

Use the following program design tools and design the model of the system

5.5.7.1 System Flowchart – For Entire Project

5.5.7.2 Program Flowchart – Integrate All Modules

5.5.7.3 Modular Program Flowchart (Represent All Your Procedures / Each Module)

Should include a minimum of 10 Modular Program Flowchart represent various function / modules in the program

CHAPTER SIX: SYSTEM IMPLEMENTATION

The chapter should address the following areas:-

Tools used for coding and testing

System test plan

Testing: this should be explained in terms of the data used to test and the approach.

Proposed Change-over techniques

6.1 Coding/Environment/Debugging/Techniques

6.2 Program Listing. (Should include comments)-, print codes - Appendix

6.3 Test System/Program Testing – Explain how the program is tested for achieving objectives

6.4 Test Plan- Test all data of all fields of the table for validation

6.5 Test Data – Constitutes of tables with records – Database schema

6.6 Sample Run-Output Result –i.e. sample reports from the program

A sample of the system code should be included in the appendix.

CHAPTER SEVEN: USER MANUAL - DOCUMENTATION

7.1 Installation environment

7.2 Installation Requirements

7.3 Installation Procedures

7.4 User instructions

Outline user instruction procedures & include captured Screen and events & explanation of screen items and procedures for training users on how to use the system.

7.5 System Conversion Methods

7.6 User Training

Recommend training methods

7.7 File conversions

CHAPTER EIGHT: LIMITATIONS, CHALLENGES, CONCLUSIONS AND RECOMMENDATIONS

The chapter has the following functions:

- Limitations: In this section you need to state some of the problems you encountered in the process of doing your research e.g. time factor, finances, anti- cooperative responses
- Conclusion: ties the results of the study to theory, practice and policy by pulling together the theoretical background, literature review, potential significance for application and results of the study.
- Recommendations: the section highlights suggestions and recommendations for further improvements in the system.

8.1 Limitation

8.2 Challenges

8.3 Degree of Success

8.4 Learning experience

8.5 Conclusion

BIBLIOGRAPHY, REFERENCES, APPENDIX AND GLOSSARY

REFERENCE

References are the detailed description of resources from which information or ideas were obtained in preparing the Project Report. The details of every references cited in the text, published or unpublished, must be listed alphabetically in this page.

Listing of all the references in APA citation style

Example

BOOKS (one, two and more than two authors)

1. KADOLPH, S.J. (2007) *Textiles*. 10th ed. New Jersey: Pearson Prentice Hall.
2. LI, X. and CRANE, N.B. (1993) *Electronic style: a guide to citing electronic information*. London: Meckler.
3. LEVITT, R. et al. (1999) *The reorganised National Health Service*. 6th ed.Cheltenham: Stanley Thornes.

JOURNAL ARTICLE (from an online database) (for more details, see the Harvard referencing official site)

1. UNIVERSITY OF SHEFFIELD LIBRARY (2001) *Citing electronic sources ofinformation* [WWW] University of Sheffield.
   Available from:http://www.shef.ac.uk/library/libdocs/hsldvc1.pdf [Accessed 23/02/07].

GENERAL FORMAT OF WRITING THE PROJECT PAPER

2 PAPER

- Size - A4 (21.0cm X 29.7cm)
- Quality – A least 80gm weight
- Colour - White

3 TYPE OF PRINTING MACHINE

Students use a personal computer (PC) to type their project paper. Near-letter quality impact printers or laser-jet printers may be used. Any word processor software such as Microsoft Word or WordPerfect would be suitable to write the project paper. Students may also use Microsoft Excel, for tables, calculations or any other applications.

4 FONT SIZE AND TYPE

Candidates must use Times New Roman or Arial font. No other fonts are acceptable. Font Size:

- For text use 12-point font.
- For tables and figures, use 10-point.
- For title page 12-point font,
- For Table of Contents 12-point font.

Please type in bold for headings and subheadings. Headings should be typed in all upper case letters while sub-headings are to be typed in upper and lower case letters.

5 FONT STYLE

Only one font style (Times New Roman) may be used throughout the project paper, including the title page, approval page, acknowledgment, bibliography and appendices. Exceptions to this can only be made for tables/figures/illustrations imported from other sources. Italic variants of the same font style may be used for labels, foreign words, book titles or occasional emphasis. The usage of bold variants of the same font style and underlining in the text of headings and titles is at the student's discretion.

6 HEADINGS

Chapter headings are to be centered and written in bold, upper case letters. The font size for chapter headings is 14 point. Other sub-headings are to be aligned to the left margin and should be 12 point in font-size. Sub-headings should be in upper and lower-case. Underlining and boldface in the sub-headings is at the student' discretion.

7 PARAGRAPHS

Spacing between two paragraphs in the basic text should be set at 4.0 spaces. The first sentence of a paragraph should be indented to 6 spaces. A heading that appears, as a last line on a page will not be accepted. There should be a minimum of two lines of a paragraph at the bottom of the page under the heading.

8 PHOTOCOPYING

All photocopied material must be clear, clean and sharp. Photocopied material on any page should be numbered as part of the project paper and should be within the margins required by these guidelines.

9 LINE SPACING

The project paper should be typed on one side of the page. The text should be spaced (1.5) throughout, with single-spacing for exceptional circumstances only:

- Abstract
- Appendices
- Long headings or subheadings
- Long captions to tables, figures, or plates
- Bibliography
- Tables
- Quotations

10 TEXT JUSTIFICATION

Set the justification to ‘full’ and the margins to the following measurements:

- The left margin should be 4 cm (for binding purposes)
- 2.5 cm for the top, right and bottom margins.

11 PLAGIARISM

Making proper text citations and providing accurate referencing for quotations are crucial to help ensure that students do not intentionally, or otherwise, plagiarize the work of others. Plagiarism

occurs when people steal the words, the ideas, and/or the work that rightfully belong to others and then present these words, ideas, and/or work as if this material were their own words, ideas, or works. Students are advised to pay serious attention to this matter, as it is a very serious offence to plagiarize the work of others. The best way to avoid plagiarism is to make proper documentation of the sources to which referred to in the project paper. Students are strongly cautioned that if there is evidence that a part or parts of a project paper has/have been plagiarized, the departmental examination board reserves the right to fail the student concerned and to report the student to the Disciplinary Committee of the University.