

## **ELECTRONIC AND COMPUTER ENGINEERING**

### **NNAMDI AZIKIWE UNIVERSITY AWKA**

#### **UNDERGRADUATE PROJECT REPORT GUIDELINE**

#### **COVER PAGE/TITLE PAGE**

Cover page should contain the following

- First one-third of the page
  - Title of project (first one-third of the page)
- Second one-third of same page
  - Full names of the student (no abbreviations)
  - Registration number of student
- Last one-third of same page
  - Student's Department
  - University
  - Month, Year of project

General formatting:

- Font Size: At least 22
- Font style: Times New Roman
- Font face: Bold
- Alignment: Centre
- Case: All Caps
- Cover page and title page do not require any pagination (although title page is assumed page 1)
- Each must start at a new page

Example: COVER PAGE

**DESIGN AND CONSTRUCTION OF 3KVA INVERTER**

**OKAFOR OKEKE MGBORIE**

**(2018364555)**

**DEPARTMENT OF ELECTRONIC AND COMPUTER ENGINEERING**

**NNAMDI AZIKIWE UNIVERSITY, AWKA**

**JUNE 2018**

Example: TITLE PAGE

**DESIGN AND CONSTRUCTION OF 3KVA INVERTER**

**OKAFOR OKEKE MGBORIE**

**(2018364555)**

**IN PARTIAL FULFILMENT OF THE REQUIREMENTS FOR THE AWARD OF BACHELOR OF  
ENGINEERING (B.ENG) IN THE**

**DEPARTMENT OF ELECTRONIC AND COMPUTER ENGINEERING**

**NNAMDI AZIKIWE UNIVERSITY, AWKA**

**JUNE 2018**

**PRELIMINARY PAGES**

Preliminary pages consist of the following pages in the given order

- Certification Page
- Approval Page
- Dedication
- Acknowledgement
- Abstract
- Table of Contents
- List of Figures
- List of Tables
- List of Symbols and Abbreviations (if any)

General Formatting:

- Paper size: A4 (210mm x 297mm)
- Font Size: 13
- Font style: Times New Roman
- Alignment: Justified
- Line spacing: 1.5
- Spacing-after: 6pts (ie the space between the last line of a paragraph and the next paragraph)
- Case: Sentence Case
- All preliminary pages should be numbered using Roman numerals starting at no 2 ie (ii, iii, iv, etc). Page numbers should be aligned to the bottom centre of the page.
- Each of the preliminary pages must begin at a fresh page

Examples:

**CERTIFICATION PAGE**

This project work “Design and Construction of 3kva Inverter” was carried out by me under the supervision of Prof. XYZ and has not been submitted in part or full to this university or other institutions for the award of a degree.

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Okafor Okeke Mgborie

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Date

**APPROVAL PAGE**

This is to certify that this project work written by “Okafor Okeke Mgborie” with registration number 2018364555 have been supervised and approved by the Department of Electronic and Computer Engineering, Nnamdi Azikiwe University Awka:

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Prof. XYZ

(Supervisor)

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Date

---

Engr Prof. XYZ

(Head of Department)

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Date

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(External Examiner)

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Date**DEDICATION**

Dedicate the report appropriately, to one or at most two entities. This is not a place to start acknowledging persons who assisted in the project work.

**ACKNOWLEDGEMENT**

As the project is purely an academic work, please note that:

- The entire staff (especially from your department) that contributed in one way or the other towards the success of your training in the university must be acknowledged. Hence,
  - First, acknowledge your project supervisor(s)
  - Secondly, acknowledge all the academic staff that contributed to your training in the university
  - Then acknowledge the technical support staff/non-teaching staff of the department
- Subsequently, acknowledge all others who did not contribute academically, but who supported your training through other means.

**ABSTRACT**

Abstract is a ONE-PARAGRAPH statement that summarises the entire work undertaken by the student.

It typically is contained in about  $\frac{3}{4}$  of the page, about 300 words.

Ideally it should contain:

- Brief introduction of the work/background of the study (two to three sentences)
- Aim and objectives of the work (formatted into one or two compound sentences)
- Method/technique(s) applied in achieving the aim/objectives
- Major outcome/result(s) obtained
- Conclusion/summary (one sentence)

**TABLE OF CONTENTS**

The table of contents is a list of the chapters/sections and their subsections in chronological order with the pages on which each item appeared. The start page number of each section/subsection should be indicated (as against page ranges) with no leading dots spaces with the tab key. The chapter caption (eg CHAPTER ONE) should not be assigned page numbers, but the title of the chapters (eg INTRODUCTION) should be, as with the rest of the sections/subsections headers

Example

Table of Contents	Page
Title Page	
Certification Page	ii
Approval Page	iii
.	.
.	.
CHAPTER ONE: INTRODUCTION	
1.1 Background of Project	1
1.1.1 Overview of Inverters	3

**LIST OF TABLES (or LIST OF FIGURES)**

The list of tables (and list of figures) with their titles and page numbers should be arranged serially according to chapters. Please note that list of tables must be separate from list of figure and both must begin at a fresh page

All tables and figures must be numbered according to chapters

Examples**LIST OF TABLES**

	Page
Table 1.1: Similarities between transistors and solid state switches	23
Table 2.4: Bill of Engineering measurement and Evaluation	54

**LIST OF FIGURES**

	Page
Figure 2.3: Circuit symbol of a Transistor.	15
Figure 4.2: Block diagram of 3kva inverter	70

**LIST OF SYMBOLS AND ABBREVIATIONS**

This is optional although advisable as it serves as a glossary for symbols and abbreviations which appear in the body of the text. However note that every symbol/abbreviation must be explained in the text immediately after they are used in the text.

Example

NCC	-	Nigerian Communication Commission
IEEE	-	Institute of Electrical Electronics Engineers

**CHAPTERS, SECTIONS AND SUBSECTIONS**

Five (5) chapters are approved for the undergraduate project report. They include

- Chapter One: Introduction

- Chapter Two: Literature Review
- Chapter Three: Methodology and System Design
- Chapter Four: Systems Implementation and Result Analysis
- Chapter Five: Conclusion and Recommendation

General Formatting:

- Paper size: A4 (210mm x 297mm)
- Font Size: 12
- Font style: Times New Roman
- Alignment: Justified
- Line spacing: 1.5
- Paragraph Spacing-after: 6pts
- Margins (left, right, top and bottom): 2.5cm (1")
- Case: Sentence Case
- Paragraph Indentation: none
- All paragraphs should be spaced 6points from the last line of the previous paragraph
- Page numbering: Arabic numerals (ie 1, 2, 3, etc), aligned to the bottom right of the page.

Chapter header formatting:

- Font Size: At least 18
- Font style: Times New Roman
- Font face: Bold
- Alignment: Centred
- Line spacing: 1.5
- Spacing-After: 12pts
- Case: All Caps
- Each chapter heading must begin at a fresh page
- The title of the chapter (eg LITERATURE REVIEW) is placed on a new line under the caption
- The chapter caption is written in words, as against in figures (eg CHAPTER ONE, instead of CHAPTER 1)

Sections and subsections

- Font Size: At least 12
- Font style: Times New Roman
- Font face: Bold
- Alignment: Left
- Line spacing: 1.5
- Case: Capitalize the first letter of main words
- All section/subsection headers should be spaced 12points from the last line of the previous sentence.
- The caption should be serial, reflecting the chapter number and the section number  
examples:

**1.1 Background of Project**

**2.1 Photo Voltaic Cells**

**2.1.2 Advantages of Photo Voltaic Cells ...etc**

- Avoid orphaned section/subsection headers

### Equations

All equations must be typed using equation editor and must be numbered serially with respect to the chapter in which it appears. The equation numbers must be enclosed in brackets and flushed to the right.

### Example

$$V = IR \quad (1.1)$$

### Titles (captions) of Tables and Figures

- All figures and tables must have a caption which must be numbered serially with respect to the chapter in which it appears. (Example Figure 1.1: Block diagram of the project stages)
- Figure captions must be centrally aligned and placed immediately beneath the figure (all figures must be centre aligned)
- Table captions must be left aligned and placed at the top, before the table.
- The captions must be in sentence case and must be plain (not bold).
- Ensure also that the caption is on the same page as the table/figure being designated.

### Figures, Tables and Equations, and their references/citations

#### Figures

- In the course of explanations, figures are usually presented for some necessary illustrations. In doing so, figures being used in the illustration should always be referred to. There are two ways of referring to the figure: either Fig. 2.1 or figure 2.1 should be used.
- These two formats must not be used simultaneously in the same text. One has to be consistent with whichever one the writer chooses.

#### Tables

- Just like in the figures, tables are referred to using the capital letter "T" irrespective of where they appear in the text. For example "Table 2.1" and not table 2.1.

#### Equations

- Equations are also referred to in the course of their derivations and usage in the text. In referring to a table in the text, enclose the equation number only in the bracket. For example, (2.2) and not equation 3.2 or Eq.3.2 e.t.c.. hence, only the equation number is enclosed in the bracket.



## CHAPTER ONE

### INTRODUCTION

Chapter one could have the following sections:

#### 1.1 Background of Study

This introduces the project work. Background information which helps the reader to understand and appreciate the subject matter is given in this section. Ideally, it should not exceed 2 pages but not less than  $\frac{3}{4}$  of a page.

#### 1.2 Problem Statement

Here, it is expected that the author defines a problem which the project is expected to solve. This problem is viewed as the motivating drive for the project. The ability to be clear and concise in this definition impacts directly on the rest of the work including the objectives, method used and the results obtained.

#### 1.3 Aim and Objectives

Typically, there is one aim for an undergraduate project, which should be in line with the project topic. The objectives of the project are measurable steps that would be taken to achieve the aim. Most often, in order to develop reasonable objectives, the project aim is broken down into modules/blocks, and those specific things to do to actualize the aim form the objective of the project. The objectives should be itemized (ie numbered).

#### 1.4 Significance of Study/Project

In this section, the importance of the project including its benefits/significance to the university or society/community is itemized. This section seeks to prove that the project is a worthwhile endeavour.

#### 1.5 Scope/Limitations of the Work

Here, the boundaries of the project work is defined/the technological limit for the work is specified ie how advanced the work is expected to be. This is not the section to list problems encountered or drawbacks to the actualization of the project work.

#### 1.6 Project Outline.

Using simple sentences and paragraphs give a general outline of the different chapters which make up the project report.

## CHAPTER TWO

### LITERATURE REVIEW

In this section, relevant literatures and state of the art technology as regards the field of consideration is reviewed. It is expected that the student reviews as much relevant literature as possible as that would give him/her a broader base and in-depth understanding of the field under study.

Literature Review is expected to be handled using three specified sections such:

#### 2.1: Theory of the (name of the main keyword the project)

#### 2.2: Review of Related Literatures

#### 2.3: Summary of the Reviewed Literatures

#### 2.4: Literature Gaps

Care should be taken to properly acknowledge any work cited so as to avoid plagiarism.

Please see the section on referencing for guidelines on citation of reviewed works.

## CHAPTER THREE

### METHODOLOGY AND SYSTEM DESIGN

#### 3.1 Methodology

In this section, all the methods and techniques adopted in the execution of the work is explained. If the work involves any experimental measurement, the measuring techniques applied and the environment in which it is applied must be explained.

Typically, there would be more than one method or technique available and even recommended in achieving a particular project work. The student should be able to adopt the best, and justify its adoption for the project. Some projects may require more than one technique (example building a prototype hardware which requires software to drive it). In such cases, all the different method chosen must be explained.

Depending on the method chosen/adopted for the project, the remaining sections of this chapter can be organized, using the methods steps as a guide to section/subsection headers.

Irrespective of the method chosen for executing the project, there would normally be a need to analyse the existing system and also specify the requirements for achieving the new project.

Please also note that:

- All mathematical models and their derivations are explained in this chapter
- All the computer algorithms and flowcharts or computer aided designs are developed at this stage.
- Avoid describing components used in the project, except in situations where it is necessary for the derivation of models and other such processes.

## CHAPTER FOUR

### SYSTEM IMPLEMENTATION AND RESULT ANALYSIS

The steps taken and techniques adopted for the actual implementation of the project is explained in this chapter.

The models developed in chapter 3 are applied to achieve the desired results.

Also in this chapter, relevant tests performed to ascertain the compliance of the developed system with approved specifications are outlined and explained. It may be necessary and advisable to show such results using tables, charts or other graphical representations, as this would make them easy for comprehension and analysis. Note that all tables and figures must be explained in the body of the text (no orphaned table/figure is allowed).

All software codes developed during implementation should be placed at the appendix, well numbered and titled, and relevant references made to them.

It may be necessary to show pictures and images here as a proof of completion of certain project works. However, such pictures (except the most basic ones) should naturally be placed at the appendix section and referenced here. The pictures should be labelled and referred to as Plates.

Bill of Engineering Measurement and Evaluation (BEME)

The student is expected to show the total cost of the project through a table titled “Bill of engineering measurement and evaluation (BEME) with appropriate table numbering. The contents of the table should be organized using column headers as shown in the table below.

S/No	Item Description	Quantity	Unit Price	Total Price
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## CHAPTER FIVE

## CONCLUSION AND RECOMMENDATION

This chapter summarizes the entire work and consists of the following sections:

## 5.1 Conclusion

The student concludes the work done and summarizes the project report here.

The conclusion section contains a brief summary of the entire report, from introduction to the testing and evaluation stage. Hence care should be taken to incorporate all necessary sections of the work in the conclusion. The guide given for writing of the abstract may be helpful, although the conclusion could be more detailed than the abstract.

## 5.2 Recommendation

This section among other things outlines 2 major areas:

- Conditions and environment necessary for the optimal operation and performance of the new system (if any)
- Suggestions on further improvement/enhancement of the system.

If the aim and the limitations sections are articulated properly, it could provide insight to this section.

## 5.3: Contributions to Knowledge

Here, the student should outline major addition(s) to the body of knowledge (if any) achieved through the project. This section is however not compulsory for undergraduate project reports, but should be included if the project is novel in order to lay emphasis on the new knowledge added to the field of study by the student.

## REFERENCES

The source of any information that is not the original concept of the author (including figures and tables) must be cited as reference in acknowledgement of the source of such information. Every item in the reference list must be referred to in the report and every item mentioned in the report should have an entry in the reference list.

There are many available referencing styles, however for the sake of uniformity, the department adopts the Oxford (IEEE) referencing style.

The Oxford referencing style is a numeric style, where citations are numbered in the order of appearance. Each citation number is enclosed in square brackets on the same line as the text, before any punctuation with a space before the bracket (example [1]). Once a source has been cited, the same number is re-used for all subsequent citations to the same source.

Full details of this style can be downloaded from <https://www.ieee.org/documents/ieeecitationref.pdf>. Every student is encouraged to download the style guideline and get acquainted with its provisions early in the development of his/her report writing

## APPENDIX

Appendices are relevant documentations and information which would be too distracting to be placed in the body of the text, either because of their size or nature. They may include raw data gotten from the field, images and pictures of field work or completed project, full codes of a software project, other tables and references extracted from other sources which could form as a lookup guide for the reader.

Appendices should be attached to the last part of the write-up and the title labelled accordingly in the order in which they appear in the text. Typically appendices are labelled using alphabets (example Appendix A, Appendix B etc).

All references to the appendices in the text must be cited.

Appendices that are not the original creations of the author must be acknowledged.

## References:

- [1] C. O Ohaneme, "Project Report Writing," in *2015 Undergraduate Workshop*, Awka, 2015.
- [2] A. C. O Azubogu, *Final Year Project Report Writing*, 2016, Unpublished.