GUIDELINES FOR WRITING UNDERGRADUATE PROJECT WORK

1.1 GETTING STARTED

In the final year of study, a group of two to four students works under supervision on a chosen topic for two semesters. The main purpose of the project work is to expose the student to a large problem whose solution involves both teamwork and organized thought.

There are three steps involved in getting started on a project:

1. The first step is to form a group of two to four students with broadly similar interests. As you will be working with your partners for two semesters, select people you can get along with.
2. Each group then looks for a topic in its area of interest. You may consult the department for a list of project topics, contact any lecturer of the department, or come with your own ideas and look for a supervisor.
3. A supervisor should help you with the final choice of a project topic.

1.2 COMPUTING PROJECT TYPES

The department outlines five categories of computing projects. These categories are not intended to be discrete, and you may well find that your own project falls into two or even more of these classes (or it perhaps falls distinctly into one category but draws on approaches that are identified in others).

1. **Research-based.** A research-based project involves a thorough investigation of a particular area; improving your understanding of that area, identifying strengths and weaknesses within the field, discussing how the field has evolved, and acknowledging areas suitable for further development and investigation (identifying gaps). This kind of project will involve some form of literature search and review and would be suitable for taught bachelor's or taught master's courses.
2. **Development.** This category includes the development not only of software and hardware systems but also of process models, methods, algorithms, theories, designs, requirement specifications and other interim documents. Examples of software development projects are database systems, apps for phones and other portable devices, multimedia systems, information systems and web-based systems.
3. **Evaluation.** This category encompasses all projects that involve some form of evaluation as their main focus. For example, such a project might involve comparing several approaches to a particular problem; evaluating two or more programming languages (applied in different contexts or to different problems); analyzing an implementation process within a particular industry; assessing different user interfaces; appraising a particular concept; assessing alternative and new technological approaches to a problem; analyzing development methodologies to a problem; and so on.
4. **Industry-based.** An industry-based project involves solving a problem within either an organization or another university department. Industry-based projects might be any of the other kinds of projects identified in this section. The difference in this case is that you are undertaking the project for an actual client, which carries with it a number of benefits as well as drawbacks.

5. **Problem solving.** A problem-solving project can involve developing a new technique to solve a problem, improving the efficiency of existing approaches or evaluating different approaches or theories in different situations. It might also involve applying an existing problem-solving technique or theory to a new area. In these cases, some form of evaluation would be expected: for example, did your new approach work well or did you discover reasons why it was unsuitable for problems of this nature? Why does one approach or theory work better in some situations than in others?

1.3 FORMAT FOR WRITING

Project work shall consist of three categories of material, namely the **Preliminaries**, the **Main Body** and the **Back Matter** (References and Appendices).

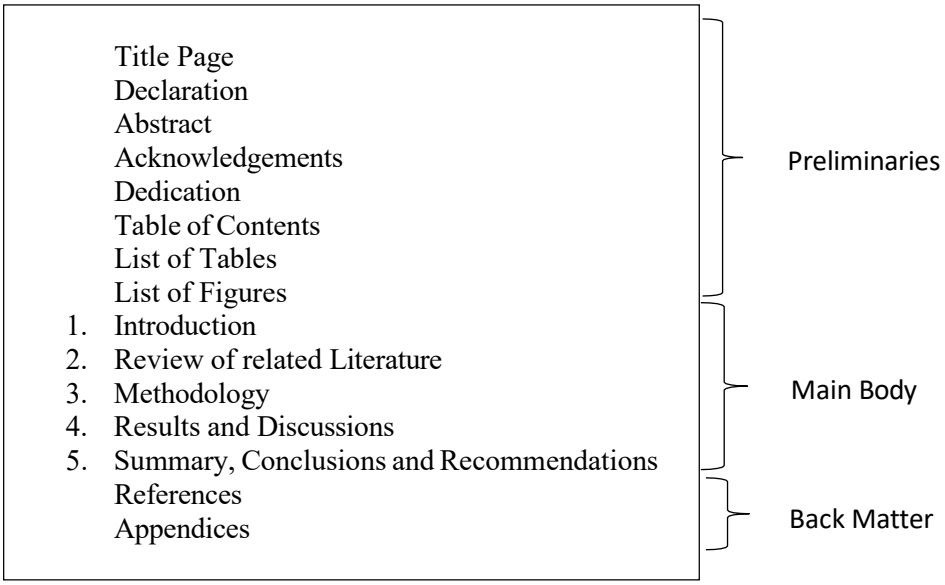

Figure 1: structure for research-based project

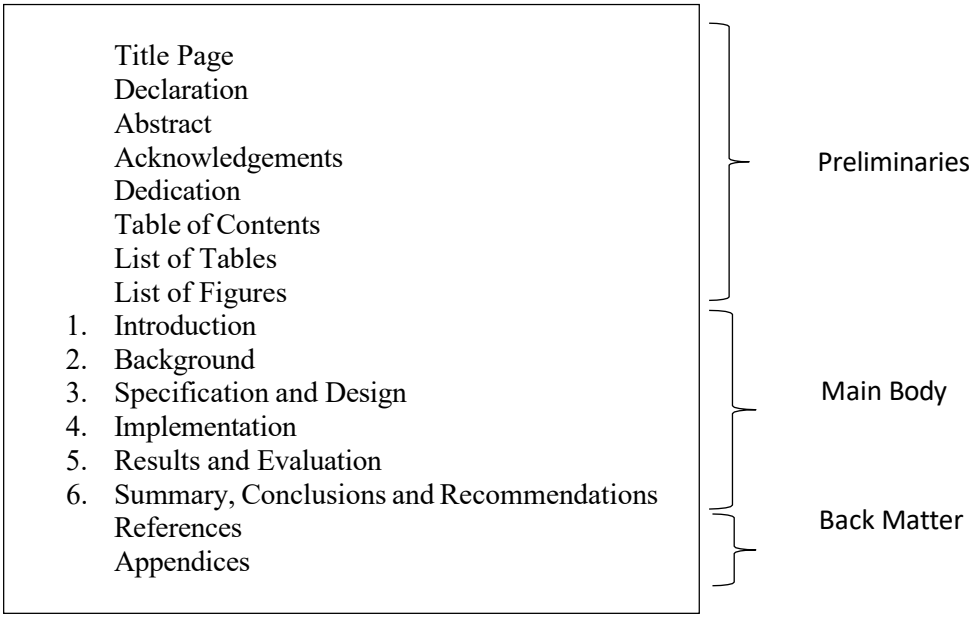

Figure 2: structure for development-based project

Refer to Appendix I for a sample Preliminary format.

1.4 BODY OF RESEARCH-BASED PROJECT

- **Chapter 1** - This chapter explains what the problem is and why it is important to study it. The following sub-headings might be used: Background to the study, statement of the problem, purpose of the study, research questions/objectives/hypothesis (whichever is applicable), significance of study, limitations of the study and organization of study.
- **Chapter 2** - review of related literature: this chapter provides support for the study.
- **Chapter 3** - Methodology: this chapter explains how the study was conducted. The following sub-headings may be followed: Research design(describe the type of study and design, explain rational for design), Population(define/describe population), Sample and sampling procedure(state sample size and how it was selected, give rational for the selection procedure and sample size, provide background characteristics of sample e.g age, gender, educational background etc.), Instrument(describe how instrument was developed, describe pre-testing/field-testing/pilot testing of instrument, show how validity was determined, indicate how reliable the instrument is), Data collection procedure (describe how the data was collected), Data Analysis (describe the scale of measuring tools used, indicate how scoring was done, indicate and justify the statistical tools used).
- **Chapter 4** - results and discussions: present the results with their discussion by research questions/hypothesis/objectives. The discussion should include the interpretation of the findings, theory or through logical deductions.
- **Chapter 5** – Summary, conclusions and recommendations. Summary (give an overview of the research study and methodology and summary of key findings. Conclusions (the researcher states precisely his/her position regarding research questions/hypothesis. The researcher indicates whether the findings confirmed or disconfirmed the hypothesis or questions. The researcher indicates his/her overall opinion regarding the study), Recommendations (make recommendations for policy and practice. The recommendations should be based on the findings of the study. Give suggestions for future research.
- **References** - contains a list of articles, reports, theses, and books consulted during the project work. The accepted referencing style of the university is the American Psychological Association **(**APA).

1.5 BODY OF DEVELOPMENT-BASED PROJECT

- **Chapter 1: Introduction** - A good introduction should tell the reader what the project is about without assuming special knowledge and without introducing any specific material that might obscure the overview. It should anticipate and combine main points described in more detail in the rest of the project report.

- **Chapter 2: Background** - The purpose of the section is to provide the typical reader with information that they cannot be expected to know, but which they will need to know in order to fully understand and appreciate the rest of the report. It should explain why

the project is addressing the problem described in the report, indicate an awareness of other work relevant to this problem and show clearly that the problem has not been solved by anyone else.

- **Chapter 3: Specification & Design** - The purpose of this sections is to give the reader a clear picture of the system you plan to create, in terms of the capability required. A specification should tell the reader what the software system is required to do. The design then gives the top-level details of how the software system meets the requirement. It will also identify constraints on the software solution that are important in guiding decision making throughout the development process. Describing what a software system does (specification) and how it does so (design) effectively usually means describing it from more than one viewpoint. A common approach is to first define the user or business requirements, then describe the static architecture, identify modules and groups of closely connected modules, and then to apply other views to each of these groups. Fine details, specifically details of code, should be left out. You are strongly recommend to make extensive use of diagrams, such as entity-relationship diagrams, UML diagrams, state charts, or other pictorial techniques. As well as describing the system, it is important that you justify its design, for example, by discussing the implications of constraints on your solution and different design choices, and then giving reasons for making the choices you did.

- **Chapter 4**: **Implementation** – this section is similar to the Specification and Design section in that it describes the system, but it does so at a finer level of detail, down to the code level. This section is about the realization of the concepts and ideas developed earlier. It can also describe any problems that may have arisen during implementation and how you dealt with them. Do not attempt to describe all the code in the system, and do not include large pieces of code in this section. Complete source code should be provided separately (see Appendix B and submission guidelines). Instead pick out and describe just the pieces of code which, for example:
    - are especially critical to the operation of the system;
    - you feel might be of particular interest to the reader for some reason;
    - illustrate a non-standard or innovative way of implementing an algorithm, data structure, etc..

- **Chapter 5: Results and Evaluation** - In this section you should describe to what extent you achieved your goals. You should describe how you demonstrated that the system works as intended (or not, as the case may be). Include comprehensible summaries of the results of all critical tests that were carried out. You might not have had the time to carry out any full rigorous tests – you may not even got as far as producing a testable system. However, you should try to indicate how confident you are about whatever you have produced, and also suggest what tests would be required to gain further confidence. This is also the place to describe the reasoning behind the tests to evaluate your results, what tests to execute, what the results show and why to execute these tests. It may also contain a discussion of how you are designing your experiments to verify the hypothesis of a more scientifically oriented project. E.g., describe how you compare the performance of

your algorithm to other algorithms to indicate better performance and why this is a sound approach.

- **Chapter 6: Summary, Conclusion and Recommendation** - summaries the results of the tests or experiments. You must also critically evaluate your results in the light of these tests, describing its strengths and weaknesses. Ideas for improving it can be carried over into the Future Work section. Remember: no project is perfect, and even a project that has failed to deliver what was intended can achieve a good pass mark, if it is clear that you have learned from the mistakes and difficulties. This section also gives you an opportunity to present a critical appraisal of the project as a whole. This could include, for example, whether the methodology you have chosen and the programming language used were appropriate. The Conclusions section should be a summary of the aims of project and a restatement of its main results, i.e. what has been learnt and what it has achieved. An effective set of conclusions should not introduce new material. Instead it should briefly draw out, summarize, combine and reiterate the main points that have been made in the body of the project report and present opinions based on them. The Conclusions section marks the end of the project report proper. Be honest and objective in your conclusions.

- **References -** contains a list of articles, reports, theses, and books consulted during the project work. The accepted referencing style of the university is the APA.
- **Appendix I.** Its part 1 is a users' guide; sufficient information should be provided to explain the initial installation of the program and its subsequent use. Part 2 must contain procedure names and function names, as well as any input and output program parameters. The flow of control through the modules of the program should also be illustrated.
- **Appendix II.** A complete source code and any relevant computer output obtained as the result of executing programs developed in the project should be listed here. Hints for printing the source code:
    - Print only the code you created. Do not print automatically generated code. If you enhance an old software, do not print it. Do not print code that performs simple functions. If your code contains procedures that are almost identical, print just one.
    - Use simple spacing and small font. The source code may be back printed and contain two pages on the side of the sheet.

1.6 SUBMISSION OF PROJECT WORK

Project works shall be submitted both as paper (printed) and electronically using the e-learning platform.

1.6.1 Paper submission

Each group is to present two printed copies of their write-up. A copy shall be given to the supervisor and the 2nd copy shall be submitted to the Department.

1.6.2 Electronic submission

Project works shall be submitted as a **pdf** and all other accompanying source codes and other references materials shall be zipped as one file (.zip, .jar or .tar .gz). Together, the file shall be uploaded on the e-learning platform.

1.7 EVALUATION OF PROJECT WORK

Project evaluation shall take two forms:

- Oral Examination (40%)
- Thesis assessment (60%)

1.7.1 Oral Examination

An oral examination will be held during the University examination period. The oral examination for a project group proceeds as follows:

- A half-hour is allotted for the group to demonstrate its project. Students are responsible for arranging availability of hardware and software for the demonstration.
- Each student is given an oral examination of 20 minutes in which the student gives a 10 minute presentation, then a team from the department question the student for 10 minutes. The student's presentation should summarize the project and explain the division of work among the group members. The oral examination is intended to ascertain the student's understanding of the project and the degree of their participation in it.
- The oral examination constitutes 40% of the entire project scores.

1.7.2 Thesis Assessment

Supervisors or examiners will assess the entire write-up and a sample assessment sheet is shown below:

Sample Assessment sheet for Development-based project

Components to assess	**Maximum mark**	**Mark Obtain**
Abstract		
1. The Abstract provides a good overview of the project and provides a good summary	5	
Background information and Problem statement		
1. Relevant background information provided.	5	
2. Problem statement is stated and covers sufficient justification.	5	
3. Appropriate aims and objectives stated	5	
Literature review, references		
1. The review provides a good background and details of the literature.	5	
2. A comprehensive list of references is cited using a standard format	5	
Specification		
1. Functional description or object oriented description is included along with required diagrams.	10	
Methodology		

1. The methods, approaches, tools, techniques, algorithms, or other aspects of the solution are sufficiently discussed with sufficient details and supporting figures.	10	
System design and implementation		
1. Low-level components and subcomponents are described with very good details. Also use case diagram, flowcharts, class diagram, ER diagram etc are drawn according to UML standards.	10	
2. System implementation provides all the necessary details for the reader.	5	
Results and testing		
1. Results and Evaluation of the solution are discussed with supporting figures and graphics.	5	
2. Various test cases are generated and details are included.	5	
Conclusion		
1. Most important results and contribution are presented.	5	
2. A good set of recommendations for future work is provided.	5	
Language and grammar, formatting style		
1. Almost no spelling or grammatical mistake. Writing is easy to read. Excellent organization. Writing is concise yet all necessary content is included.	5	
2. Content is supported by good number of figures and tables.	5	
3. Formatting style of chapters, table of contents, title page, references and appendices are proper and relevant.	5	
	Total (100)	

Sample Assessment sheet for research-based project

Components to assess	**Maximum mark**	**Mark Obtain**
Abstract		
1. The Abstract provides a good overview of the project and provides a good summary	4	
Introduction		
1. Relevance and clarity of topic	4	
2. Relevant background information	5	
3. Problem appropriately identified	5	
4. Appropriate objectives/research questions/hypothesis	5	
Literature		
1. Relevance of literature to objectives/research questions	5	
2. Demonstration of scholarly analysis, and criticism of research relevant to the topic/problem being investigated	7	
3. Appropriate organization of literature	3	
Methodology		
1. Appropriate methodology to achieve objectives or answer research questions	6	
2. Quality and relevant instrument(s) for objectives/research questions	6	
3. Appropriateness of data collection and analysis procedures	6	
Presentation and Discussions of results/findings		
1. Appropriateness and relevance of data/results to objectives/research questions	5	
2. Used relevant pictorials or tables	5	

3. Relevance of comments on data	5	
4. Relation of discussion to the data collected and related literature	5	
5. Soundness or arguments	5	
6. Clarity of expression and organization of presentation	5	
Conclusion		
1. Appropriateness of conclusion	3	
2. Relevance of recommendation	3	
3. Adequate presentation of cited sources	4	
4. Appropriateness of referencing style	4	
	Total (100)	

APPENDIX I: PROJECT WORK TEMPLATE

UNIVERSITY OF CAPE COAST

THE TITLE OF THE PROJECT WORK IN ALL CAPITAL LETTERS, BOLD AND CENTRED

YOUR NAME IN ALL CAPITALS, BOLD AND CENTRED

YEAR OF AWARD

UNIVERSITY OF CAPE COAST

THE TITLE OF THE PROJECT WORK IN ALL CAPITAL LETTERS, BOLD AND CENTRED

BY

YOUR NAME IN ALL CAPITALS, BOLD AND CENTRED

Project Work submitted to the [Department of Candidate] of the [Faculty/School of Candidate], University of Cape Coast, in partial fulfilment of the requirements for the award of Bachelor of Science degree in [discipline of candidate]

MONTH YEAR

DECLARATION

Candidate's Declaration

I hereby declare that this project work is the result of my own original research and that no part of it has been presented for another degree in this university or elsewhere.

Candidate's Signature:..... Date:.....

Name: e.g., Michael Ayikwei Quarshie

Supervisor's Declaration

I hereby declare that the preparation and presentation of the project work were supervised in accordance with the guidelines on supervision of thesis laid down by the University of Cape Coast.

Supervisor's Signature:..... Date:.....

Name: e.g., Prof. Edward Marfo Yiadom

ABSTRACT

The body of the abstract begins here and is typed double spaced. The abstract is limited to one page. It should be a brief summary of what the report is about and what the conclusions are. It should include the following components: purpose of the research, methodology, findings/results, and conclusion(s) and/or recommendations. It should not include anything that is not in the text. It should be blocked (no indentation).

ACKNOWLEDGEMENTS

This is your acknowledgements page. Here is where you thank the people who helped you to write this work. They may include your supervisors, librarians, your best friends, your spouse, etc. It is a maximum of one page.

DEDICATION

Dedications are brief statements; they should be very short, as in "**To my family** or **In memory of my father".** It should not be longer than two lines.

TABLE OF CONTENTS

LIST OF TABLES

List of Tables should show the Table numbers, their titles and page numbers. Do not use Table 1, Table 2, etc. in the list; it should be 1, 2, 3, etc. Delete this page if you do not need it. Be sure to delete all the text on the page, and the page break after it, not the one before it. To see the section and page breaks, click the "show all nonprinting characters" button in the Word toolbar.

LIST OF FIGURES

Figure Page

List of Figures should show the Figure numbers, their captions and page numbers. Do not use Figure 1, Figure 2, etc. in the list; it should be 1, 2, 3, etc. Delete this page if you do not need it. Be sure to delete all the text on the page, and the page break after it, not the one before it. To see the section and page breaks, click the "show all nonprinting characters" button in the Word toolbar.

LIST OF ABBREVIATIONS

UCC	University of Cape Coast
ISO	International Standards Organization
MoFA	Ministry of Food and Agriculture

Delete this page if you do not need it. Be sure to delete all the text on the page, and the page break after it, not the one before it. To see the section and page breaks, click the "show all nonprinting characters" button in the Word toolbar.

DO NOT DELETE THE SECTION BREAK BELOW. Take this seriously – do not delete any space below this point

CHAPTER ONE

INTRODUCTION

Background to the Study

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Table 1: My First Table

Sex	Frequency	Percent
Male		
Female		

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Section Two at Heading Level 2

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Section three at heading level 3

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Table 2: My Second Table

Level of Education	Frequency	Percent
Non-formal		
Basic		
Secondary		
Tertiary		

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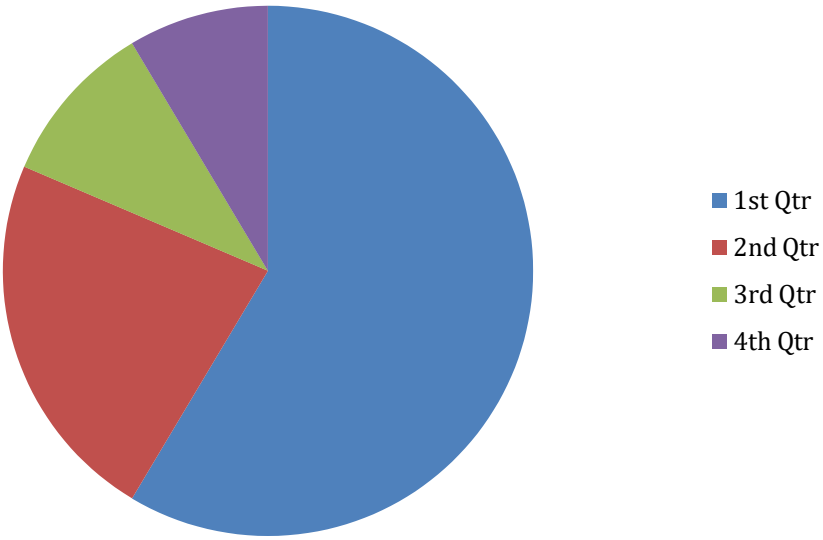

Figure 1: My First Figure.

CHAPTER TWO

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CHAPTER THREE

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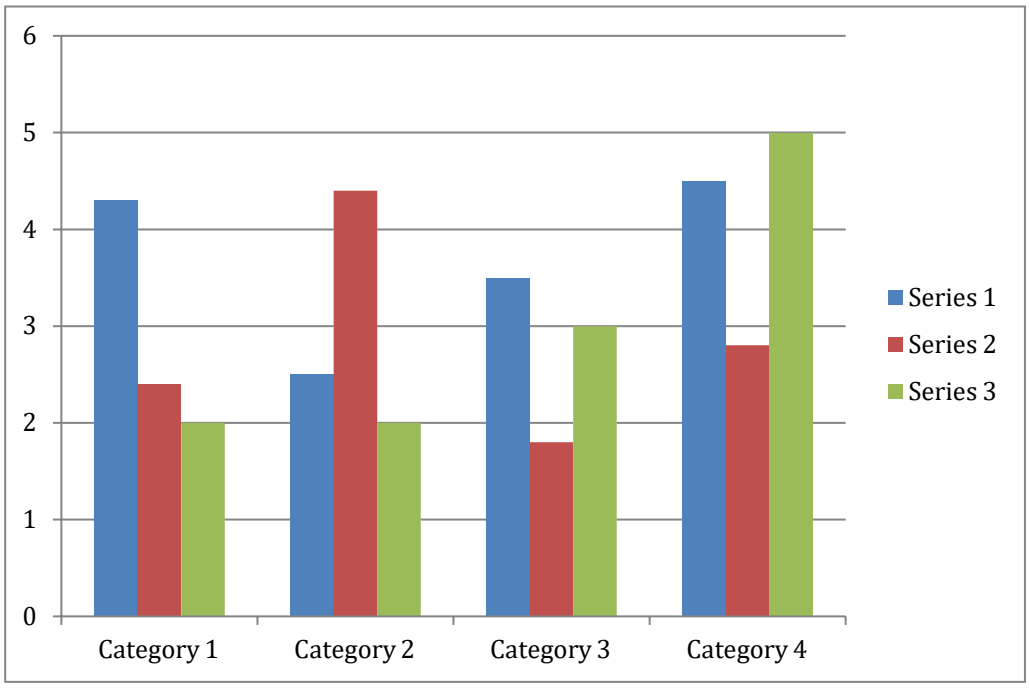

Figure 2: My second figure.

NOTE:

The number of chapters of a project work depends upon the subject and type of the research, and discipline. Add other chapters as you may require. The traditional five-chapter format at UCC include: Chapter One – Introduction; Chapter Two – Literature Review; Chapter Three – Research Methodology;

Chapter Four – Results and Discussion; and Chapter Five – Summary, Conclusions and Recommendations.

REFERENCES

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Akeredolu-Ale, E. O. (1975). *The underdevelopment of indigenous entrepreneurship in Nigeria.* Ibadan, Nigeria: Ibadan University Press.

Akplu, H. F. (1998). *Transfer of entrepreneurial training in small enterprise development in Ghana*. Unpublished doctoral thesis, Department of Vocational and Technical Education, University of Illinois, Urbana-Champaign.

APPENDICES

[This is where your appendix goes. You can have as many appendices as you wish.]