MBARARA UNIVERSITY OF SCIENCE AND TECHNOLOGY

Proposal, Thesis, and Dissertation Guidelines

2016

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1 Introduction

This document is designed to support candidates in the writing of a research proposal, thesis, or dissertation. The first section is a guide to using the scholarly literature to develop a proposal and to support a thesis or dissertation. The second section provides specific information about formatting the paper.

This document provides only a brief introduction to all these topics. The candidate is advised that much more information is available on the internet. When more detail is needed, use a search engine such as Google to locate guidance for post-graduate students on topics ranging from performing a literature search to using Microsoft Word to format a Ph.D. thesis. Many universities maintain extensive notes on their library or writing centre websites to aid post-graduate students, and these university-hosted websites can be considered to provide reliable guidance.

2 Using the scholarly literature

Developing a research topic is a critical and difficult step in a research project. You must formulate a research project that is original; that is, it must not have been previously published. Equally important, the topic must be interesting because it makes forward progress in the field. Finally, the research must be achievable using available resources.

With these constraints, developing a topic must be an iterative process. One cannot simply choose a title and then set out to do a literature search. Instead, after choosing an interesting general area for research, you will need to read widely to determine what has already been achieved. As you read, you can start to formulate a possible topic, and then will read more about that specific topic. It is likely that as you read more, you will find that some topics will not be possible, and you will need to think of new ones.

2.1 Searching the scholarly literature

In the very early stages of research, you will want to read introductory material such as textbooks and even Wikipedia in order to learn basic concepts and vocabulary. But once a topic is formulated, scholarly sources will need to be consulted.

In some cases, it may be possible to use a bibliographic database that specializes in the field of research to find journal articles. For example, PubMed is useful for medical texts; GeoRef is used by geoscientists; and Inspec is useful for physics. However, if you do not have access to these databases, Google Scholar (scholar.google.com) may be used. If you are new to this database, read about it by clicking on ‘about Google Scholar’ on the home page. You should also read some articles about using Google Scholar (these can be found through a Google search).

Once you have found some sources that look promising, then reading them carefully will lead you to new sources. You will learn new facts and ideas that help you choose better search terms to use in Google Scholar. Also, you will probably find that you need to read the papers that cited by papers you’ve already found, since they will provide important background to help you understand the field.

However, if you only read papers that are cited by the papers you have already found, you will quickly see that this chain only goes backwards in time. It is also important to be able to go forwards in time to check for newer sources. Citation indexes are designed to help you find articles that have cited the article you are reading. There exist specialized citation indexes. If you do not have access to them, another option is to locate the article of interest in Google Scholar and then click on 'cited by' in the Google Scholar entry. You will now see a list of articles that have cited the article you have already found.

2.2 Obtaining journal articles

Once you have found references to articles that may be useful, you will need to find copies of those articles. Some papers are freely available on the internet, but others are not. To obtain copies of the articles that are not free, there are three databases that will be useful at MUST:

1) libhub.kiox.org – only accessible if logged in through MUST network
2) inasp.info – only accessible if logged in through MUST network
   These journals can also be accessed directly from the publisher webpages if you are logged in through MUST, without going through inasp.info
3) www.who.int/hinari/en – accessible from any network with the login and password that are available from the MUST library. This is the most extensive list of journals, so please be sure to obtain the login information and use this database.

These databases will provide access to a very large set of journals. However, if you find that there is an article that you cannot access in any database, one additional strategy is to email an author (usually one is marked as the person to whom correspondence should be addressed), introduce yourself; explain that you have limited access to journals in Mbarara; and ask if it might be possible to receive a copy of the article by email.

2.3 Evaluating the quality of sources

Not all journals maintain high standards of peer review. Therefore, it can be helpful to use journal rankings. You will find many journal ranking sites by entering 'journal ranking' in the Google search box. Some sites are available only by subscription, and you can check with the library whether MUST has access to these sites. Other sites are free, and you can look at several to see how the journal is ranked in each. If a journal is in the bottom quarter of journals in its field, or is not ranked at all, then you will know that other scholars have not found articles in this journal worthy of citation.

Note that the journal ranking does not allow you to determine with certainty whether an article is of high quality. Sometimes a poorly written article slips through the peer-review process of a good journal, and other times an excellent article is published in a lower ranked journal. Therefore, it is important to read widely and develop expertise so that you can begin to evaluate articles yourself. When you recognize the signs of sloppy work, you will choose not to use these articles.

Finally, an article may be a reliable source for some information but not for other information. For example, an article about developing software to track AIDS patients may begin by stating the number of AIDS patients worldwide. However, since this article is focused on treatment of AIDS and not quantification of AIDS, it should not be cited as a source for the number of people living with AIDS. Instead, you might locate the reference that this article cited when it gave the number, or you might go directly to a more current and reliable source such as the World Health Organization.

2.4 Searching outside the scholarly literature

Sometimes you will need information that is easier to find on a website than in a journal article, such as the population of Uganda. In this case, you should look for the most reliable sources, which are generally those that are published by a governmental or intergovernmental agency such as the Uganda Wildlife Authority, the United Nations, or the World Bank. You may also use recognized non-governmental authorities such as the International Red Cross. However, remember that it is easy to come up with an authoritative name and create a website, so just because a website looks and sounds professional, you should not necessarily trust it. Additionally, be wary of papers written by students that are posted to websites. A PhD thesis from a recognized institution may be cited, but an undergraduate paper is not a reliable source.

2.5 Keeping records of searches

As you read articles, you will be able to refine your search and reformulate your research topic. Eventually, if you work carefully, you will have both a well-defined research project and also a good start on the literature search section of your paper.

However, this work will be much less efficient if you fail to keep careful notes throughout the process of searching the literature. Without notes, you will find yourself going in circles, re-using the same search terms, wasting both time and internet access. One good way to avoid this waste is to save all the search terms you in a document on your computer. For example, if you are searching for articles on managing diabetes, you might begin by entering ‘diabetes management’ in the search box in Google Scholar. At this point, you should also open your record document and enter the date and these search terms. Then note down how many pages of results you looked at, so that if you choose to return to this search, you’ll know where to start. If any of the results you check look promising, copy the bibliographic information into your document (note that you can click ‘cite’ to obtain the citation information). And, finally, if you obtain the article, there are two more essential steps: (1) Save the document to a folder on your computer, giving it a descriptive file name such as the first author’s name and the year; and (2) in the case that the article is not from the journal publisher’s website, record the complete url where you retrieved the article. If you take these careful notes, then it will be easy to compile the references section for your paper.

2.6 Avoiding plagiarism

Many students think that plagiarism refers only to taking entire pages or chapters from another source without attribution. However, this is not correct. Plagiarism occurs any time that someone (1) uses someone else's *ideas or results* without attribution; or (2) uses someone else's *words* without attribution. It is still plagiarism even if only one sentence or one idea is borrowed.

Unintentional plagiarism can easily occur, and is a very serious offense that will result in the paper being returned for corrections, or sometimes even failure. Plagiarism can be avoided through careful record keeping and careful writing.

One strategy to avoid plagiarism is to start the writing process using only exact quotations. For example, if a report on air quality published by the World Health Organization makes a point that's important to your paper, then you might begin by including the entire paragraph (in quotation marks) in your draft paper:

> *Example that is not plagiarized because it includes the entire text in quotation marks:*
> The WHO report on Air Quality Guidelines states: 'The serious consequences of exposure to high levels of urban ambient air pollution were made clear in the mid-twentieth century, when cities in Europe and the United States experienced air pollution episodes (such as the infamous 1952 London Fog) that resulted in many deaths and hospital admissions. Subsequent clean air legislation and actions reduced ambient air pollution in many regions. The winter smog problems associated with coal combustion that were common in some cities during the 1980s and early 1990s have been eradicated, and it is now mainly emissions from traffic that pose the main threat to good air quality. The main sources for the present air pollution levels in western cities are traffic-related' (2005).[1]

As you further edit your paper, you may decide that you want to shorten this quotation, and you could write:

> *Example that is not plagiarized because it includes the borrowed text in quotation marks:*
> The WHO report on Air Quality Guidelines states that, 'the serious consequences of exposure to high levels of urban ambient air pollution were made clear in the mid-twentieth century, when . . . air pollution episodes . . . resulted in many deaths and hospital admissions' (2005).

Alternately, you may decide that, while you want to include these ideas, your paper will be easier to read if you rephrase them.

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[1] 'Air Quality Guidelines: Global Update 2005' World Health Organization, Regional Office for Europe. Retrieved from http://www.euro.who.int/__data/assets/pdf_file/0005/78638/E90038.pdf

Example that is not plagiarized because it rephrases the ideas in the student's own words, but still cites the source of the ideas:
Over time, air pollution developed into a more serious problem, especially due to increased population density and increased use of fossil fuels. In the 1950s, urban air pollution sometimes became bad enough to result in clusters of deaths (WHO 2005).

All the previous uses of the material are correctly cited and are not plagiarism. However, the following example *is* plagiarism:

Example that is plagiarized because it uses the source's words without quotation marks:
As the use of fossil fuels increased, cities in Europe and the United States experienced increasingly serious episodes of air pollution. Since then, clean air legislation and actions reduced ambient air pollution in many regions (WHO 2005).

In this paragraph, the entire phrase, 'clean air legislation and actions reduced ambient air pollution in many regions' is exactly the same as in the original source. It is not enclosed in quotation marks, so it appears that the student is claiming to have composed those words. Simply citing the source does *not* prevent it from being plagiarism. If more than a few words in sequence are borrowed from the source, then they must be in quotation marks.

One point of style: if a several sentences use ideas or information from the same source, the citations can become awkward:

At the present time, air pollution in large cities in highly developed countries is mainly caused by vehicular traffic (WHO 2005). However, sixty years ago, when coal burning was common in urban areas, there were periods of severe air pollution, sometimes resulting in spikes in hospitalizations and deaths (WHO 2005). Air quality improvement has been due both to the reduction in coal burning and to the introduction of regulations on air quality (WHO 2005).

An alternative is to use a signal phrase:

The WHO report explains that at the present time, air pollution in large cities in highly developed countries is mainly caused by vehicular traffic. However, sixty years ago, when coal burning was common in urban areas, there were periods of severe air pollution, sometimes resulting in spikes in hospitalizations and deaths. Air quality improvement has been due both to the reduction in coal burning and to the introduction of regulations on air quality (2005).

The introductory phrase, 'the WHO report explains,' signals that information in all the sentences up to the reference (2005) comes from the WHO report. Without that signal phrase, the reader would assume that only the information in the last sentence came from

the WHO report. Many other variations on this signal phrase are acceptable, such as 'according to the WHO report'.

Note that one exception to the requirement of citing the source of ideas is if the ideas fall into the category of 'common knowledge'. For example, one is not required to cite a source to state that the radius of the Earth is 6370 km or that in diabetes patients, high blood sugar levels can lead to serious illness or death. A general rule is that if the information appears in a textbook or in several independent sources (that have not plagiarized from each other!) then it is common knowledge. However, a student may still choose to cite a source for information that is common knowledge in order to aid the reader who wishes to learn more about the subject.

3 Writing a research proposal, thesis, or dissertation

A research proposal should give the necessary information for a reader who is knowledgeable of the field to understand what the student is proposing to accomplish; how the proposed research builds on and adds to the current state of knowledge; and what tools, resources, and timeframe will be necessary to accomplish the research. A thesis or dissertation should explain clearly what the student has accomplished and how it has contributed to the field of research.

The proposal, thesis, and dissertation often follow a standard format that is discussed below. This format is designed to ensure that the paper includes all necessary information and that readers are able to easily find the information they seek. This format is standard for many East African universities, but it is not standard in the rest of the world, where the format is more flexible.

Depending on the exact nature of the content, the standard format may not be optimal. In this case, flexibility in the formatting will best achieve the goals of the paper. For example, some projects may require extensive discussions of theory before the research problem can be understood, and this development of the theory may include a review of the literature. In this case, the paper would include a theory section before the statement of the problem, and there would not be a separate literature review chapter. For other papers, once the research problem and objectives are explained, the justification and significance of the research will be immediately obvious, so that a justification section would be redundant and should be omitted.

Therefore, the following sections should be seen as useful guidance, but changes to the format may be made with the approval of the research supervisor, and, if necessary, the department chair. Additionally, faculties and institutes are encouraged to develop their own additional guidelines that are appropriate to their disciplines.

In order to make obvious the parallels between the research proposal and the thesis or dissertation, the sections of these papers are discussed together in this document. If a section should be present in only one type of paper, then this is noted in the discussion. To aid the student who would like a quick summary of these formats, sample tables of

contents are provided in the appendices to this document. As discussed above, the exact sections in the table of contents may vary based on the needs of the project.

One additional format exists for the thesis or dissertation: the paper-based format. This format is discussed separately at the end of this document.

The proposal, thesis, or dissertation should be set in a standard typographic format, using a standard font such as Times New Roman or Arial, or, in Latex, Computer Modern Roman. The font size should normally be 12 point, although for a large font such as Arial, 11 point may suffice. Use double line spacing except in the abstract and in block quotations. Page numbers should be centred at the bottom of the page. Margins should be at least 1 inch on each side, preferably 1.5 inches on the left side to allow for the binding.

Normally the proposal will be under 20 pages; a master's dissertation will be in the range of 50 – 150 pages; and a Ph.D. thesis will be in the range of 100 – 300 pages.

3.1 Cover page

The cover page follows a standard format that is shown in Appendix A.

The title should be carefully chosen to capture the scope and content of the study. Normally it should not be longer than thirty words. The cover page is not numbered.

3.2 Preliminary pages

The preliminary pages should be paginated in lowercase Roman numerals, starting with (i) for the first page after the cover page. The following pages may be included, as appropriate.

3.2.1 Declaration

The format for the declaration is below. The candidate signs to indicate that the work contained in the thesis/dissertation is his/her original work and has not been published or submitted to any institution for an award. This page is not included in a proposal. It can follow the format below.

> Declaration of Authorship
>
> The work presented in this thesis/dissertation is the result of my original research work. Where I have used the works of other persons, due acknowledgements are clearly stated. No portion of this work has been submitted in support of an application for a degree or qualification to any other university or institute of higher learning. I present it without any reservations for external examination.

Name……..

Signature…… Date……

3.2.2 Approval

The format for the approval is below. The supervisor(s) sign(s) to indicate that the work is approved to be sent for review. This page is not included in a proposal. It can follow the format below.

Approval

The research work culminating in this thesis/dissertation
was conducted under my guidance and supervision.

Name……..

Qualifications……

Signature……..…….…. Date…….

3.2.3 Dedication

The dedication is optional.

3.2.4 Acknowledgement

The acknowledgement is optional.

3.2.5 Table of contents

The table of contents should include the preliminary pages but not the cover page. Students are strongly advised to use the word processor's built-in capability of creating the table of contents. Include the appendices (if any) in the table of contents. See sample tables of contents in the appendices of this document.

3.2.6 Lists of figures, tables, plates, and maps

Each of these lists, if present, should be on a separate page.

3.2.7 List of abbreviations

The abbreviations used in the paper should be listed in alphabetical order. Note that the list should be kept as short as possible in order to prevent unnecessary work for the reader. A general guideline is that if a term is not used more than three times in any chapter, then it should not be abbreviated. Exceptions can be made for cases where the abbreviation may be more familiar than the full name, such as UNICEF. Once the paper is complete, use the 'search' command to ensure that all abbreviations listed are used in

the paper, and re-read the paper carefully to ensure that all abbreviations used in the paper are included in the list.

3.2.8 Abstract

The abstract should be a brief description of the entire work, suitable to be published separately from the paper. The abstract for a proposal will not normally include any results, but the thesis and dissertation should include the most significant results and conclusions. It should be single-spaced, normally under 300 words, and never exceeding one page. The abstract for completed theses and dissertations will be submitted separately for publication on the MUST website.

3.3 Body

The main body of the work should be double spaced and paginated in Arabic numerals separately from the preliminary pages.

3.3.1 Introduction

The introduction should give sufficient information for the reader to understand the research question and its importance. In some fields, providing this understanding may require significant development of theories, so that the introduction will be expanded from the guidelines below. In other fields, the following subsections may be sufficient. Students are encouraged to discuss with their advisers the possibility of modifying this list as required to best achieve the goals of the introduction.

Background: the background to the study provides sufficient information for the reader to understand the topic of investigation and its importance.

Statement of the problem: describes the overall problem that motivates research in this area.

Aim: states the target of the research. It is also sometimes called the purpose, goal, or main objective.

Objectives: are specific targets that must be achieved in order to accomplish the main target of the research study. They are sometimes called the specific objectives. To the extent possible, the objectives should be specific, measurable, and achievable.

Scope: limits the study in time, space, and content.

Significance or justification: describes the benefits that will result from the aim being achieved.

3.3.2 Literature review

The literature review should make clear how the proposed research builds on and adds to the current state of knowledge. If the candidate has carefully used the published

literature to develop a research topic as described in the first chapter, the literature review will be easy to write. Note that simply describing previously published works is not sufficient; your paper should make clear how previous work informs your current work.

3.3.3 Materials and methods

The materials and methods section should discuss issues such as the research design, study population, research site, sampling procedure, sample preparation, data collection, data analysis, and all other relevant information. Choices made in each of these areas should be explained. This section should also make clear if ethical clearance is required.

In the completed thesis or dissertation, the materials and methods section should give sufficient detail to enable follow-up by another researcher. If some procedures are very detailed, an appendix can be used.

3.3.4 Time frame or work plan

The time frame is required only for the proposal, not for the thesis or dissertation. It should follow a tabulated format shown in Appendix E.

3.3.5 Budget

A research proposal budget should follow the format provided in Appendix F. Theses and dissertations should not include a budget.

3.3.6 Results, analysis, and discussion

When possible, this chapter should be organized in the same order as the objectives. It is acceptable to write separate chapters for each objective. A proposal does not include results, analysis, or discussion.

3.3.7 Conclusions and recommendations

This chapter should draw conclusions from the work and, if appropriate, make recommendations for follow-up work. A useful guideline is that it should be possible for a reader to skip directly from the introductory chapter to the conclusions and recommendations and still obtain an overall sense of the work. A proposal does not include conclusions or recommendations.

3.4 End matter

3.4.1 References

The most important factors in formatting the references are that (1) it must be possible for the reader to find the work being referenced based on the information provided, and (2) the formatting should be internally consistent in terms of punctuation, italicization, ordering of items, etc. The candidate should also check carefully to ensure that all works

cited in the text are listed in the references, and all works listed in the references are cited in the text.

There are many different formats for references, and each faculty and institute is encouraged to choose an appropriate format for its discipline. In the absence of guidance, the student and research supervisor should choose a style and use it consistently. To obtain current information on styles prefered by each field, it may be helpful to enter the following into the Google search box, 'field PhD thesis reference style' where 'field' would be replaced by the area of research, such as 'management' or 'chemistry'. Many university libraries and writing centres maintain extensive lists of style guidelines for different fields.

Once a style is selected, then an additional Google search will aid in finding guidelines for using the style. The search may be customized for specific types of references, such as 'APA style online resource'.

3.4.2 Appendices

Appendices can be used to include information such as data tables and lengthy derivations that may be useful to some readers but that would disrupt the flow of the paper if it were included in the main body.

3.5 The paper-based dissertation/thesis format

The paper-based dissertation/thesis may be used with the permission of the supervision team. For a PhD thesis, a minimum of 3 publications or accepted manuscripts are required. At least 2 should be in well-regarded peer-reviewed journals. A third may be published or accepted in an edited and peer-reviewed conference proceedings. Masters dissertations require 1 publication or accepted manuscript in a well-regarded peer-reviewed journal. The journals should be in the candidate's field of study. The candidate should be the first and corresponding author of all publications.

Many of the sections in the paper-based dissertation/thesis are the same as in the standard format. The sections are listed below, and the ones that are different from the standard format are then explained. Optional sections are in brackets.

Cover page
Preliminary section
- Declaration
- Approval
- (Dedication)
- (Acknowledgement)
- Table of contents
- Lists of figures, tables, plates, and maps (this list should not include those that appear only in the publications)
- List of abbreviations (this list should include those abbreviations used in the publications)
- Abstract

List of publications included in the thesis or dissertation
Introduction
Results
Discussion
Conclusions and recommendations
References (not to include those that are cited only in the publications)
(Appendices)
Publications

List of publications included as part of the thesis or dissertation:
This section should list the publications in the same order in which they appear in the thesis or dissertation.

Introduction:
The introduction will include background information, literature review, research questions, objectives, and additional discussions of materials and methods that are not sufficiently discussed in the publications. It is acceptable to divide these sections into separate chapters.

Results:
The results section does not need to fully repeat the results from each of the papers, but should attempt to summarize the results for the benefit of the reader.

Conclusions and recommendations:
This section should attempt to draw conclusions and make recommendations based on the total contribution of all the work.

Publications:
Each of the publications should appear in its pubished form. If it has been accepted but not yet formatted for printing, then it can be formatted in the style of the rest of the thesis or in the form in which it was submitted. The student is responsible for obtaining any required permissions from the publisher and co-authors to reproduce the work.

Appendices:
If any of the papers have co-authors, then written communication from each co-author should clarify his or her contribution to the papers. These letters should be included in an appendix. Additional appendices can also be included if necessary.

APPENDIX A: Title page of a research proposal or thesis/dissertation

Optimizing the Refractive Index Sensitivity of Extraordinary Optical Transmission Based Sensors

(A Research Proposal Submitted by)
Lisa Walumbe
M.Sc., Makerere University, 2016
B.Sc. Mbarara University of Science and Technology, 2014

(proposal)
For a Thesis in Partial Fulfillment of the Requirements Leading to the award of Master of Science in Physics of Mbarara University of Science and Technology

(thesis/dissertation)
Thesis/Dissertation Submitted in Partial in Fulfillment of the Requirements for the Degree of Doctor of Philosophy in Physics of Mbarara University of Science and Technology

Supervisor:
Dr David Besigye

June 2017

APPENDIX B: Sample table of contents of a proposal.
The exact formatting, sections, and ordering may vary. Note that the cover page is not included in the table of contents.

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APPENDIX C: Sample table of contents of a traditional dissertation or thesis.
The exact formatting, sections, and ordering may vary. Note that the cover page is not included in the table of contents.

TABLE OF CONTENTS

APPENDIX D: Sample table of contents of a paper-based thesis or dissertation. The exact formatting, sections, and ordering may vary. Note that the cover page is not included in the table of contents.

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APPENDIX E: Sample timeframe for a research proposal

	Time Period				
Activity	Aug-Nov 2016	Dec 2016	Jan-Jun 2017	Jul-Aug 2017	Sep-Dec 2017
Proposal writing	***				
Presentation and approval		***			
Sample Collection	***	***	***	***	
Sample preparation		***	***	***	
Data Collection			***	***	
Analysis				***	
Dissertation preparation and submission				***	***

APPENDIX F: Sample budget for a research proposal

Item	**Description**	**Quantity**	**Unit Cost (unit)**	**Amount (unit)**
A: Stationery				
Books	A4 counter books	10	5,000	50,000
Pens	Water proof pens	5	10,000	50,000
File folders	Plastic folders	2	2,000	4,000
Sub-total				**104,000**
B: Consumables				
Starch	Ordinary	5 kg	120,000	600,000
Sudan III	Classic	500 mls	500,000	500,000
Ascorbic Acid	Ordinary	100 mls	150,000	150,000
Sub-total				**1,250,000**
C: Field Trips				
Transport	Fuel for 10 trips	800 litres	4,000	3,200,000
Facilitation	Subsistence	10	500,000	5,000,000
Park Fees	Entry	10	50,000	500,000
Sub-total				**8,700,000**
GRAND TOTAL	**N/A**	**N/A**	**N/A**	**10,054,000**