academicresearchJournals

Vol. 7(3), pp. 15-56, July 2019 DOI: 10.14662/ARJB2019.015 Copy © right 2019 Author(s) retain the copyright of this article ISSN: 2384-616X https://www.academicresearchjournals.org/ARJB/Index.htm

Academic Research Journal of Biotechnology

A Review Paper On:

Under Graduate Scientific Paper (Academic Research Proposal, Research, Senior Seminar and Practical Attachment Report) Writing Guide Lines

Chanie Derso M.

Wollo University, College of natural Science, Department of Biotechnology. Email: chaniederso@gmail.com

Accepted 1 April 2019

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ABSTRACT

Research is well-organized investigation and study of materials and sources in order to establish facts and reach to new conclusions. Research in all sciences and natural science in particular requires not only the excitement, but also specific knowledge and skills to guide the research process to its rational conclusion. On the time of writing, there are frequent occurrence of persistent challenges experienced by students with regard to; Poorly focused proposal titles resulting in internal inconsistencies, unclear statement of the problem, poor articulation of theoretical framework, lack of precision in presenting the interacting variables through a conceptual framework, incoherent literature review not consistent with study objectives, unclear study design, methodology and choice of methods especially methods of data analysis, unsystematic referencing style etc. Not only with research proposal development, but also there are problems with regards to academic research, senior seminar and practical attachment report writing. These also result poor outcomes for each session. This review paper will be prompted by the need to respond appropriately to students who require to be updated periodically with the necessary, but up-to-date capabilities in writing. Therefore, the objective of this guideline is to enhance knowledge and skills in quality under graduate academic research proposal, research, senior seminar and practical attachment report writing and presentation via with the best practices. To do so, this review paper was prepared from own teaching and research experiences, other model research papers and presentations. This review paper consists definitions, important elements, formats, writing styles, DOs and DON'Ts of writing and presentation. Hence, undergraduate students can get fundamental knowledge and skills for their proposal, research, seminar and other report papers writing and presentation.

Key Words/Phrases: Academic research proposal, Format, Oral presentation, Research elements, Review, Senior seminar, Writing style

Cite This Article As: Chanie Derso M. (2019). Under Graduate Scientific Paper (Academic Research Proposal, Research, Senior Seminar and Practical Attachment Report) Writing Guide Lines. Acad. Res. J. Biotech. 7(3): 15-56

1. INTRODUCTION

Conducting research requires excitement to solve problems that affect processes and outcomes, including content. Hence, writing Academic research proposals in the area of natural science requires not only the

excitement, but also specific knowledge and skills that would help to guide the research process to its logical conclusion which entails making viable recommendations for resolving identified problems, based on research evidence addressed through credible methodologies, thus making a valuable contribution in the area of study. On the time of writing, there are frequent occurrence of persistent challenges experienced by students with regard to; Poorly focused proposal titles resulting in internal inconsistencies. Unclear statement of the problem, Poor articulation of theoretical framework, Lack of precision in presenting the interacting variables through a conceptual framework, Incoherent literature review not consistent with study objectives, Unclear study design, methodology and choice of methods especially methods of data analysis, Unsystematic referencing style etc. These also result poor research outcomes. "A bad beginning makes a bad ending."(Euripdes). Not only with research proposal development, but also there are problems with regards to academic research, senior seminar and practical attachment report writing. This review paper for under graduate academic research proposal, research, senior seminar and practical attachment report writing guide lines will be prompted by the need to respond appropriately to students who require to be updated periodically with the necessary, but up-to-date capabilities in writing. Therefore, this guideline aimed to enhance knowledge and skills in guality under graduate academic research proposal, research, senior seminar and practical attachment report writing and presentation via with the best practices. In general, to write any of the above: discovering, narrowing, and focusing interesting topic; finding, selecting, and reading sources; grouping, sequencing, and documenting information; writing an outline and a prospectus for yourself; writing the introduction part and others; revising the final draft.

2. ACADEMIC RESEARCH PROPOSAL WRITING

2.1. What is Research proposal?

Proposal is a plan employed to solve a given problem. It is strategy used by a researcher in search of a solution to a given problem. It is a means of communication instrument used to communicate to reviewers of proposals with the intention of the researcher. The promotional document intended to convince the reviewers of the proposal about the capability of researcher in the bringing about an impact on the target group or beneficiaries or broadening the horizon of scientific knowledge.

Research work is initiated to seek solutions to problems that may institutional, local, national, regional, or international significance. The problem of interest has to be defined and the procedure for solving it developed along with specifying the appropriate objectives to be undertaken. Conduction research requires use of resources and many researches will compete for limited resources which preferred by funding agencies. This generally done by writing or preparing proposals submitted by researchers and release funds only if the proposals meet their standards.

In case of academic research proposal, students prepare their own proposal in order to practice, pass or graduate in the program, solve a certain problems and generate technologies as well. Therefore, as far as practice and passing, students should be prepared their proposal to solve a given problems and provide technologies.

With respect to quality, the research proposal should not be too long, nor should it be clattered with too many technical terms or scientific jargons. Otherwise, the reviewer would lose sight of what the proponent of the proposal intends to do. Hence, clarity, simplicity and parsimony should be the motto of the researcher when preparing a proposal. Serious thought should be given to the style and language of the proposal. Commonly accepted standards of proposal preparation should be employed. It must be also prepared in such a way that grammatically correct sentences are used and should be edited to avoid such errors.

2.2. Main Parts/Elements of Proposal

Proposal has the following three parts;

I. Front Matter/Preliminaries

The front matter/preliminaries includes all the following parts respectively

A. Cover page

The cover page must have the following components

- **a.** Name of the University
- **b.** Name of the college
- **c.** Name of the Department
- **d.** Log of the University
- e. Title of the project

Writing Style (a-d):

- Alignment_ Align at centered
- Font size____14
- Font face____ Times new roman
- Bold
- Capitalization__ Upper case letters
- \checkmark Short title is recommended with a clear view on the subject of study
- ✓ Avoid use of uncommon/unconventional and unnecessary abbreviations, repetitions....
- ✓ Do not begin titles with ambiguous phrases such as "*Factors influencing*…"
 Instead, state the actual/specific factors for the particular study. eg. *fertilizer rate, Watering frequency, seed rate etc.*
- ✓ Be Informative, specific and att
- **f.** Student name
- **g.** Student registration number
- Writing Style (e, f, g):
 - Alignment__ align centered
 - Font size____14
 - Font face____ Times new roman
 - Bold
 - Capitalization__ capitalize each word

h. Caption of degree for which proposal is made.

i.e. A research Proposal Submitted to the Department of (*your specific department*) in Partial Fulfillment of the Requirement for the Degree of Bachelor Science in (*your department*)

Writing Style:

- Alignment__ Justify
- Font size____14
- Font face____ Times new roman
- Bold
- Capitalization__ capitalize each word, not upper case

- i. Adviser name
- **j.** Date and Place

eg. July, 2016

Dessie, Ethiopia.

Writing Style:

- Alignment__ align to right
- Font size____14
- Font face Times new roman
- Bold
- Capitalization capitalize each word, not upper case
- Use full stop at the end
- **N.B.** All contents of the cover page (a-j) should appear on one page and in order accordingly without giving page number.

B. Declaration page

- It should start with new page
- The student must declare in writing the originality, intellectual honesty and compliance to anti-plagiarism for the work as follows:

i.e. I declare that this proposal is my original work and has not been presented in any other university/institution colleges and departments for consideration of any certification. This research proposal has been complemented by referenced sources duly acknowledged. Where text, data (including spoken words), graphics, pictures or tables have been borrowed from other sources, including the internet, these are specifically accredited and references cited in accordance with anti-plagiarism regulations.

Student's name	Signature	Date

the work is original. Therefore, the completed proposal must be duly signed by the student and the supervisors.

i.e. I confirm that the work reported in	n this proposal was carried out b	by the candidate under
my supervision as University super	visor.	
Advisor's name	Signature	Date

C. Table of Content

✓ The table of contents can also be headed simply 'Table of Contents', where all the parts of the proposal are listed with page numbers except the title and dedication page. If the chapters are grouped into parts, the heading such as PART I, PART II, etc. and the title of these parts, should be also appear in the 'Table of contents'. Subheadings within parts are frequently included uniformly.

- 21 Acad. Res. J. Biotech.
- ✓ Capitalization and wording of the titles of all parts and sections should agree exactly with the way they appear in the body of the text.
- ✓ Page numbers in the table of contents are always align right following a line of period's one space apart, separating the title from the page numbers. Note that only the beginning page number of each chapter or other section is given.

D. Acknowledgement

In this section, candidate is at liberty to give credit to individuals, groups, organizations, institutions etc supported in the way of facilities, financial assistance and other supports, but does not exceed one typed page.

E. List of Figure/s (if present)

- This section includes illustrations like pictures, graphs, diagrams, photographs, designs, figures, etc.
- In a list of figure/s, the figure number are given in Arabic numbers (1, 2, 3, 4, ...) followed by a colon (:); the captions start two spaces after the colon, and the page numbers in Arabic are separated from the caption by period leaders. Captions in the list of illustration should be agreed with those given beneath the respective illustrations

F. List of Table/s (if present)

• In a list of table/s, the table number (in Arabic), followed by a colon and the page numbers are listed flush right under the heading 'page'. The table title should two space after the colon following the table numbers and should agree exactly with the wording of the titles as they appear above the tables themselves.

G. List of Abbreviation/s (if present)

eg.

- This section should be included in the proposal when applicable
- The list can be arranged alphabetically, by the abbreviation itself and not the spelled out of term. Under the centered generic heading in 'List of Abbreviation', list of abbreviations on the left alphabetical order and leave five places between the longest abbreviation and its spelled-out term.
- The corresponding explanatory text should be in Title Case (capitalized each word).

✓ CBD	Convention on Biological Diversity
✓ FAO	Food and Agricultural Organization
✓ WHO	World Health Organization

Note that even if there is a list of abbreviations, the spelled-out version of the term should be given the first time. The term appears within the text, and it should be followed by the abbreviation in parenthesis. On subsequent occasions, only the abbreviation need be used.

H. Executive Summary/Abstract (Optional)

- \checkmark The executive summary is usually used by 'information services'.
- ✓ Summary of the entire proposal including the *background*, *statement of the problem*, *objective* (general), significance of the study, research location and design, method of data collection and *analysis* with a sentence or two.
- ✓ Should not exceed 500 words.
- ✓ Should not have in-text referencing
- \checkmark Should be one block paragraph and be contained on one page
- \checkmark Use italics style for executive summary, in this case scientific names don't write with italic.



II. Text or Main Body of Proposal

The main body of the proposal is usually separated into well-defined parts, titles and sub titles. The text may also include parenthetical references. The main body of the proposal includes the generic headings like Introduction (Part I), Literature Review (optional) (Part II), Material and methods (Part III), Work plan (IV) and Budget break down (Part V). These headings may be divided into first, second sub titles and so on. Each new part (generic heading) starts with new page.

PART ONE

1. INTRODUCTION

- > The first part of the proposal as main body begins with an introduction.
- > The introduction should give the rationales of the present study
- > It intended to provide the overall theoretical background and underlying the issue on hand.
- > Under the introduction the following sub titles should be appeared

1.1. Background

- This section must contextualize the research issue and terminate into the research problem statement.
- ✤ The background information is preferable if it is short and exact
- ✤ It must Create reader interest in the topic by providing a basis for the research issue
- ✤ The back ground part should close with the general objective.

1.2. Statement of the Problem

- It is important in a proposal that the problem stands out immediately after the background so that the reader can easily recognize it without having to meander around unnecessary reading in the sub-section.
- A problem statement points out the precise gap that exist in the literature, theory, or practice which the particular research will address
- Avoid the trap of obscure and poorly formulated problems that are masked in extended unfocussed discussions crowded with references and citations.
- It should be clear and prices

1.3. Significance of the Study

- In this section, mention the beneficiaries and how the communities may benefit from the findings of the study.
- The possible benefits of the study, persons to be intended in the outcomes, relevance of the study in contributing towards the overall development of the country should be addressed.

1.4. Objectives

- > The objectives specifies exactly what the researcher intended to do.
- > They must be clear, researchable and attainable
- > The objectives contains both general and specific objectives

- 1.4.1. General Objective
 - \checkmark The general objective should provide the accurate synopsis of the overall goal/ aim of the study
 - \checkmark It should be directly related to the proposed title.

1.4.2. Specific Objectives

- Should list the detail aim of the project
- Should be directly linked to the study variables as indicated in the title
- should be SMART (Specific, Measurable, Achievable, Realistic, Time bound)
- Should be outcome based verbs such 'Identify, define ...etc'.

1.5. Hypothesis

- Hypotheses are usually presented as directional declarations of relationships between two or more variables
- The hypothesis that we going to set are null hypothesis (H₀) which will accept or reject after the experiment accomplishment.



2. LITERATURE REVIEW (optional in the proposal)

- This is the second part of the text/main body of the proposal.
- Use relevant headings (1st, 2nd, or 3rd) developed from the research objectives to guide the structure of this part.
- It should be Para-phrased and creative (not direct copy-and-paste from the source).
- o Highlight the knowledge that find already existing in relation to the study problem
- Should be complete enough, contribute something new
- Should show the researcher is an expert in his/her area of endeavor. (Be systematic and synthetic in style using logical links in the flow of arguments)
- Bring out what is still not known about this study problem, i.e. to identify relevant previous work to find out where there are gaps of knowledge which call for research intervention.
- All borrowed ideas should be cited.

Writing Style for Literature Review:

- The first heading should
 - ✓ align centered
 - ✓ Font size___14
 - ✓ Font Face____ Times new Roman
 - ✓ bold
 - ✓ Capitalization___ UPPER CASE
- The second respective heading should be with
 - font size ____ 14
 - alignment___ align left
 - 🔷 bold
 - font face ____ Times new Roman
 - Capitalization _____ title case (capitalized each word)
- ✤ The respective third sub headings also write as
 - font size ____ 13
 - alignment___ align left
 - non bold
 - font face ____ Times new Roman

The text under each respective headings should

- align -----justify
- font size ----- 12
- font face ----Times new Roman

PART III

3. MATERIAL AND METHODS

- > This is the third main part of the proposal
- In this part, the researcher justifies every action made in implementing the proposed study. It must highlight methodological details appropriate to the study in an explicitly convincing manner.
- The material and methods include the following sub sections and most of this section should be written in the future tense.

3.1. Description of the study Area

- ✓ The specific area where the current research will conduct clearly describe with respect to latitude, latitude and distances from well-known place.
- ✓ In addition, the climatic factors (minimum and maximum average annual rain fall and temperature), the soil type, main agricultural activities and the target population should be stated accurately with separate paragraphs.

3.2. Materials to be used

- \checkmark Describe each instrument that will be used in the study.
- ✓ List experimental animals, microorganisms, plants and materials (seeds, fertilizer, water, etc) that will be used in the research process.

3.3. Treatments and Experimental Design

- \circ In this section,
 - the investigated dependent variables or factors (eg. plant height, grain yield, milk yield, seed rate, leaf number and area, root number, etc) should be clearly mentioned
 - ✤ the treatment levels which the dependent variables will be made should be listed.
 - the appropriate designs (CRD, RCBD, LSD ...) and number of replications have to list
 - the area of the experiment unit (eg. Petri dish, magenta/baby food jar, plot, intra and inter row spacing (if) should be included.
 - the suitable procedures of the current experiment should be listed
 - ✤ the specific experimental management ways should be clearly indicated

3.4. Data collection

- 4 It may be qualitative and/or quantitative data
- For quantitative data, the parameters that to be measured, methods and time interval of collection should be pointed out
- 4 In addition, the corresponding measurement units (if) (eg. cm, kg, day, etc) should be indicated.

3.5. Data Analysis

- For quantitative data analysis;
 - the suitable statistic (descriptive statistic and/or ANOVA) should be mentioned
 - the statistical software (eg. SPSS, SAS, R- STAT, ...) (if) to be mentioned
 - ♦ the kind of multiple comparison (eg. LSD, Dunken Multiple test, ...) to be indicated



PART IV

4. WORK PLAN

- This is the fourth part of the proposal.
- In this part, the researchers should be made a list of all the key activities in the project and the time interval in which they will be carried out.

PART V

5. BUDGET BREAK DOWN

- In this section, list of items/activities and the required expenses for stationary, materials, labour etc. should be listed in table form.
- ✤ In parallel, the units, quantity, unit price and total price should be indicated
- ♦ At the end, budget summary for each expense with some contingency to be mentioned

III. Reference Matter or Back Matter

- This is the last part of the proposal
- It includes the reference and appendix and these should write as the 6th and 7th generic heading respectively.

6. REFERENCES

6.1. Reference in text

- For citations in the text, the author-date system of referencing shall be used. There are two possible ways of citation, namely, the subject-centered and author-centered citation. In the subject-centered citation, the author's last name followed by a comma, a space, and the year of publication are written in parenthesis usually at the end of the sentence. In the author-centered citation, only the year of publication is placed in parenthesis and a coma is not required after the author's name.
- Whenever statements are borrowed from published literature or when the author cites a reference to an earlier work, the author(s) with year of relevant publications are to be given immediately where it is referred in the text. **Author, Year** method is the most frequently used others use numbering system, therefore, in this regard; you are expected to use based on your adviser, college, institution.... instruction.
- In the case of Ethiopian names, the author's first name precedes that of the father's name; and

Ethiopian names should not be abbreviated. Eg. Abera Kebede and not Abera, K.

- Examples;
 - ✓ One author:
 - Subject centred: (Kamoun, 2003)
 - Author centred: Kamoun, (2003)
 - When the work has no named author, cite it as 'Anonymous'
 - Subject centred: (Anonymous, 2007)
 - Author centred: Anonymous (2007)
 - eg. phytophthora species are both sterol and thiamine auxotroph and typically require exogenous sources of beta hydroxy sterols for sporulation and thiamine for growth (Kamoun, 2003).

or

- The study of (Kamoun, 2003) indicated that phytophthora species.....

or

- According to (Kamoun, 2003), phytophthora species.....

or

- Kamoun (2003) reported that phytophthora species.....

• Two authors:

eg. - Late blight of potato has caused by more human suffering than any other disease of plants (Roberts and Royd, 1984).

Or

- Roberts and Royd (1984) found that Late blight of potato......
 - or

- According to Roberts and Royd (1984), Late blight of potato.....

• Three or more authors:

- Use the first author followed by *et al*. It is an abbreviation of Latin meaning "and others".
 - eg. Cordeauxia edulis is used for various purposes including firewood, bee forage, mulch, soil conservation, nitrogen fixation, live fence and tannins (Mbuya et al., 1994).

Or

- Mbuya et al. (1994) revealed that Cordeauxia edulis is used for various.....

Or

- As Mbuya et al. (1994), Cordeauxia edulis is used for various.....

• When more than one reference is made in any one of the contexts, place the references in

chorological order and use semi-colon between them.

eg.- Plant tissue culture is a technique of separating plant cells, tissues and organs from the donor plant and rising on synthetic media under aseptic conditions (Erica, 2000; George, 2008).

Prepared by Chanie D.

Or

- Principally, useful in low germination potential plant species that have recalcitrant seeds as well as in dying out species (Minocha and Jain, 2000; Pasqual *et al.*, 2012).

Or

- does not stand water logging and seedlings are fragile and require care during transportation to protect from damage (IBPGR, 1984; Booth and Wickens, 1988; FAO, 1988).
- If **two or more articles** written by the same author in the same year are cited, then distinguish between them using suffixes a, b, c, etc. in both the text and the reference section

eg. (Smith and Jones, 1982b).

• Cross References:

✓ In case, the publication in which the borrowed statement appeared originally was not located by the present author, who referred it in another publication, its reference is given as (*Ralls 1971 cited from Brown 1998*). This shows that the statement was originally published by **Ralls** (1971), but the present author could not see the original text and he referred it the statement as given by Brown (1998). In such a case, in the section of References, only Brown 1998 need be referred.

• Citation in Edited Book:

- in such cases, the author of the respective articles/chapters can be referred in the text, not the editors
- In addition, you can take/cite ideas from thesis (MSc, PhD) and presentations.

6.2. Reference Section

 \checkmark A list of references ordered alphabetically on author's surname, must provide at the end of your paper. Make sure that all references listed in the reference section are cited in the text and all references cited in the text are present in the reference section, but no more. Do not use the *et al* in the reference section. The name of all the authors should be written. Include with each of the reference details as follows.

✓ Examples;

* Book Citation:

eg. Agrios, G.N. (1978). Plant pathology. Academic press, Inc., New York, 703 pp.

	^				
author	yr of publication	name of book	name of publisher	place of pub	T. pages

 * Alexpoulos, C.J. and Mims, C.W. (1979). *Introductory Microbiology*. 3rd ed. John Wiley and Sons, Inc., USA, 632 pp. * Hartmann, H. T., Kester, D. E. and Davis, F. T. (2002). *Plant Propagation: Principles and Practices*. 6th ed. Prentice- Hall International, Inc., Englewood Cliffs, New Jersy, 647 pp.



***** Journal Citation:

- eg. * Erica, E. B. (2000). Special symposium: In vitro plant recalcitrance. *In vitro Cell Dev. Biol.* **36**: 141-151.
 - * Brown, D. C. W. and Thorpe, T. A. (1995). Crop improvement through tissue culture. *World J. Microbiol. and Biotech.* **11**: 409-415.
 - * Asghari, S., Abbas, S. J., Chen, L., He, X. and Qin, Y. (2013). Micropropagation of *Myrica rubra* Sieb. and Zucc. using shoot tips and nodal explant. *Afr. J. Agric. Res.* 8 (17): 1731-1737.



Citation in Edited book:

eg. * Myers, N. (1997). Biodiversity's genetic library. In: *Nature's Services: Societal Dependence* on *Natural Ecosystem*, PP. 255-364, (Daily, C. D. (ed). Island press, Washington DC, USA.

Note:		
Name of edited book		
Nature's Services: Societal Depender	nce on Natural Ecosystem	
➤ editor of the book		
Daily, C. D.		
> Title of the article		
Biodiversity's genetic lib	rary.	
> Author of the article		
Myers, N.	 Various publishers may 	use differently.
Articles page range	Therefore, use it based on that.	
PP. 255-364		

***** Thesis Citation:

eg. Ali, H. M. (1988). Cordeauxia edulis: production and forage quality in central somalia. MSc thesis. Faculty of Agriculture, Somali National University, Somalia.

Format:

Author__ (year)__ Title__ MSc thesis or PhD dissertation __ Faculty__ Name of University__ Country

7. Appendix (if)

- It is the last part of the proposal
- An appendix need not be essential in all paper. However, it may be useful to make available to the reader materials related to the text, but not suitable for inclusion in it. Appendixes can also tables too detailed for text presentation, a large group of illustrations, and technical notes on method, schedule and forms used in the collecting materials, and copies of documents not different categories should be placed in separate appendixes. When there are more than one appendix, each should be given a number as APPENDIX I, APPENDIX II, etc.

2.3. Margins and Font

- A margin of 1-inch (2.54cm) shall be left on all four sides of all pages of the paper
- > Times New Roman font shall be used throughout the documents
- The font size to be used throughout the paper shall be 12 point; exceptions are headings (1st to 3rd level) and contents of the title page
- The content of the title page of the papers shall be presented in title case except the name of the University, College and Department which should be written in upper case letters and placed at the top of the page. The font size in this page is 14 and it is in bold face

2.4. Tables, Figures and other Illustrations

> Tables:

- ✓ Efficiently organize and comprise data into a standardized form.
- \checkmark Each table should be precise and clear to the reader.
- ✓ Do not arrange much information in one table. Each table should have a separate number and title given at the top.
- ✓ If abbreviations and symbols are used, it should be explained in a key or in the footnote.
 Abbreviations must be consistent for all tables in a thesis.
- ✓ If the table is too long wide for the page, it should be turned lengthwise (broadside table). In such a case, make sure that the binding comes on the top of the table.
- ✓ Table notes shall be used to describe the contents of the caption or column headings crossreferenced using superscripted numbers.
- ✓ All tables must be numbered consecutively, corresponding to the order in which they are introduced and discussed in the text.

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- \checkmark Tables and figures should be single line spaced.
- ✓ Tables should not be constructed in MS Excel.
- \checkmark The headings within the Table can be bolded.

> Position of Table/s:

- Each table should be placed as close to the first reference to it in the text as possible. When the table cannot be accommodated in the remaining space in the page, continue the text to make the full page and place the table at the top of the next page.
- The title of the table should be written above the table and separate two points from table number. The table number should give with Arabic numbers (1, 2, 3, 4,), followed by a period, and a brief descriptive caption.
- Borders are required above and below the column headings and below the last row of the table.
- eg.

Table 1 . Effect of different Clorox concentrations on decontamination and germination percentage of <i>C. edulis</i> seeds.			
Clorox	Decontaminated	Germinated Seeds (%)	
concentration	seeds (%)		
3%	30	15	
5%	80	70	
10%	85	20	
15%	85	10	

> Illustrations:

✓ Illustrative materials consist of drawings, photographs, charts, graphs and maps. Such illustrations are generally called "Figures". Each illustration should have a consecutive number.

Each illustration must be self-contained and explanatory with reference to the text concerned.

> Position of Figure/s:

Each figure should be place as close as the first reference to it in the text as possible. When the figure cannot be accommodated in the remaining space the page, continue the text to make the full

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page and place the figure at the top of the next page. Wide illustrations may be placed broadside on the page with the top at the binding side.

The title of the figure should be placed below the illustration in the forms of Fig. 1, Fig.2, Fig. 3,

etc, followed by a period, and a brief descriptive caption.

- Figures should be single line spaced
- The headings within the Figures can be bolded
- All figures must be numbered consecutively, corresponding to the order in which they are introduced and discussed in the text.
- ♦ eg.



Figure 2. Seeds of *C. edulis*. Coated seeds (A); De-coated seeds (B) and cross-sectional part of seeds (C) of *C. edulis*.

2.5. Pagination

- There are two categories of pagination (giving page).
 - The front matter or preliminaries (cover page, declaration page, table of content, Acknowledgment, list of figures, list of tables, list of abbreviations and executive summary) numbered with consecutive lowercase roman numerals (i, ii, iii, iv,) centered at the bottom of the page. Note that no page numbers appear on the title page, dedication page. Therefore, the page starts from table of content with number 'iii'.
 - The rest of the matter, starting from part I to appendix, numbered with consecutive Arabic numerals (1, 2, 3, 4, etc) centered at the bottom of the page.

2.6. Line Spacing and Paragraph Format

- The line spacing for the text shall be 1.5; however single line spacing shall be used for titles, captions, texts of tables and figures and list of references
- An extra line (1.5 spacing) shall be kept between paragraphs and above and below all headings, sub-headings and captions.
- Text alignment shall be justified
- References should be separated from one another by 1 line

- All paragraphs of the text shall be in block paragraph format (the first line of paragraphs are not indented)
- Each chapter of the paper should begin on a new page, and the title of the chapter should be centered at the top of the page in bold Times New Roman 14 point font

2.7. Other Considerations

- Scientific names in any part of the document should be written in *Italic Font*, the genus name starting with capital and the species name in a small letter. Moreover non English words or local words such as *enset*, *teff*, etc should be italicized.
- Contractions such as can't, shouldn't, didn't should not be used
- The ampersand (&) should be avoided and its normal form (and) should be used instead
- Abbreviations should be written out if they appear at the beginning of a sentence
- All measurements should be given in metric or Standard International (SI) units.
- Never begin a sentence with a number or with a molecular formula

2.8. Summary of Important Tips for Academic Research Proposal

- Aside from this variation in font size and formatting, all the text in the document (including captions and column headings of tables) shall be written in12 point size normal font.
- No headings, subheadings or captions of tables or figures are underlined
- o abbreviations in headings and full stop at the end of the headings should not be used
- Each of the titles of the preliminary sections and the chapters of the text should be written in bold upper case letters and be centered
- o Second and lower level headings shall be aligned left
- The chapter headings of the text must be numbered with Arabic numerals (1, 2, 3...) starting from the Introduction and ending with the References or the Appendix/ces (if any).

 \circ Look at the following box as A_4 paper. Each respective box represents the first or new pages for each major heading. Therefore, as it mentioned above each generic heading start with new page.

WOLL UNIVERSITY COLLEGE OF NATURAL SCIENCE DEPARTMENT OF BIOTECHNOLOGY



Effect of Nitrogen Fertilizer Rate on Pod Size of Yeheb (*Cordeauxia edulis*): A Multipurpose Shrub

By; Name..... ID. No.....

A research Proposal Submitted to the Department of Biotechnology in Partial Fulfillment of the Requirement for the Degree of Bachelor Science in Biotechnology

Adviser: (Name and Status)

New page

March, 2019 Dessie, Ethiopia.

Declaration

I declare that this proposal is my original work and has not been presented in any other university/institution colleges and departments for consideration of any certification. This research proposal has been complemented by referenced sources duly acknowledged. Where text, data (including spoken words), graphics, pictures or tables have been borrowed from other sources, including the internet, these are specifically accredited and references cited in accordance with anti-plagiarism regulations.

Student's name

Signature

Date

Date

I confirm that the work reported in this proposal was carried out by the candidate under my supervision as University supervisor.

Advisor's n

Signature



	List of Abbreviation	New page
✓ CBD	Convention on Biological Diversity	
✓ FAO	Food and Agricultural Organization	
✓ etc		
	Executive Summary (optional)	New page

PART I		
1. INTRODUCTION		
1.1. Background of the Study	This page indicated that part I starts with page	
1.2. Statement of the Problem	I, but not all these parts restrict with	
1.4. Objectives 1.4.1. General Objective		
1.4.2. Specific Objectives		
- etc 1.5. Hypothesis		

	PART II	
		New page
	2. LITERATURE REVIEW	
2.1. Environmental Factors		
2.1.1. Olimetic Ecotors		
2.1.1. Climatic Factors		
2.1.2. Soil Factors		
•••••	•••••••••••••••••••••••••••••••••••••••	
2.2. Bio fertilizer		
•••••		••
	PART III	
		New page
3. N	MATERIAL AND METHODS	
3.1. Description of the Study Area		
5.1. Description of the Study Area	1	
3.2. Materials to be Used		
•••••	••••••	••••••
3.3. Treatments and Experimenta	l Design	
ciev freuditentes una Emperationa		
3.4. Data to be collected		
25 D.4. A 1		
3.5. Data Analysis		
•••••		

PART IV 4. WORK PLAN Table x:						New page			
No	Activities		Time (Month, 2016)						
•		Sep	Sep Oct Nov Dec Jan Feb etc				etc		
1									
2									
etc									
PART V 5. BUDGET BREAK DOWN Table xx:									
No.	Items	Unit	Unit Quantity Unit Price Total Price						
1									
2 etc									
eic									
	Total								
PART VI 6. REFERENCES									
Gurel, S. and Gulsen, Y. (1998). The Effects of IBA and BAP on <i>In Vitro</i> Shoot Production of Almond									
(Amygdalus communis L.) Tr. J. Bot.22: 375-379.									
Raj, V.S., Tejavathi, D. H., Nijalingppa, D. H. M. (1989). Shoot tip culture of <i>Dolichos biflorus</i> .									
<i>current sci.</i> 58 (24): 1385 -1388.									
Etc.									

2.9. Oral Presentation of Research Proposal

- The presentation tests the researcher's/student's readiness to conduct field and/or laboratory work of the proposed study successfully.
- The student is expected to use communication technology, usually the Power point projection highlight key aspects Part I (the background, problem, significance, objectives and hypothesis), Part III (the area description, materials, treatment and design, data collection and analysis), Part IV and V.
- In oral presentation, usually the concise content of the work is presented followed by discussion on them. To influence and win the attention of the audience, it is good to warm them up with jokes, anecdotes, or quotations related to the topic.

Some Do's and Don'ts;

- In order to develop confidence and overcome stage fright, practice and rehearse, if possible in front of colleagues/classmates
- Don't read manuscript or else that will bore the audience. Use a precisely prepared outline.
- Use simple and plain language free of unnecessary jargons
- Voice has to be clear and loud enough to be heard, understood and expressive enough to arouse interest.
- Watch your non-verbal behaviors like facial expression, eye contact, gestures, physical appearance, posture etc.

Note: A proposal has to write in future tense. Try to revise a sentence with respect to structure, word choices, punctuation, spelling and a paragraph with topic

3. UNDER GRADUATE ACADEMIC RESEARCH WRITING

3.1. Introduction

Research is the application of the scientific method in the study of the problems. Through research one can discovers new knowledge, organizes it in applicable form and invests technologies to solve development problems. It is an integral part of university education via contributes the teaching learning

process. The research paper is written after data collection and analysis. Therefore, the first step for any research is proposal writing. One of the main differences between them is the use of tenses. i.e. the proposal write with future tense while the research is with past tense. The other differences are indicated below in the list. A research differs from other kinds of writing in that it must be documented, that is, it must be based on facts, observations, experiments or evidence that can be verified by the reader.

3.2. Components of Academic Research Paper

Like proposal elements, research paper also consists three main parts; the preliminaries, main body and back matter or reference part.

I. Front matter/ preliminaries

A. Cover page

As reflected in the proposal above, the cover page must have the following components

- Name of the University
- Name of the college
- Name of the Department
- Logo of the University
- Title of the project
- Student name
- Student registration number

As it reflect above in the proposal, you have to follow all tips and writing style for research also.

• Caption of degree for which proposal is made

i.e. A research Paper Submitted to the Dep. (your specific department) in Partial Fulfillment of the Requirement for the Degree of Bachelor Science in (your department)

Date and place

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B. Declaration page

• As it reflected in the proposal, both students/researchers have to duly sign on the same time as follows

i.e. I/we declare that this research is my/our original work and has not been presented in any other university/institution colleges and departments for consideration of any certification. This research proposal has been complemented by referenced sources duly acknowledged. Where text, data (including spoken words), graphics, pictures or tables have been borrowed from other sources, including the internet, these are specifically accredited and references cited in accordance with anti-plagiarism regulations.

Student's name	Signature	Date

• The supervisor/Advisor also sign as follows

my/our supervision as University supervisor.					

Advisor's name	Signature	Date
C. Table of content		
D. Acknowledgment		
E. List of Figures (if)	\checkmark Look at the writing sty	le on the above
F. List of Tables (if)	section Page ()	
G. List of Abbreviations (if)	• B-H; should start with r	new page
H. Abstract		

- \checkmark The abstract is usually used by 'information services'.
- ✓ Abstract of the entire research including the *background*, *statement of the problem*, *objective* (general), significance of the study, research location and design, method of data collection and *analysis*, *result/finding/,conclusion and recommendation* with a sentence or two.
- ✓ Should not exceed 350 words.
- ✓ Should not have in-text referencing

- ✓ Should be one block paragraph and be contained on one page
- \checkmark Use italics style for abstract, in this case scientific names don't write with italics.
- ✓ Most of the abstract should be written with the past tense, because it shows the action which is already done.
- \checkmark It should never give any information or conclusion that is not stated in the paper
- \checkmark No graphs and tables are included

I. Key Words

- o contain few most important technical terms which deal with information in the paper
- \circ it should be about 6-10 words or phrases alphabetically

II. Text or Main Body of the Research Paper

As reflected in the above proposal section, the research paper should contain the following parts.



PART I 1. INTRODUCTION

1.4.2. Specific Objectives

1.5. Limitation of the study

 \checkmark Students can state all challenges with respect to material, financial and any other problems.

PART II 2. LITERATURE REVIEW	New page
PART III 3. MATERIAL AND METHO	New DS
3.1. Description of the Study Area	
3.2. Material Used Use	similar writing
3.3. Treatments and Experimental Design	as above osal section
3.4. Data collection	
3.5. Data Analysis	/

PART IV

4. RESULT AND DISCUSSION

4.1. Results

- it starts with new page
- present the pertinent data rather than endlessly repetitive data
- actual results of the study
- original data and illustrations summarized with tables, figures, graphs...
- results should be presented in the past tense.
- no interpretation of the data here
- give the data in logical order and attractive

4.2. Discussion

- It starts with new page
- \circ interprets the result
- consolidate generalizations
- \circ $\,$ look for similarities and differences with respect to the previous works
- \circ show how your own result interpretations agree or contrast with previously published works
- \circ should start with new page.

New page

PART V

5. CONCLUSION AND RECOMMENDATION

5.1. Conclusion

- \checkmark In this section, the main findings are emphasized based on the discussion above
- \checkmark It is better to write down using bullet

5.2. Recommendation

- The main findings with related to future directions in research and application should be recommended
- ✤ Indicate future careers about the situation with respect to the research.
- ✤ It should be related to the concluded study (not some wishful from nowhere).
- ✤ It is better to write down using bullet

PART VI



New page

6. REFERENCES

- As it reflected on the above section (on proposal), all the references in the text should list in this section and all the references listed here should present in the text above, but no other references which don't use in the text. It should be in alphabetical order and hanging form.
- For instance;
 - * Alexpoulos, C.J. and Mims, C.W. (1979). *Introductory Microbiology*. 3rd ed. John Wiley and Sons, Inc., USA, 632 pp.
 - * Ali, H. M. (1988). Cordeauxia edulis: production and forage quality in central somalia. MSc thesis. Faculty of Agriculture, Somali National University, Somalia.

7. Appendix

• We use appendix as it reflect above in the proposal

Summary:

- All the writing styles such as the alignment, font size, font face, capitalization, boldness, before and after line spacing etc are similar with the proposal
- o position of tables and illustrations look like as it reflected in the proposal above
- Pagination and references both in text and reference section are similar with proposal section.
- In addition to some elements, there are differences in the use of tenses. i.e. most of the proposal content use future tense while the research paper write with past form.

3.3. Research Progress Report Writing

- This is a report meant to give information to adviser or supervisor, employer, sponsor about the present stage of a project. It does the following things;
 - \checkmark briefly describe works done so far
 - \checkmark state problem faced, if any in the context of the present work
 - \checkmark discuss the specific aspects that are worked on the present
 - ✓ present plans including suggestions if any toward overcoming the problem faced by way of keeping the project on track.

3.4. Oral Presentation of Research Paper

- keep all techniques as it reflects in the above in proposal section, but the presentation of research paper includes *introduction* (*background*, *statement of the problem*, *significance*, *objectives*), *material and methods* (*location of experiment*, *material used*, *treatment and design*, *data collection and analysis method*), *Result and discussion together and conclusion and recommendation* as well.
- Look at the above techniques on the proposal section.

New page

4. UNDER GRADUATE SENIOR SEMINAR WRITING

4.1. Introduction

- A seminar paper is a work of original research that presents a specific thesis and is presented to a group of interested peers, usually in an academic setting. Although seminar papers have specific purposes and guidelines in some places, the general process and format is the same. Seminar papers have to have a clear structure. This implies that sections and subsections follow in a logical order and do not merely constitute a random enumeration of aspects relevant to the main topic. The paper has to be subdivided into paragraphs, sections and subsections.
- Use your own words to describe what other authors have written. Do not copy and paste other authors' texts. In case of translation, do not simply translate the English texts.

4.2. Main Parts of Seminar Paper

Seminar papers are scientific texts and are thus subject to certain requirements regarding format and content. It is including Preliminary parts, main body (introduction, main section and concluding remarks) and the back matter (reference and appendixes). 51 Acad. Res. J. Biotech.

I. Preliminary Parts A. Cover Page

As it indicated on the above sections, the seminar paper should contain the following parts on the cover

page. These are;

- Name of the University
- Name of the college
- Name of the Department
- Logo of the University



• Caption of degree for which Practical Attachment is made.....

i.e. A Senior Seminar Report Submitted to the Department of (*your specific department*) in Partial Fulfillment of the Requirement for the course of Senior Seminar (*Number*)

- Student name
- Student registration number
- Name of organization/institution attached to....
- Date and place.
- B. Acknowledgement

> This is the section where the student acknowledges all those persons and/or any institutions.

- C. Acronyms and Abbreviations
- D. Table of Contents
- E. List of Tables (if)
- F. List of Figures (if)
- G. List of Tables in the Appendix (if)

Each Start with new page

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• The table of contents providing the deep structure has to be included directly after the cover page. It has to contain page references for all sections and subsections, the headings of which have to be repeated at the respective locations in the text.

H. Abscract/ Executive Summary/

- The executive summary provides a summary of the body of the seminar, outlining its scope, purpose and highlighting the key conclusions and recommendations.
- It should be one single block paragraph (it should not be divided into sections or paragraphs)
- It should be brief and concise (not more than 350 words)
- No citations of previous study results and references to tables and/or figures in the text shall be made.

II. Main Body of the Seminar

1. Introduction

- The introductory paragraph provides a first characterization of the topic. It answers the question why this topic is worth investigating and is concluded by an overview of the structure of the paper.
 - In the subsequent paragraphs, firstly the theoretical foundations of the topic have to be displayed. This is usually done in the form of a review of the relevant literature in the respective field.
 - In general, the introduction part of the seminar paper consists the background information, the problem (answer why the given title is selected), the significance of writing the seminar paper and final closed with the objective/s of the paper.

2. Main Section

✓ The scientific nature of a seminar paper is closely connected to the use of literature that has been published in the relevant field. Existing statements by other authors have to be quoted, controversial approaches have to be displayed and a position regarding their content has to be developed.

3. Conclusion

> focus on summary, own assessment and evaluation

further aspect and outlooks

III. Back Matter

- The back mater consists of reference and appendixes. Throughout the text, all direct and indirect quotations have to be clearly marked and corresponding references have to be indicated. A seminar paper lacking either a complete bibliography or references in the text will not be accepted.
- If you make use of other authors' texts, you have to mark this clearly in your paper by citing the exact source.
- An appendix can only be added if the topic requires the use of large-size figures and tables or comprehensive mathematical expositions.
- Please make sure to indicate all sources of any type of intellectual property. This also applies to all quoted numbers, tables and figures. The violation of intellectual property rights by passing off ideas of others as one's own is a serious abuse of the rules of scientific duty of documentation.
- ✤ The source of tables and graphs has to be cited.

✓ For the writing style of each section, you have to follow all the above guidelines.

5. PRACTICAL ATTACHMENT REPORT WRITING

5.1. Introduction

There is no strict rule on specific formatting of a typical field attachment report. Students may format their attachment report in the style most appropriate for their studies/activities depending on the nature of the specific project activities they have been involved. However, a typical field attachment report shall consist of three main sections: the preliminaries, the main text (Body) and the reference material. An experiment based research project, the reporting format shall be the same as that of Research report.

5.2. Main Parts of the Paper

I. Front matter/ preliminaries

A. Cover page

As reflected in the above sections, the cover page must have the following components

- Name of the University
- Name of the college
- Name of the Department
- Log of the University
- Caption of degree for which Practical Attachment is made.....

i.e. A Practical Attachment Report Submitted to the Department of (*your specific department*) in Partial Fulfillment of the Requirement for the Degree of Bachelor Science in (*your department*)

- Student name
- Student registration number
- Name of organization/institution attached to....
- Date and place
- B. Acknowledgements
 - This is the section where the student acknowledges all those (persons and/or institutions) who assisted in contributing to the success of the field attachment and report writing.
- C. Acronyms and Abbreviations
- D. Table of Contents
- E. List of Tables (if)
- F. List of Figures (if)
- G. List of Tables in the Appendix (if)
 - This section presents the captions of the tables included in the appendix part of the report along with the page numbers.
 - H. List of Figures in the Appendix (if)

Each starts with new

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> This section is constituted of the captions of the Figures and/or Illustrations included in the Appendix part of the report.

I. Abstract/Executive Summary/

- The executive summary provides a summary of the body of the report, outlining its scope, purpose and major activities, highlighting the key conclusions and recommendations.
- It should be one single block paragraph (it should not be divided into sections or paragraphs)
- It should be brief and concise (not more than 400 words)
- No citations of previous study results and references to tables and/or figures in the text shall be made.

II. Main text (Body) of the Report

1. Introduction

- ✓ This chapter shall present the background of the field attachment program, General description of the host organization including:
 - Organizational profile;
 - geographical location,
 - historical background,
 - main functions or core activities,
 - Vision and Mission,
 - core values.
 - organizational structure;
 - o Structure and organization of the specific department where student was deployed,
 - $\circ\;$ major activities and focus of the department, and
 - $\circ\;$ student's main objectives for the attachment exercise.

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2. ATTACHMENT ACTIVITIES

- This is the main and longest part of the report. It presents the activities and assignments which the student was involved in while on field attachment.
- This body of the report should be presented in logical sequence and broken-down into readily identifiable sections and headings.
- This section may address the following points:
 - ✓ working conditions and functions (Working days and hours, overtime, field trip, etc)
 - \checkmark Attachment tasks assigned and experiences gained throughout the attachment period
 - \checkmark working tools used
 - ✓ Level of accomplishment of the duties/responsibilities assigned
 - \checkmark New knowledge and skills gained in each of the duties and responsibilities assigned
 - ✓ Difficulties and challenges experienced and how handled
 - ✓ Major benefits derived from field attachment program
 - ✓ Contribution of the attachment program to your academic and personal development
 - ✓ The correlation between the field attachment activities and your university knowledge
 - \checkmark Your relationship with the attachment supervisor and other staff

3. CONCLUSION AND RECOMMENDATIONS

This section should provide a key summary derived from the Attachment experience including the major strengths and weaknesses of the field attachment program and recommendations as to how the attachment exercise can be improved by the University.

III. Back Matter

- **5. REFFERENCE**
- 6. APPENDIX

Look at the above writing styles.