

GOMAL UNIVERSITY DERA ISMAIL KHAN



A manual for synopsis and thesis writing: style and format

**DIRECTORATE OF ACADEMICS
GOMAL UNIVERSITY, DERA ISMAIL KHAN
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PART A: PREPARATION OF SYNOPSIS

The synopsis for a graduate program can be divided into following sections.

1. Title

It should be comprehensive to reflect the main contents and subjects of the research plan to be undertaken by the student.

2. Introduction

This section must contain statement(s) on the general subject, the orientation, setting, and foundation, on which the investigations were made, but it is not and should not be made a general literature review. The objective and rationale of studies must be described. The purpose of introduction is to orient the readers. It should contain a statement of the problem to be investigated so that the reader(s) can proceed with the nature and purpose of research in mind. It should overview briefly the scope, aims and general characters of the research.

There is a tendency to use “Introduction” as a second window for “Review of Literature” with the incorporation of several citations. This is a duplication of the scope and purpose of a subsequent section, the “Review of Literature”. It is, therefore, desirable that “Introduction” should provide a general account of a particular topic on which one has to embark upon.

3. Review of Literature

This is an important section. Before writing this portion, the student should search for relevant research articles from different sources, like library, scientific journals, data bases, internet, major supervisor, senior students and others actively working in his/her selected area/topic of studies. But the student must be critical in selection of relevant research papers, their review and integration. It is recommended that student(s) must study at least 15-20 original research papers before starting writing of synopsis and must have copies of such papers with them.

4. Materials and Methods

This section should contain elaborative experimental methods, analytical procedures and statistical techniques to be followed, each supported with appropriate and authenticated literature citations, Name-Year system (see thesis section). One aspect which is mostly overlooked is the discussion with a statistician at the planning stage of experiment which otherwise is highly required and very helpful for the students and

supervisors. Another aspect worth to consider is the research facilities available in the department of the student, university or any other sister institute from where the requirements could be met.

5. References

An alphabetical order be followed, details of which are given in part B - section pertaining to thesis preparation. An acceptable format of synopsis is shown on the next page.

Seven sample pages are given next to specify the format of synopsis.

(Sample Page # 1)

TITLE OF RESEARCH

University Logo

Submitted By
Name of student

DEPARTMENT OF
FACULTY OF
GOMAL UNIVERSITY, DERA ISMAIL KHAN

(Sample Page # 2)

TITLE OF RESEARCH

Synopsis of proposed thesis research submitted in partial fulfillment of the requirements for the degree
of..... (name of degree)

Submitted By
Name of student

Approved by the Supervisory Committee

(Name and Signatures)

- 1. ----- Supervisor -----
- 2. ----- Co-Supervisor -----
- 3. ----- Member (optional) -----
- 4. ----- Chairman -----

(Sample Page # 4)

Chapter 1

INTRODUCTION

(Sample Page # 5)

Chapter 2

REVIEW OF LITERATURE

(Sample Page # 6)

Chapter 3

MATERIALS AND METHODS

(Sample Page # 7)

REFERENCES

PART B. PREPARATION OF THESIS

1. The Volume of Thesis

The bulk of a thesis is no criterion for the excellence of a piece of work. A student must keep in view the economy of space, labor, time and clarity of presentation. Padding with lengthy descriptions and avoidable discourses do not add to the standard of scholarship. The study of given research enjoins on us a forthright, objective description of phenomenon and interpretation of results. It is therefore, essential that the bulk of a thesis must be carefully controlled to incorporate and digest sufficient and appropriate scientific information.

2. English Usage and Grammar

The students will be responsible for correct English usage and grammar. Small sentences comprising 25-30 words may be good practice to follow. A good sentence is one which describes or addresses one thing at a time in minimum words. Such straightforward sentences are easy to construct (e.g. "There has been an increase in the amount of milk consumed by teenagers" and "Teenagers are drinking more milk" – compare the two sentences to say the same thing). The students may seek help of other competent persons in this regard. The brief description given below will help the students in correct expression. A good flow and consistency of language in statements and paragraphs should always be maintained which makes the presentation attractive.

a. Punctuation

- Use a comma before 'and' or 'or' in a series of three or more items, e.g. "0.8, 2.1, and 3.9 kg ha⁻¹"; "shoot biomass, root biomass, leaf blade or leaflet length and width, and plant height"; but "nodule weight and size and N₂ fixation."
- Use a semicolon to separate a series of items within a list if any one of them itself includes a comma, e.g. Treatments in the second fertilizer study were @ 56, 112 and 448 kg ha⁻¹ N; 25 and 49 kg ha⁻¹ P; and 47, 93, 139, 186 and 279 kg ha⁻¹ K.
- Punctuation in display lists (where each item starts on a new line) depends on the content and context. If all the items are short, independent phrases, use no period. If anyone of the items is a complete sentence, end each item with a period. If the list is functionally part of the introductory sentence, punctuate with commas or semicolons and a final period, just as we would if the sentence had no line breaks.

- Use no comma in dates, e.g. May 2000; 14th May 2000.
- Commas and periods come before a closing quotation mark, an asterisk, or a superscripted footnote number; semicolons and colons come after. Do not double periods at the end of a quotation: "Once is enough."
- Use single quotes around cultivar names the first time these are introduced in the abstract or text; however, do not use both single quotes and the abbreviation cv. or the word 'cultivar'. Place punctuation outside of the single-quote marks. Do not use cultivar quotes with landraces or experimental lines.
- For parentheses within parentheses, substitute brackets for the inner pair. For example: "- --- declared the problem solved (Lloyd-Jones, 1873 [as cited by Andrews, 1996])." Professional Societies publications require two exceptions in prose:
 - Use brackets to enclose scientific names that already contain parentheses, as in "soybean [*Glycine max* (L.) Men.]" was ----- "An alternative is to use commas, as in "soybean, *Glycine max* (L.) Men., was -----."
 - Put equation numbers within brackets, regardless of other parenthetical marks. For example: Eq. [1], Eq. [3] to [9].
 - For mathematical usage, fences are used inside out in the order {{()}}.

b. Hyphens, Spaces, and Dashes

A word containing a prefix, suffix, or combining form is a derivative and is almost always written as one word. Compound words used to express an idea different from that expressed by the separate parts are usually written as one word. Hyphens and en-dashes are used to avoid a confusing sequence of letters, a confusing sequence of adjectives, a jumble of ideas, or possible confusion with a word of the same spelling without the hyphen, e.g. co-op, as distinct from coop. Comprehensive rules for compounding words can be found in dictionaries, books of usage, and style manuals. Most of the compounds and derivatives fall under the following general rules:

- Derivatives are usually written solid, e.g. antiquity, clockwise, fourfold (but 10-fold or 1.5-fold), nonadditives, nonsignificant, postdoctoral, preemergent, reuse, shortwave.
- Where several usages are acceptable, choose one and use it consistently throughout the manuscript, e.g. winter hardiness or winterhardi-ness, but not both; likewise, main stem or mainstem, but not both.
- Use hyphens with prefixes to words that begin with a capital and sometimes in a few

awkward combinations that bring like vowels together, e.g. un-American, semi-independent.

- Hyphenate compound adjective when used before, but not after, the word it modifies, e.g. a winter-hardy plant; the plant is winter hardy.
- Hyphenate two-word verbs but not phrasal verbs. The distinction is not always obvious, but two-word verbs usually have the modifier first and the main verb second; phrasal verbs have the verb first. It may be easier to memorize a few often-used forms. Common examples include air-dry, heat-shock (but 'heat shock' as a noun), out-cross (but 'crossing out'), winter-kill (but 'winterkill' as a noun).
- Compounds in 'cross' are so many and varied that a reference list drawn from a good dictionary can help: cross-check, cross-country, cross-examine, cross-eyed, cross-fertile, cross-fertilization, cross-fire, cross-grained, cross-hair, cross-index, cross-legged, cross-link, cross-linkage, cross-linked, cross-multiply, cross-pollinate, cross-pollination, cross-product, cross-purpose, cross-reaction (antigens), cross-reference, cross-section, cross-sectional, cross-sterile, cross-tolerance, crossbred, crossbreed, crosscut, crosscutting, crosshatch, crossing-over (in genetics), crossover, crosspiece, crosswalk and crosswind.
- Use a hyphen after a prefix to a hyphenated adjective, e.g. semi-winter-hardy plant, non-winter-hardy plant.
- Use a hyphen in a compound adjective that includes a number. This applies especially to units of measure, e.g. 10-yr-old field, 6-kg samples, 4-mm depth, 5 to 10-cm layer.
- Hyphenate compound modifiers starting with the adverb 'well', except when another adverb precedes it, e.g. well-known method, but very well-known method.
- Do not use a hyphen after an adverb formed by adding 'ly' to an adjective, e.g. an intensively cultivated hillside (Note that the word 'early' ends in 'ly' but is not an adverb; therefore, "early-morning data collection" is correct.)
- Use a hyphen for compound adjectival expressions as needed for clarity, e.g. "on a per-gram basis, winter-grown cereals, but low molecular weight substance".
- Use an en-dash instead of a hyphen in a compound or prefixed adjective that has a phrase in one of its parts (and the phrase cannot be hyphenated), e.g. "*Avena sterilis*-derived resistance genes; pre-Civil War surveys."
- Use an en-dash instead of a hyphen after a superscript or subscript, e.g. F₃-derived; NO₃-N; but 'nitrate N' when spelled out.
- Use hyphens to join numbers and prefixes in chemical names, e.g. trans-2-bromocyclopentanol. There are exceptions (see Dodd, 1986 for more details).

- Use an en-dash between joined nouns of equal importance, e.g. Webster–Nicollet soil complex; log–normal function; oxidation–reduction potential; corn–soybean rotation; fusarium wilt–root–knot nematode complex.
- As a specialized instance of the previous rule, use an en-dash between two chemical compounds, e.g. HCl–H₂SO₄.
- In references and in parenthetical values, use an en-dash to indicate a range of numbers, e.g. "p. 23–49; Plant Dis. 66:172–176; during the final study years (1997–1999). If either of the numbers is negative, or is otherwise modified, then use the word 'to' instead of the dash, e.g. a score of -200 to 250; -5 to 10°C.
- The above rules are given in part to explain why sometimes hyphens and sometimes en-dashes appear in final typeset form, and why sometimes hyphens are added and sometimes deleted. If we cannot or do not wish to distinguish hyphens from en-dashes in a manuscript, use hyphens throughout. Getting the hyphens absolutely correct is far from the most important step in preparing a scientific document like these. However, never make a one-letter division, like a-mong; never carry over suffixes such as -ed, -able, -ible, -ing; do not divide the initials of a name, or the forename and the initials, the month and the day or such combinations as £12, 4s, 2005 BC or 6.00 P.M.; never carry over the hyphen to the next page.

c. Correct Use of Common Words

The following entries address common difficulties in scientific use of very common **affect vs. effect** (*verb*). 'To affect' means **to act** upon something that already exists; 'to effect' means to bring some thing or condition into existence.

Affect, vs. **effect** vs. **impact** (*noun*). An 'effect' is a result or outcome; an 'affect' is an emotion (the term is used chiefly in psychology); an 'impact' is a collision, the force of a collision, or (by extension) a major effect. That is, 'impact' is not a neutral equivalent of 'effect'.

Alternate vs. alternative. Use 'alternate' to mean occurring or following by turns, or alternating in time or space — first one, then the other. Use 'alternative' for one of two or more mutually exclusive possibilities.

Based on vs. on the basis of. 'Based on' is adjectival and must modify a noun or pronoun which usually immediately precedes it. For example "This conclusion is based on four years of experience" or "Conclusions based on experience may still require testing." To modify a verb, use a phrase starting with "on the basis of. EXAMPLE: Change "based on the first four years of results, we discarded the original hypothesis" to "on the basis of our results, we discarded the original hypothesis."

Between vs. among. Use 'between' for two entities; 'among' for more than two.

cf. (Latin confer, compare) vs. see. Use 'cf.' sparingly, to mean "see, for a contrasting

view." For scientific writing, the English 'see' and 'compare' are preferable.

Compare to vs. compare with (*verb + preposition*). Use 'compare to' to point out similarities only; use 'compare with' to point out differences (or both differences and similarities). More broadly, use 'compare to' for overall likenesses and contrasts and for subjective, qualitative comparisons and use 'compare with' for objective, quantitative comparisons. Also do not be afraid to simplify "more --- compared with" to "more --- than" (e.g., "more bio-mass at the second harvest than the first" instead of "more biomass at the second harvest compared with the first").

Due to (*adjective or preposition*) vs. **because of** (*preposition*). 'Due to' as an adjective must modify a noun or pronoun; as a preposition, however, it is equivalent to 'because of' or 'owing to' and can modify a whole clause. Authorities disagree on this usage. The ACS manual (Dodd, 1997) rejects the prepositional usage, and both *Webster's Tenth New Collegiate Dictionary* and *The Hew Fowler's Modern English* (Burchfield, 1996) uphold it. The CBE manual (1994) is silent on this point (CBE, 1994, p. 756). A writer who wishes to avoid minor controversy may safely use 'because of' instead of 'due to' at the beginning of a sentence or an independent clause.

e.g. (Latin *exempli gratia*, for example) vs. i.e. (Latin *id est*, that is). Use 'e.g.' to give an example out of available possibilities; use 'i.e.' to specify exactly what is intended, if, as you write, you think "for example" and "that is" instead of "ee-gee" and "eye-ee", you will not have trouble with the distinction.

e.g. and i.e. vs. for example and that is. Use the abbreviated form in figures, tables, and in parentheses; otherwise, use the English words in full.

Ensure vs. insure (*verb*). Use 'ensure' to mean "make certain that a desired outcome occurs." Use 'insure' to mean "protect" against monetary loss as in an insurance policy.

et al. (Latin *et alii*, and others) vs. etc. (Latin *et cetera*, and the rest). 'Et al.' is limited to reference citations and entries, and refers to people. There is one period ('et al.', not 'et. al.' or 'et al'). , and only one 'etc.' refers the reader to additional, unspecified examples of what has just been mentioned. If an adequate group of examples has been introduced as such (with 'e.g.' or 'for example'), the 'etc.' is unnecessary. If the reader needs to be told to think of other possibilities, say so in English words ("and the like" or "and so forth"). In scientific writing, however, a specific statement is preferable. Give the right examples, or a complete list, but do not leave it to the reader to figure out what else we mean.

Further vs. farther (*adj. or adv.*). 'Further' means in addition or to a greater extent; 'farther' implies distance in space or time.

Geographical names. Use common English equivalents of place names where such exist (e.g. Rome, not Roma; Munich, not Munchen; Mexico City, not Mexico; but Buenos Aires. Beijing).¹

Likely vs. probable (*adj.*) and **likely vs. probably** (*adv.*). In general, use 'probable' and 'probably', unless the emphasis is on the future. 'Likely' is often used in combination with another adverb (e.g. more likely, most likely, very likely), but such expressions do not

often have a place in scientific writing. For example "The phenomena described in this research could probably have ---," but not "The phenomena described in this research could likely have ---" (because the statements are in the past). "It is likely that the results will ---" is a good use of likely, since it looks to the future: "It is likely that the results were ---" makes sense only if the emphasis is less on the explanation than on the likelihood of the explanation.

Percent vs. percentage vs. percentage point. 'Percent' is used with numeric values, and is spelled out only at the beginning of a sentence. 'Percentage' describes such a value, and is always spelled out. 'Percentage point' is used with numeric values, and refers to a step of 1% in a percentage value; it is treated as a word, not a unit, and so is not abbreviated. For example "Grain fill was 20%; Nine percent of the plants; the percentage of grain fill."

Principal (*adj.*) vs. principle (*noun*). Use 'principal' to mean foremost, chief, main; use 'principle' to mean a tenet or belief.

Restrictive and nonrestrictive clauses (*that* vs. *which*). Generally, 'that' introduces a restrictive clause, one that gives information essential to the meaning of the sentence; 'which' may also do so, but to be read as restrictive the 'which' must not be preceded by a comma. Examples: "Only soil samples that contained >30% clay were tested. Those samples which were rejected for testing were stored for use in a separate study. This is the house that Jack built." If in such sentences, the restrictive 'that'-clause were omitted, essential meaning (*what kind of samples? >30 % clay; which samples? the rejected ones; what about this house? Jack built it*) would be lost.

"Which" introduces a nonrestrictive clause, one that gives only incidental or supplemental information. For example "The soil samples, which had been stored in a rain shelter, were tested for clay content. The rejected samples, which received no further treatment, were stored for use in a separate study. The house, which Jack built, will be razed next week. If in such a sentence the nonrestrictive 'which' clause were removed, the basic statement (*samples were tested, samples were stored, the house will be razed*) The difference in meaning between restrictive 'that' or 'which' and nonrestrictive 'which' is so important, but is signaled by so slight an item as an ordinary comma, that it may be worth resorting to a simple rule. Use 'that' (but not 'which') with no comma before when the added phrase gives essential information (is restrictive); use 'which' with a comma before when the added phrase is incidentally useful (is nonrestrictive).

Some troublesome singulars. Apparatus (pl. apparatuses or apparatus); criterion (pl., criteria); medium (pl., media); phenomenon (pl., phenomena); species (pl., species).

Use vs. employ (*verb*). 'Use' is the simpler word, and neutral. 'Employ' carries additional connotations, as of advantageous use or hiring for wages.

Use vs. utilize (*verb*). The meanings are not identical. Use 'utilize' meaning "to turn to practical use" only to indicate that some unexpected use was found for an object or procedure, e.g. At the development phase, it was possible to utilize earlier research. A

passive sentence such as "the samples were oven-dried using the larger oven" implies "by us" (this grammatical construction is called *subject understood*), but in scientific writing an explicit statement is far preferable. Recast the sentence in the active voice (We oven-dried the samples using ---). Alternatively, change "using" to "with" for pieces of equipment or materials and "by" for procedures.

Whereas vs. while vs. but. Most contexts require only the simple 'but'. Use 'whereas' only when we intend a strong and parallel contrast (while on the contrary). Use 'while' occasionally for a mild and parallel contrast, but never when it can be confused with "and at the same time. Except in formal proclamations and resolutions (where it means "in view of the fact that"), 'whereas' requires a comma before and takes no comma after.

Words of foreign origin. Foreign words in common usage in English (such as denouement, de novo, per diem, or Zeitgeist) is considered to have been incorporated into the language. They are thus considered English words, and are set in roman type, not italic. Dictionaries indicate roman vs. italics for words of non-English origin. Common words of this kind include ad hoc, a priori, et al., in situ, in vitro, in vivo, per se, vice versa, and vs. Do not hyphenate such foreign words, not even in adjectival position (e.g. in vitro development, ex officio member, in situ changes).

/ (slash or solidus). With rare exceptions, the slash is reserved for mathematical division and ratios. If we want to express a combination of ideas, decide on exactly what we mean and say it in words. For example "In an expression such as 'appearance of collar/ligule of first leaf, change the wording to 'collar or ligule', 'collar and ligule' or 'collar and/or ligule'."

Slang words. The authors/writers should avoid the use of such words as far as possible or should give some explanation for the readers and audiences.

Foreign Words: Foreign words are underlined unless used in a quotation. Foreign words that have been anglicized need not be underlined.

Tense: The past tense is proffered for scientific writing. Exceptions are quotations and references to existing facts or to facts which will be true in the future, in which cases the present and future tenses may be used.

Person: Personal pronouns (I, we, he, they, and the like) should be avoided. For example, "Clover was found to be better quality than was alfalfa" is preferable to "I (or he, they, etc.) found that clover was of better----". However, an exception to this rule is the case where personal pronouns appear in material that is quoted.

ABBREVIATIONS

Use abbreviations sparingly. If we have to abbreviate, try to find a standard abbreviation given in Ulrich, Abacus or CABI abstracting agencies rather than making up one specific to our paper. If the use of an ad hoc abbreviation is necessary, avoid letter groups that already are familiar abbreviations but with a different meaning. For a fictitious example, do not abbreviate leaf appearance interval as LAI, even if we are not going to discuss leaf area index. Some commonly used abbreviations and acronyms (an acronym is an initialism or abbreviation that can be pronounced as a word) have become words in themselves; DNA and ELISA, for example, are rarely spelled out.

Avoid using abbreviations at the beginning of sentences and in titles. Never begin a sentence with a single-letter abbreviation (I instead of iodine, for instance). Let the context decide whether to use an abbreviation. What makes sense in the dense presentation of Materials and Methods or the quantitative presentation in Results may be clumsy in the introduction or the conclusions. Abbreviations could be used in the text provided it is written in full where it appears first time in text. The following are exceptions to this rule:

- 1. Titles:** Such as Mr., Mrs., Ms., M/S, Sr., Jr. etc. are always abbreviated.
- 2. Lengthy Words:** Acceptable abbreviations for lengthy words and phrases are used separately throughout the text. Such abbreviations must be presented in parentheses immediately after the words or phrase for which they stand. For example “Phosphate buffered saline (PBS) was used in all dialysis operations”. In succeeding sentences throughout the thesis, initials PBS could be used in place of words phosphate buffered saline.
- 3. Commonly Used Abbreviations:** Abbreviations such as “mm” and “cm” which do not require a period, or an “s” to make a plural, are acceptable. The very form must agree with the quantity, e.g. “one mm is...., but Three mm are ...”
- 4. Space and Time:** To save space and time, it is sometimes convenient to use abbreviations for lengthy words or phrases used separately throughout the text. Abbreviations must be presented in parenthesis immediately after the words or phrases for which they stand.

In “Discussion” and “Summary” parts of a Thesis, while discussing the results, students often fail to mention the exact nature of treatment and give only symbols such as A , B , C & D or I, II, III & IV or T1, T2, T3 & T4 etc. This often confuses the reader(s) and he/she finds it difficult to fully grasp the idea meant to be clarified. If the reader has to refer to the previous pages again and again, for the explanation of notations and symbols, the very interest in the publication is lost. It is therefore, essential that treatments should be explained very briefly within parenthesis whenever the symbols are used. Alternatively use symbols for treatments which are very much self-explanatory. However, always try to use internationally accepted abbreviations throughout the thesis.

THESIS AND ITS SUB-SECTIONS

A thesis generally covers full information on a narrow field of studies conducted by a scientist and presented in a logical sequence. It cannot be compared to a book or a monograph. In writing a thesis, certain conventions in presentation are observed. This special type of presentation is generally sub-divided into following parts and subsections:

1. The Preliminaries

- a. Title page.
- b. Dedication (Optional).
- c. Acknowledgements.
- d. Table of contents with page references.
- e. List of tables with titles and page references.
- f. List of figures with titles and page references.
- g. List of illustrations, if any, with page references.
- h. List of appendices, if any, with page references.
- i. Abstract

2. Main Body: This part is divided into following chapters:

- a. Introduction.
- b. Review of Literature.
- c. Materials and Methods.
- d. Results and Discussion.
- e. Summary and conclusions.

3. References

4. Appendices

A brief description about the sections and sub-sections is given below for the sake of general guidelines to students.

1. The Preliminaries

a. Dedication: This part is optional.

b. Acknowledgement: In acknowledgement, credit should be given to individuals who have contributed to the research or to the thesis preparation, funding agency of research and the institute that facilitated the research work.

c. Table of contents: The table of contents should list in order the titles of major divisions and subdivisions exactly as these appear in the body of thesis, the list of figures, all with their page citations. Also include the list of references and appendices. No material preceding the table of contents should be enlisted in it.

The heading, table of contents, is typed one line space in the centered capitals at top of page and without terminal punctuations. The body of the table of contents then follows one 1.5 line space below. Table of contents (continued) is put on succeeding page(s) flush with the left margin. Spacing depends on the table. Generally, use a 1.5 line space between major headings and between major and sub-headings; use a single line space between sub-headings of the same order. Major headings are in capitals or in title format. Major headings begin at the left margin; and second order sub-headings two more spaces. All the words in sub-headings are in title format except articles, prepositions, and conjunctions except in cases where any of the letters is the first in a title.

d. List of tables and figures: If tables and figures are used in the thesis, list of tables and list of figures must be included in the table of contents but on separate pages.

i. List of tables: The position of the heading, list of tables is the same as for the table of contents, with the column heading, page, in the same position. Arabic numerals are used for tables. These are typed at the left margin and aligned vertically by the period marks following each number.

ii. List of figures: The list of figures appears on a separate page and in the same general form as the list of tables. No distinction is made among drawings, figures, or photographs. These should all be designated as figures and numbered consecutively with Arabic numerals.

e. The handling of tables and figures: All the tables and figures are faced in the same manner as the written text unless dimensional considerations require the presentation along the length of the page. In this case, these should read properly when the page is rotated 90 degrees clockwise.

Figures larger than the normal page size usually may be reduced photographically. If reduction is not feasible, the material may be folded. When folded, the sheet should be approximately, but no larger than 8.25 by 10.75 inches with a 1-inch left margin for binding remaining free of folds. Because of special requirements of the microfilm service, this arrangement is not recommended for the Ph.D. thesis. All the figures and tables must be numbered and titled. The number and title of figure are placed one 1.5 or double line space below the figure.

f. Abstract

The abstract is a summary that allows readers to determine the value of reading the full thesis. It should include a statement of the problem, an outline of procedures or methods, and a summary of results and conclusions.

2. Main Body

The construction of main body of a thesis is the joint responsibility of the student and his

Advisory Committee. It should be appropriate to the character of the work to be reported. Generally, following sections are included.

Introduction: This is more extended and elaborative version of the introduction as presented in the synopsis. It is re-emphasized that this chapter must contain statement(s) on the general subject, the orientation, setting, and foundation, on which the present investigations were made, but it is not and should not be made a general literature review. The objectives of studies must be described. The purpose of the introduction is to provide an overview of the problem. It should contain a statement of the problem investigated so that the readers could proceed with the nature and purpose of the thesis in mind. It should briefly outline the scope, aims and general character of research.

There is a tendency to use “Introduction” as second window for “Review of Literature” with the incorporation of several citations. This is a duplication of the scope and purpose of a subsequent section, the “Review of Literature”. It is, therefore, desirable that “Introduction” should be kept confined to a general account which has led one to embark on a particular project.

a. Review of Literature: The “Review of Literature” should begin with a few references by way of introduction, the rest or bulk should only include citations pertinent to the investigations. A “Review of Literature” is thus a documentation of the related work done by others, its merits and limitations, i.e. critical analysis of reported research on the problem or topic under review. The review may be placed under sub-headings for clarity and more critical analysis. In principle, the Review of Literature should provide an account of research work done by others on the related topics. Implicitly it has to be a critique of the previous research results.

While it is not the intention to discourage the students from presenting all the information he/she likes to include in a “Review”, it is necessary at the same time, that a judicious care is taken by his teacher while editing, to retain only those references which are pertinent to the subject of thesis. The students are advised to be exact and concrete in preparing a critique of results of research done in the past. The following steps are usually involved in the preparation of Review:

- Before a student starts working on a thesis, he/she should consult his teacher about the need and scope of the “Review” as well as digestion of reviewed information in the “Discussion” so as to eliminate diffused and unnecessary literature on various aspects of an extensive field.
- The students may do full exercise at the first typing stage taking note of English Usage and Grammar and get it vetted by his/her Supervisory Committee to bring it within the four corners of logical presentation of the information which is pertinent to his/her subject.
- After vetting, thesis should be typed on an ordinary paper and a semi-final thesis be submitted to the Directorate of Advance Studies for a final general check, after which final typing may be done.

These stages of work will allow a student to have mental satisfaction of presenting everything that he/she thought was necessary and by the end will be trained for scientific presentation of facts.

Overall, the Review of Literature should be a complete and orderly development of the status of the knowledge in the area bearing of the work. It should be divided into subsections as appropriate for the particular situation. The sub-sections dealing with different aspects of work should be arranged as nearly as possible in the same order as the items are considered in later divisions. The On-Line Search facility and Computer Search Services are very helpful for review of literature.

c. Materials and Methods

This section usually explains various aspects of what materials were used and how the work was done. The soundness of research has its foundation on the methods followed by the investigator. The validity of his/her technique and logic of interpretation need to be clearly stated and must be acceptable.

To understand and evaluate a thesis, readers would like to know exactly how the study was carried out. If the author does not supply complete information in this chapter, no credence can be placed on the research results and conclusions. It is also essential that the material selected and the basis of selection, if drawn from literature, be clearly described along with other relevant information on the subject.

If a student does not attend to his work personally, he/she will always remain shy and indifferent to the use of research, analytical procedures, statistical methods and their presentation. The make and models of scientific equipment used may be mentioned which will help validate the health of findings.

d. Results and Discussion

This is the main and an important part of the manuscript containing description of experimental observations. Representative data, therefore, should appear in a clear, concise, and logical form. The emphasis should be on precise description of the phenomenon observed as well as collection of data and not on reflection.

A very common error to be avoided, when no number is involved, the word percent should be used instead of percentage, e.g. "it was expressed as a percentage of the total; it was 10 percent or 10 % of the total but not to be expressed as percent of the total.

In this section, the writer may answer the questions "So what?" as he/she interprets his/her data in relation to the original objectives. He clarifies the meanings and implications of various results and may indicate possible future developments. The reasoning done must be accurate and in accordance with a recognized method of logic. It is emphasized again that "Review of Literature" and "Discussion" parts of a thesis, are

intimately related, the former reflected entirely in the subsequent account.

e. References

It is important that the students should go to the primary sources of information and an effort always be made to obtain the information from original articles published in a journal or a reprint obtained from the author. The tendency to cite the literature from abstracting journals is neither enough nor in scientific spirit. In only unavoidable circumstances, the secondary source of information may be utilized or when the original article is in a language other than English. Secondary reference(s) should be written in parenthesis after quoting primary reference without the main heading. Following points should be kept in mind while enlisting references.

- i.** References should be arranged alphabetically according to author and then according to the year.
- ii.** A complete reference includes author(s), year of publication, complete title of the paper, and reference to journal (See sample references).
- iii.** The number of the issue of the volume of a journal may not be given, unless paging of each number starts from 1 or issue number may be given in all the references consistently.
- iv.** In case of book, the name of the author(s), year of publication, title, edition and complete address of the publisher must be given and should not be underlined.
- v.** Names of journals and number of their volumes should not be underlined.
- vi.** The words 'Idem' and 'Ibid' may be avoided in citing references.
- vii.** Abbreviations for journals should be used as being recognized internationally.
- viii.** The word 'References' may be used in preference to 'Literature Cited'.
- ix.** The title must appear exactly as it does on the first page of article or the title page of the book.
- x.** For titles of scientific papers, only the first letter of the first word is capitalized (exceptions are proper names, scientific names or certain other words which are capitalized always).
- xi.** The family name of the first or sole author precedes the initials or given names. The names of co-author(s) follow in normal order and are separated by comma.
- xii.** When the reference is the proceedings of a symposium etc. and the author to be cited is the editor, it may be indicated as such in parenthesis.
- xiii.** References except of publication by Government department or other Organizations, for which no author is known, may be listed as Anonymous.
- xiv.** In case of publications of organizations, learned societies or Government department, the name of the organization, Government department, Ministry or Division be given in place of author, if no author is indicated in the publication.
- xv.** Work of authors, whether individual or joint should be discussed under different topics or headings in the review, i.e. integration and analytical treatment.
- xvi.** There are many systems of writing References in vogue in various sciences and journals. With this end in view, a model list is given below to be followed for uniformity in the theses preparation.

Format of Listing References

i. Journal article

Ghafoor, A. and A. Salam. 1993. Efficiency of Ca^{2+} concentration in irrigation water for reclamation of a saline-sodic soil. *Pakistan J. Agric. Sci.* 30:77-82.

Kelly, J.D., J.R. Stavely and P.N. Miklas. 1996. Proposed symbols for rust resistance genes. *Annu. Rep. Bean Improv. Coop.* 39:25-31.

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ii. Article in serial publication

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iii. Article not in English with English abstract

Title translated into English

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v.

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Treat electronic sources as you would the same kind of material in print, starting with the author, year, and title and then giving further information as for a chapter or journal article, but adding the essential on-line address URL and the date the information was posted or accessed or when the address was verified.

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b. Appendices

Appendices are generally included to help clarification and make readers understand statements in the main body of theses or dissertations. In addition, sometimes appendices are useful to support the interpretation of results. This becomes a record of data for different computations later by the author or the readers.

3. Margins

All portrait-oriented pages must have a left margin of at least 1.5 inches throughout the document in order to allow space for binding. Landscape-oriented pages must have a top margin of 1.5 inches. All other margins must be at least 1 inch

4. Font Size and Style

Use 12-point Times New Roman or other common serif type font for all text throughout the document.

5. Line Spacing

Use standard 1.5 line spacing throughout the document.

6. Page Numbering

Small Roman numerals must be used for the Preliminary section. The title page is understood to be 'i' but no number appears on this page. Arabic numerals begin with the first page of the body of thesis, but no number appears on this page. Numbering continues consecutively through the appendices. All the numbers, both Roman and Arabic, are printed 2.5 cm from the bottom of the paper flushed to the center of page. No punctuation is used with the page numbers. Headings or narratives end one 1.5 line space above the page number.

7. Thesis Binding Colour

Thesis binding colour will be "green" for M.Phil/MS/M.Sc (Hons) degree program and "black" for Ph.D. degree. Golden colour will be used for title page printing in the printing press for all aforementioned degree programs.

Fourteen sample pages are given next to specify the format of thesis.

(Sample Page # 1)

TITLE OF RESEARCH

University Logo

Submitted By
Name of student

DEPARTMENT OF
FACULTY OF
GOMAL UNIVERSITY, DERA ISMAIL KHAN

(Sample Page # 2)

TITLE OF RESEARCH

Thesis submitted in partial fulfillment of the requirements for the degree of.....
(name of degree)

Submitted By
Name of student

Approved by the Supervisory Committee

(Name and Signatures)

- 1. ----- Supervisor -----
- 2. ----- Co-Supervisor -----
- 3. ----- Member (optional) -----
- 4. ----- Chairman -----

(Sample Page # 6)

ACKNOWLEDGEMENT

Name of student

(Sample Page # 7)

TITLE OF RESEARCH

Name of student, supervisor, co-supervisor, chairman

Department of....., Faculty of....., Gomal University, Dera Ismail Khan

ABSTRACT

(Sample Page # 8)

Chapter 1

INTRODUCTION

(Sample Page # 9)

Chapter 2

REVIEW OF LITERATURE

(Sample Page # 10)

Chapter 3

MATERIALS AND METHODS

(Sample Page # 11)

Chapter 4

RESULTS AND DISCUSSION

(Sample Page # 12)

Chapter 5

SUMMARY, CONCLUSION AND RECOMMENDATIONS

(Sample Page # 13)

REFERENCES

(Sample Page # 14)

APPENDICES