

DOCTORAL DISSERTATION REQUIREMENTS

A - GENERAL REQUIREMENTS

The doctoral dissertation is a written document required by universities for the completion of the highest academic degree – the Doctor of Philosophy (Ph.D.). The purpose of the dissertation at UNMC is to provide written documentation of the research achievements of the student, thereby supporting awarding of the Ph.D. degree by the University of Nebraska.

The dissertation should be a complete and independent document that can be understood without reference to other materials. It should represent original research on a defined problem – research for which the student has taken primary responsibility. The dissertation presents proof that the student has the ability to ask questions relevant to some field of inquiry, that the student has developed an appropriate, detailed approach to addressing these questions, and that the student can gather data and interpret them in relation to the current status of the field. The research must therefore be the student's work, not the collective work of several people (even if others have contributed in a minor way).

The dissertation must be an original, substantial and significant contribution to the body of knowledge in the student's field. Original – indicating that the exact data or the interpretation of the data do not already exist in the knowledge base of the discipline. Substantial – indicating that the research presented is important to the field of study (not tangential nor of little relevance) and examines a question in depth. Significant – indicating that the research presented provides information that is useful to other scholars in the field, ideally of such importance that it will alter the thinking or perspective in the student's field of study.

B - FORMAT

- Margin Settings: Left = **1.5"**; Right = 1"; Top = 1"; Bottom = 1"
 - Figures and tables must fit within the same margins as the text. If oversized figures or tables are included, they should have exactly the same margins as the text, or should be folded as needed to be contained within those margins.
- Fonts:
 - The same font must be used in **all** elements of the document – including all text, page numbers, headings, subheadings, tables, figure legends, etc.
 - The main text font size must be a minimum of 10 pt; however, 11 pt is recommended.
 - Recommended fonts for the main text: 11 pt Arial, 11 pt Helvetica, 11 pt Calibri, 11 pt Minion Pro Med, 11 pt Palatino Linotype, or 11 pt Times New Roman.
 - Headings and subheadings may be in a larger font size, and may be in bold print, but the font must be the same as the one used in the remainder of the document. Consistency is necessary. If a large type is used for one subheading, the same size must be used in all subheadings of the same level. If the major headings and subheadings have two different font sizes, the larger font must be used in the major headings.
- Line spacing: The document must be **double spaced** (except figure legends, long headings/subheadings, and footnotes).
- Paragraph settings: Paragraphs should be preceded by a spacing of 6 pt and should begin with a Tab of 0.25" or 0.5" (do not indent the first line of a paragraph using the space bar). Paragraphs should be either left-aligned or justified (text aligned along both the left and right margins). Be sure to use the same paragraph settings for the entire body of the document. These paragraph setting constraints do not apply to headings and subheadings, which generally should be preceded by a spacing of 12 pt (or more) and may be either centered between the margins (major headings) or left-aligned (subheadings).

- Hyphenation should be employed to avoid unsightly gaps between words when using justified paragraphs (optional for left-aligned paragraphs). Words of less than 6 letters should not be divided by a hyphen at the end of a line. Divided words should not occur at the end of more than two consecutive lines or on the final line at the bottom of a page.
- Material contained in published manuscripts must be reformatted to dissertation specifications. **Reprints of published material are not permitted in the dissertation.** If you include material (text, figures, etc.) from previously published work, you must obtain permission from the publisher and you will need to upload proof of the publisher's permission when submitting the dissertation to the DigitalCommons@UNMC (see page 6).

Note: Journals are routinely asked for permission to include published materials in student dissertations. The process for obtaining such permission is usually included in the journal's Instructions for Authors.

- Footnotes should be single spaced and should be placed at the bottom of the page to which they pertain unless special instructions are provided by the department/program.
- Page numbers must appear in the header at the top right of each page (except the Title Page and Abstract). The page number may be 9 or 10 pt font, with the Header Position set at 0.5" from the Top and aligned with the right margin. Be sure to use the same font as the main text. For pages before the Introduction, use small Roman numerals (i, ii, iii, iv, etc.). Beginning with the Introduction, number all pages through the remainder of the document using Arabic numbers (1, 2, 3, etc.) Steps for accomplishing this page numbering layout in Microsoft Word 2010:

- To insert small Roman numeral page numbers for the initial portion of the document: With the cursor on the 2nd page of the document (not the title page), click on the Insert tab → Page Number → Top of Page → Choose the option showing the number positioned at right margin. In the Options section of the Design / Header & Footer Tools Tab, select Different First Page. Click on Page Number → Format Page Numbers → In the Number Format pulldown menu, select i, ii, iii, ... In the same Format Page Numbers window, ensure that the Page numbering Starts at i. Click on OK.
- To establish a different number format beginning with the Introduction: Position the cursor at the bottom of the page immediately before the Introduction. Click on the Page Layout Tab → Breaks → Section Breaks: Next Page. Then, click on the Insert Tab → Page Number → Top of Page → Choose the option showing the number positioned at right margin. In the Options section of the Design / Header & Footer Tools Tab, unselect Different First Page and unselect Link to Previous. Click on Page Number → Format Page Numbers → In the Number Format pulldown menu, select 1, 2, 3, ... In the same Format page Numbers window, ensure that the Page numbering starts at 1. Click on OK.
- Unless you are very skilled with the section break and page numbering functions in your word processor, use a white shape (rectangle or circle; with no border) to obscure page numbers on the Title Page and Abstract pages.

- Figures and tables are generally presented one per page, although multipanel figures are allowed. Each figure should be numbered consecutively and have a legend that begins with the title/caption ("Figure 1: Giant spiral galaxy" in the example below) and includes all of the information needed to interpret the figure. The legend may appear on the page preceding the figure, or on the same page as the figure, being sure to use the same approach throughout the document. Each figure (with its accompanying legend) should appear in the document in close proximity to, but not before, the first referral to the figure in the text. The figures and legends should not be clustered at the end of the Dissertation. The student should consult with his/her Supervisor to determine the preferred format.

Useful tip: For ease of editing the document and correct positioning the figures, do not insert figures and legends into the document until you have a complete draft of the entire dissertation.

Some departments/programs may prefer that figures be integrated within the main body of text, similar to the appearance of journals or magazines (see example shown here). Useful tips for implementing this specific approach are provided below:

- Both the figure and its accompanying legend should be inserted within a single text box delineated by a thin black or grey line. (Do not simply draw a rectangle around the figure and its legend! Copy/paste the figure into a text box and type the legend within the same text box.) This will vastly facilitate



Figure 1: Giant spiral galaxy. This image taken with the Hubble Space Telescope Wide Field and Planetary Camera shows galaxy M101, which is estimated to contain at least 1 trillion stars (previously published in ref. 89).

editing of the document and the positioning of the figure and its legend on the page – you will only need to position the text box, because both the figure and the legend are contained within the text box.

- When using this approach, the figure legend may be 1- or 2-pt smaller font size than that used for the main body of text.
- For most relatively small figures (such as the example shown here), format the text box (right click → More Layout Options) as follows: Text Wrapping → Wrapping Style = Square; Position → Horizontal alignment = Right relative to Margin. Do not select the Move Object with Text option, otherwise your text box will tend to “jump around” (move from page to page, or even disappear) as you edit the document!
- If the table or figure spans most of the width of the page within the confines of the margins, format the text box (right click → More Layout Options) as follows: Text Wrapping → Wrapping Style = Top and bottom; Position → Horizontal alignment = Center relative to Margin. Do not select the Move Object with Text option.
- Once you have inserted the figures, display and editing of the document is most efficient if you activate “show picture placeholders” (Microsoft Word 2010: Select Customize Quick Access Toolbar → More Commands → Advanced → under Show document content, select Show picture placeholders. To view the figures as they will appear in the document, unselect this option.)

Similar criteria (and useful tips) apply to positioning of tables in the dissertation document. For example, tables must be numbered consecutively (Table 1, Table 2, etc.), include legends with titles/captions, and may appear on a dedicated page or in boxes within the body of text. Regardless of the figure/table presentation mode chosen by the student, the legend for any previously published figure or table must include the appropriate literature citation.

C - ORGANIZATION & CONTENT

The dissertation may contain some, or all, of the elements listed below. Those elements that are contained in the document must appear in the order listed and must be formatted as described. Each element should begin on a new page.

Required items are indicated by the checkmark (☑).

☑ **Title Page:** Must be formatted and worded according to the sample attached (with some variation allowed for use of larger font size for the title and the student’s name). Do not number this page.

Acknowledgments: You may acknowledge those who assisted you during your graduate studies.

☑ **Abstract:** The abstract is limited to 350 words including the title and must be typed in a format according to the sample attached. Do not number the pages of the abstract. Utilize the word count feature of a word-processing program to ensure that the abstract conforms to the 350-word limit.

☑ **Table of Contents:** The Table of Contents (sample attached) should provide the reader with an analytical view of the materials covered by the study, together with the order of appearance in the document. All headings and subheadings listed in the Table of Contents must agree word-for-word with the headings/subheadings appearing in the body of the document.

Useful Tip: The student is advised to spend a few minutes up front learning how to have their word-processing program (e.g. Microsoft Word) automatically generate a Table of Contents – this will save hours in the long run.

List of Figures: If any illustrative or graphic materials are used, a List of Figures must be provided. The figure titles/captions included in the list must agree word-for-word with the titles/captions appearing in the body of the work. Page numbers must be those on which the legend appears.

Useful Tip: The List of Figures can be generated automatically in Microsoft Word (which refers to this as inserting a Table of Figures) based on captions (figure titles) that you have inserted into the document.

List of Tables: If any tables are included in the dissertation, a List of Tables must be provided. Page numbers must be those on which the table appears. The List of Tables is can be generated automatically in Microsoft Word though the same process used for generating a List of Figures.

List of Abbreviations: Define each abbreviation used in the document, according to the sample attached.

☑ **Introduction:** This section should present a comprehensive and integrated presentation and critical analysis of the literature relating to the overall dissertation topic. It should also frame the questions addressed by the dissertation. The student is strongly advised to utilize citation/bibliography software (e.g. EndNote, Reference Manager, or RefWorks) for incorporating literature citations into the dissertation. The style of in-text citations should be chosen based on consultation with the Supervisor.

☑ **Chapters:** Two or more Chapters should follow, detailing the research project. The Chapters should be numbered (1, 2, 3, etc.), with each chapter bearing a title (e.g., CHAPTER 1: EFFECT OF THE AKITA MUTATION ON PANCREATIC ISLET FUNCTION). The Chapters should include a description of the procedures utilized in the research in sufficient detail to indicate that the student has a thorough understanding of the techniques used to answer the question and to permit others to replicate the work. There should also be a complete presentation of the research findings in a logical and clear fashion.

- Unpublished work should be presented in one or more Chapters that address well-focused questions or hypotheses. These chapters should include only work performed by the student.
- Published work. If some or all of the student's work has been published, the findings may be rewritten/reformatted and presented as Chapters, provided that you have received permission from the publisher (see page 2). Chapters of previously published materials must meet **three** conditions:
 1. **the student must have been first author of the publication(s);**
 2. the majority of the work described in the chapter(s) must have been done by the student; and
 3. work performed by others in the publications must be cited in the Acknowledgement section of the dissertation.

Students should consult with their Supervisors for guidance in organizing the Chapters. There is considerable flexibility in this regard. Some options are provided below:

- a. One option is for each Chapter to contain Introduction, Methods, Results and Discussion sections. This approach most readily accommodates rewritten/reformatted papers – minus the reference citation list (as all citations in the Dissertation should be listed only in the overall Bibliography). A downside of this approach is that it is more difficult for the student to develop a detailed and analytical general Discussion section (see below) when viewing each component of his/her work in the context of free-standing papers.
- b. Another option is for each Chapter to present a very brief Introduction, detailed Methods and Results, and a brief Discussion. In this option, the major aspects of the introductory and discussion materials related to each Chapter would be included in the main Introduction and Discussion sections of the dissertation. This option forces the student to develop Introduction and Discussion sections that integrate all aspects of their research, rather than presenting free-standing papers as Chapters.
- c. A third option would be for there to be a Chapter entitled Methods, and another Chapter entitled Results. This option forces the student to fully integrate all aspects of their dissertation research – even if the work has been (or will be) published as more than one paper. In this way, the student gains a broader perspective of the scope and relevance of his/her work. The nature of some projects may not readily accommodate this option.

Regardless of the approach employed for organizing the Chapters, the student should strive to avoid repetition of text/information presented in the general Introduction. In addition, the references should be fully incorporated into the overall Bibliography (there should not be a separate reference list for each Chapter). For a Chapter presenting previously published material, a footnote to the Chapter title should indicate such (e.g. “The material presented in this Chapter was previously published: Jones and Smith, Title, Journal citation...”).

☑ **Discussion:** This section should address the results in terms of their importance, their limitations, their place in our current knowledge, the conclusions drawn based on the results, and the future directions or implications suggested by the results. The Discussion may address each Chapter's results separately; however, ultimately, it should tie together the various Chapters indicating the relationship of one to another, as well as their overall contributions to the field of study. Care should be taken to avoid repeating in this section material that is included in discussion sections of the various Chapters.

Useful Tip: Regardless of the option chosen for organizing material into Chapters, the Discussion would typically be at least 10 pages in length (and much longer for options b and c, above). This section of the Dissertation brings the entire project into perspective. Given the amount of thought and effort that the student has devoted to the project over a period of several years, he/she should be able to provide abundant insight into the significance of the work and future directions necessary to further advance the field. This is also a rare opportunity to offer unfettered (but reasonable) speculation regarding the relevance of their work.

☑ **Bibliography**: This section must provide complete listing of all literature cited in the dissertation. Each citation should list all authors (within reason; limit to 20 for reports of large clinical trials, for example), full title of the paper, journal name (standard abbreviations used by PubMed are acceptable), volume, range of pages (not simply the 1st page), and the publication year. The list may be arranged by order of citation or alphabetically by author, at the discretion of the student and his/her Supervisor.

Useful Tip: Do not waste time creating your own bibliography citation format within your reference citation software; rather, select one of the options provided by the software. There will be hundreds among which to choose.

Appendices: May include surveys, ancillary observations, detailed protocols developed for specific procedures, recipes for key reagents, etc. If there is more than one appendix, number them A-to-Z, and include a title for each appendix (e.g., APPENDIX A: PATIENT CONSENT FORM).