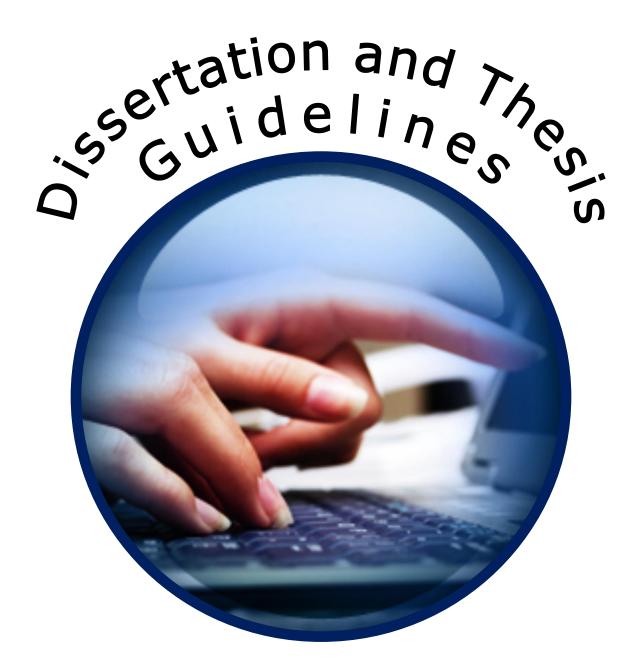


**School of Graduate Studies** 



Updated 6/22/09

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## INTRODUCTION

This guide is provided by the School of Graduate Studies to assist candidates in the preparation of theses and dissertations for submission to LSU Health Sciences Center at New Orleans. The guide specifies the requirements for the form and style of theses and dissertations. Please read the material in this document carefully: All candidates for advanced degrees should confer with their major professors and graduate advisors to determine specific departmental requirements. Questions not specifically addressed by departmental guidelines or by the information included in this document should be directed to the School of Graduate Studies.

Students preparing theses and dissertations also should refer to the rules formulated in the 7th Edition of the <u>CBE Style Manual: A Guide for Authors, Editors and Publishers in the Biological</u> <u>Sciences</u> published in 1996. LSUHSC-NO has three copies of this Manual. Both the Isché Library and the Dental School Library maintain one copy in their reference section that cannot be checked out. In addition, the Isché Library has one copy that can be checked out.

| Title            | <i>itle</i> Scientific style and format : the CSE manual for authors, editors, and publishers. Style Manual Committee, Council of Science Editors. |  |                           |
|------------------|--|--|---------------------------|
| Publisher        | Reston, VA :<br>Press, 2006.   | Council of Science Editors in cooperation with t | he Rockefeller University |
| Edition          | 7th ed.  |  |                           |
| Descript         | 658 p., illus.   |  |                           |
| LOC              | ATION  | CALL #   | STATUS                    |
| Ische Reference  |  | <u>WZ 345 C76s 2006</u>                          | LIB USE ONLY              |
| Ische Stacks     |  | <u>WZ 345 C76s 2006</u> c.2                      | AVAILABLE                 |
| Dental Reference | e  | <u>WZ 345 C76s 2006</u> c.3                      | LIB USE ONLY              |

Thesis and dissertation format is the responsibility of the student and is subject to approval by the student's Committee and the Dean of the School of Graduate School.

The degree candidate must submit copies of the manuscript to members of the examining committee prior to the examination. The Graduate School recommends that this interval be at least two weeks, although certain departments may require more time. The degree candidate's graduation could be delayed by failing to allow sufficient time for the committee to review the manuscript.

## **MICROFILMING OF DISSERTATIONS**

LSU Health Sciences Center at New Orleans cooperates with <u>Proquest</u> Information and Learning in publishing doctoral dissertations on microfilm, microcards, or as microprint. All doctoral candidates are required to participate in this program. Services offered by Proquest Information and Learning include the following:

- Publication of a 350-word abstract in Dissertation Abstracts.
- Preparation of a master microfilm negative of the full text of the original typescript of the dissertation.
- Storage and service of the negative at Proquest Information and Learning.
- Production of positive 35mm microfilm copies of complete dissertations or enlarged 51/2"x81/2" photocopies on book paper, for a charge, whenever these are requested.
- Depositing one positive microfilm copy of the dissertation in the Library of Congress, and listing it in its subject and author catalogue.
- Copyrighting of the dissertation, if desired, for an additional charge plus the cost of the two
  positive prints required by the Copyright Office.

## **COPYRIGHT PERMISSION**

Doctoral candidates must carefully avoid violating copyright provisions in the preparation of their manuscripts. The experience of Proquest Information and Learning has shown that some candidates, in writing their dissertations, have made extensive use of copyrighted material without obtaining the necessary permission. Although this is permissible when the dissertation remains in manuscript form, it becomes a violation of copyright with the publication of the manuscript on microfilm. Moreover, Proquest Information and Learning becomes equally liable with the author for such violations.

Accordingly, Proquest Information and Learning joins the Graduate School in emphasizing the following points to doctoral candidates.

- When any copyrighted material is used extensively, that is, more than 150 words in direct quotation, permission should be obtained from the copyright owner. This includes tables, charts, graphs, figures or any other copyrighted materials.
- Notice of copyright by law appears on the verso (back) of the title page, and from this the copyright can be determined.
- The usual procedure is to write to the owner and obtain a written reply authorizing the use of the material. Ordinarily, there should be no difficulty in this connection, providing proper acknowledgment is made.
- However, if in certain instances, the owner requires payment, then a decision must be made as to whether or not the material will be used.
- In all instances, it is anticipated that the author will hold Proquest Information and Learning free and clear for any copyright violations.

Proquest provides a more detailed copyright guide, which includes a sample permission letter for use of previously copyrighted material online at http://www.proquest.com/assets/downloads/products/UMI CopyrightGuide.pdf.

## FORMATTING INSTRUCTIONS

The candidate is responsible for the correct presentation of the content, reference and illustrative materials of the manuscript, arrangements of parts, sentence structure, grammar, paragraphing, punctuation, spelling, quotations, forms of footnotes and bibliographical items and of tables and other illustrative materials.

A Thesis/Dissertation Checklist is included in this guide and must be completed and turned in with your final document.

| Paper | ©<br>© | A white bond paper of not less than 20 pound weight is required for the original and copies.<br>The paper must be 8 1/2"x11" in size<br>Graphics are to be placed on 20 pound weight paper and have letter<br>quality equivalent to that in the printed text. |
|-------|--------|---|
| Print | Ċ<br>C | Preferred: Laser printed copy with crisp, dark black characters<br>Acceptable: High-quality photocopy with crisp, dark black characters   |

| Text    | Ċ | The text sha<br>is acceptab    |  | er only. The use of a laser printer   |
|---------|---|--------------------------------|--|---|
|         | Q | •                              |  | uld have typed scientific notations.  |
| Font    | ¢ | includes all<br>(e.g., Ackno   |  | ents of the document. This<br>nd figure legends, main headings<br>ents, List of Tables), and any other  |
|         | ٢ | looks simila<br>for scientific | r to cursive writing) may not<br>terms, foreign words, speci                                       | n10-point. Script fonts (one that<br>be used; italics may be used only<br>ial emphasis, and in citing titles of<br>for subheadings or other textual |
|         | Q | The followir                   | ng fonts are recommended.  |   |
|         |   |                                | Arial *  | 10pt  |
|         |   |                                | Century  | 11pt  |
|         |   |                                | Courier New *  | 10pt  |
|         |   |                                | Garamond   | 12pt  |
|         |   |                                | Georgia *  | 11pt  |
|         |   |                                | Lucida Bright  | 10pt  |
|         |   |                                | Microsoft Sans Serif   | 10pt  |
|         |   |                                | Tahoma   | 10pt  |
|         |   |                                | Times New Roman *  | 12pt  |
|         |   |                                | Trebuchet MS *   | 10pt  |
|         |   |                                | Verdana *  | 10pt  |
|         |   | are likely to                  | view and/or use your disser  | en readability. Since many readers<br>tation or thesis onscreen, you may<br>ext by using one of these fonts   |
|         | Ø |                                | e font must be the same one  | a larger size, and may be in bold<br>that is used in the remainder of   |
|         | 0 | For example type must b        | e, if a large type is used for (<br>e used in all subheadings. C<br>s have two different font size | ency is an absolute requirement.<br>one subheading, the same size<br>Dr, if the major headings and<br>es, the larger font must be used in           |
|         | Ø | special font                   |  | nts do not preclude the use of<br>technical symbols which are<br>or the appropriate specialty.  |
| Margins | Q | headers/foo                    |  | '. ALL material, including figures,<br>nd full-page images must appear  |
|         | C | the edge of MS Word, y         | the page, but do not need to   | hese must appear at least ¾" from<br>o appear within the margins. In<br>setting the footer to 0.75 and<br>oter.                                     |

| Spacing        | C | Double-space: abstract, dedication, acknowledgements, table of contents, and body of the manuscript, except for quotations as paragraphs, captions, items in tables, lists, graphs, charts.  |
|----------------|---|--|
|                | C | Single-space: chapter titles and subtitles, footnotes/endnotes, bibliographic entries, lists in appendices   |
|                | C | Tabs of .5" should be used to begin new paragraphs   |
|                | Ċ | For long quotations of more than fifty words, the writing should be indented .75" from the left-hand margin and single-spaced.   |
|                | ¢ | It is not permissible to leave a single line of a paragraph or other subdivision at either the bottom or top of a page (a "widow" or "orphan").  |
|                | Q | The last word on a page should not be hyphenated.  |
| Page Numbering | ¢ | The preliminary pages (Acknowledgment, Table of Contents, Abstract, etc.) are to be numbered with small Roman numerals (ii.iii, etc.) centered at the bottom of the page two spaces below the marginal line.   |
|                | Ċ | The title page counts as page "i" but the number does not appear, therefore, the numbering begins with "ii".   |
|                | C | Beginning with the Introduction, Arabic numerals should be centered at<br>the bottom of every page in the footer, which is set at 0.75 inches. No<br>period or other marking may follow or precede these numerals.   |
|                | C | Pages carrying a major heading (e.g., the first page of a chapter, bibliography, or appendix) will be similarly numbered with Arabic numerals  |
| Alignment      | Q | Major headings should be centered and spaced one inch from the bottom of the upper margin (72 points or approximately 6 single spaced lines).  |
|                | C | The dissertation/thesis text must be either left-aligned or justified.<br>Justification, where the text is aligned evenly along the left and right<br>margins, is only acceptable if hyphenation is used to avoid unsightly gaps<br>between words.   |
| Hyphenation    | Ĉ | No word of less than six letters may be divided in a formal manuscript.<br>Divisions of words at the end of a line should concur with Webster's<br>International Directory and should not occur on more than two adjacent<br>lines.  |
| Page breaks    | C | Each heading of the main divisions of the manuscript (Table of Contents,<br>Abstract, Introduction, Chapters, Autobiography, Bibliography, etc.)<br>should begin on a new page, with the heading typed in capital letters<br>throughout and centered one inch below the upper marginal line (72<br>points or approximately 6 single spaced lines). |
| Corrections    | C | The manuscript should be carefully proofread and corrected by the candidate before submission to the Graduate School Office.   |
|                | Ċ | No inked-in corrections, crossing out of words, strikeovers, extensive erasures or whiteouts are permissible.  |
|                | C | The candidate is fully responsible for the manuscript, including any typographical errors.   |
| Submission     | C | The candidate is expected to submit two copies of the manuscript in person to the office of the School of Graduate Studies Coordinator of Students Affairs for final approval.   |
|                |   |  |

## **DIVISIONS OF THE THESES AND DISSERTATIONS**

The elements of a thesis or dissertation may contain some, or all, of the elements listed below. Those elements that are in your document must appear in the order listed and must be formatted as described.

The LSUHSC-NO School of Graduate Studies requires that the manuscript be organized in the following order. Please note that required items are indicated by a check mark "☑."

Click on any "<u>underlined blue</u>" item to view a sample page in the appendix with detailed formatting information. In the sample pages formatting instructions appear in red. MS Word 2007 screen shots show how to format specific text. If additional formatting information is needed, use the help function of your word processing program. The text, figures and tables in the sample pages are gibberish.

| <u>Title Page</u> ☑    | Not numbered, but is considered page i<br>Text is centered. See example page.   |
|------------------------|---|
| Copyright Page         | Copyrighting the thesis or dissertation is optional. Students who wish to copyright their documents may contact the Copyright Office directly, at the Library of Congress, 101 Independence Ave., S.E., Washington, D.C.20559-6000, or by visiting their website at <a href="http://www.loc.gov/copyright/">http://www.loc.gov/copyright/</a> . |
|                        | For a fee, <u>ProQuest UMI Dissertation Publishing</u> will act as your agent with the United States Copyright Office and register your copyright as part of the publishing process.  |
|                        | Theses and dissertations that are copyrighted must contain a page following the title page (and numbered ii). See example page.   |
| ACKNOWLEDGMENTS        | The acknowledgment should appear immediately following the title page (or the copyright page when applicable). It should simply state to whom the writer is indebted for guidance and assistance.   |
| PREFACE                | This optional section is a preliminary statement that explains the scope, intention, or background of the document.   |
| TABLE OF CONTENTS<br>☑ | The TABLE OF CONTENTS should provide the reader with an analytical view of the materials covered by the study, together with the order of discussion.   |
|                        | The heading TABLE OF CONTENTS, typed in capitals, should be centered 1 inch from the top margin (72 points or approximately 6 single spaced lines).   |
|                        | The chapter headings of the TABLE OF CONTENTS are numbered consecutively with Arabic numerals, with one space following the colon and with no terminal punctuation. An example is given below.  |
|                        | CHAPTER 1: AN EXAMPLE CHAPTER HEADING   |
|                        | Subheadings of the chapter headings are indented five spaces from<br>the initial letter of the first line of the main heading. Only the initial letter<br>of the first word and of other words normally capitalized in prose are<br>capitalized.  |
|                        | Use double spacing between headings and single spacing for headings that are longer than two lines.   |

| <u>LIST OF TABLES</u>  | The LIST OF TABLES is on a separate page. Each entry should list<br>the number of the table, its exact heading, and the appropriate page<br>number of the manuscript. The tables are numbered consecutively with<br>Arabic numerals. No terminal punctuation is used for the heading or<br>after any title. The initial letters of the important words of the title are<br>capitalized.   |
|--|---|
|  | When such lists are used, captions and/or legends must agree word<br>for word with captions in the body of the work, except that lengthy<br>captions or titles may appear in shortened form in the list, using the<br>first few words or phrases that give an understanding of the table or<br>figure. Page numbers must be those on which the table or a lengthy<br>caption appears.   |
| LIST OF FIGURES  | If any illustrative or graphic materials are used, a LIST OF FIGURES of these should immediately follow the LIST OF TABLES and appear in the same form.   |
|  | When such lists are used, captions and/or legends must agree word<br>for word with captions in the body of the work, except that lengthy<br>captions or titles may appear in shortened form in the list, using the<br>first few words or phrases that give an understanding of the table or<br>figure. Page numbers must be those on which the figure begins, or a<br>lengthy caption appears.  |
| LIST OF<br>ABBREVIATIONS   | When necessary a LIST OF ABBREVIATIONS may be included in the preliminary pages immediately following the LIST OF FIGURES and appear in the same form. When such lists are used, captions and/or legends must agree word for word with captions in the body of the work, except that lengthy captions or titles may appear in shortened form in the list, using the first few words or phrases that give an understanding of the table or figure. Page numbers must be those on which the table or figure begins, or a lengthy caption appears. |
| ABSTRACT ☑ (required)<br>Always the final element<br>in the preliminary pages. | The abstract is a brief description of your research project. It should describe the problem being addressed, how you addressed it, the results and conclusions reached.  |
|  | The abstract may not contain graphs, tables or illustrations. An English translation should be provided of an abstract in a foreign language. The dissertation abstract must be no more than <b>350 words.</b> The thesis abstract should be no more than <b>150 words.</b> In Word 2007, you can choose <i>Review</i> > <i>Word Count</i> to determine the number of words in a document.  |
|  | The abstract should be double spaced.   |
| CATALOGING<br>ABSTRACT   | In addition to the abstract in the body of the manuscript, a student must<br>submit one cataloging abstract. This abstract will be used by<br>researchers and others to determine whether or not they wish to<br>access your complete thesis or dissertation, it should provide a<br>succinct, descriptive account of your work.  |
|  | To prepare a cataloging abstract, the student must use the abstract<br>from the body of the document and add to it the special heading,<br>described below. This abstract, with its special heading, must be<br>submitted on paper with the thesis or dissertation. The cataloging<br>abstract must not be numbered or included in the body of the thesis or<br>dissertation. The cataloging abstract should be single spaced.  |

| The special heading must be placed at the left margin (meeting margin requirements) and must be single-spaced. Check the Graduate Section of the <u>Catalog/Bulletin</u> for correct official titles of degrees and cite the degree correctly on both the title page and abstract. Names and document titles must also be identical on the title page, the cataloging abstract, and the examination report forms (approval sheets) signed by the student's committee. The following single-spaced formats should be used for the heading on the cataloging abstracts: |
|---|
| <ul> <li>Format Requirements for Special Heading</li> <li>Include title page and preliminary pages in total number of pages.</li> <li>Give the correct name and professorial rank of the major professor as listed in the School of Graduate Studies section of the <u>Catalog/Bulletin</u>.</li> </ul>   |
| Special Heading Example:  |
| Coltrane, James Justin, B.S., Duke University, 1996<br>M.S., University of North Carolina, 2000<br>Doctor of Philosophy, Commencement, 2005<br>Major, Anatomy. Minor, Physiology.<br><u>Examinations of Fenestrated Endothelia</u><br>Dissertation directed by Professor John X. Educator<br>Pages in dissertation, 79. Words in abstract, 331  |
| The Abstracts to be bound with the thesis or dissertation should not contain the headings shown above.  |
| This section of the manuscript should include a literature review, statement of the problem and methods, data presentation and discussion   |
| Arabic page numbers must be used beginning with the body of the text (Chapter 1, or the Introduction.). Pages must be numbered consecutively beginning with 1 and continuing through to the end of the document including the APPENDIX. No other numbering scheme is acceptable.  |
| Can be a separate section or it can be incorporated in the first chapter or section   |
| Should be divided into chapters or sections as indicated in the document's table of contents  |
| Can be a separate section or it can be incorporated in the final chapter or section in the traditional style  |
|   |

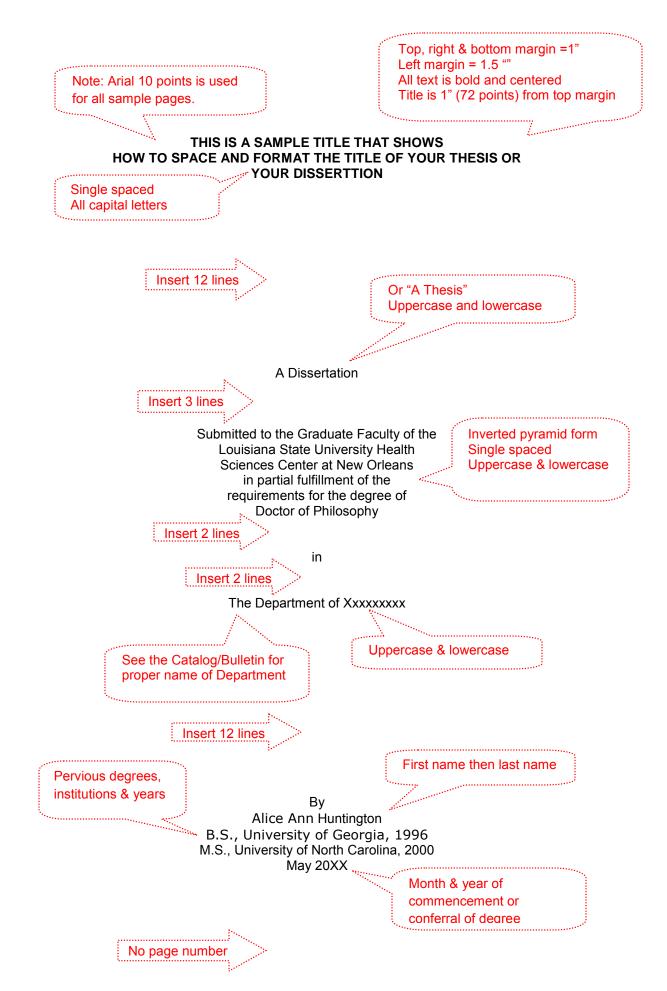
| Heading and<br>Subheadings    | All main headings, including chapter or main section titles, must begin<br>on a new page. Main headings include titles such as<br>Acknowledgments, Table of Contents, List of Tables, List of Figures,<br>Abstract, Introduction, Bibliography, Appendix Number and Title, Vita,<br>and Chapter Number and Title. These headings must be identical in<br>typeface, size, placement, and style of capitalization. The font size for<br>main headings and subheadings may be larger than that used in the<br>text, and boldfaced type may be used. However, its use must be<br>consistent throughout the document. Do not place a subheading on a<br>new page if there is room to place it on the previous page without<br>creating a widow or orphan. |
|-------------------------------|--|
|                               | Be certain that subheadings in each chapter are formatted identically, from first level subheading to succeeding levels. Do not start a subheading on a new page, unless it naturally falls there. Subheadings may be numbered by chapter (e.g., 1.1, 1.2, 2.1, 2.2, etc.). If subheadings are not numbered, each level must be distinct from the other levels. Within each level of subheading, however, a single, consistent format must be maintained. We do not recommend using more than three levels of subheadings. It is not necessary to include all subheading levels in the Table of Contents.  |
| Tables, Figures and<br>Graphs | Tables, figures, and graphs must be numbered either (a) consecutively (1 through xx) throughout the text and appendixes, or (b), consecutively within each chapter or appendix, in which case they are coded to the chapter number or appendix letter (e.g., 1.1, 1.2, 2.1, A.1, A.2, etc.). The use of frames around tables and figures is optional, but their use must be consistent, i.e., frame all or frame none. Tables and figures should be inserted near, and following, their first mention in the text (as near as logically possible without creating space gaps in the text), on a separate page if they are large, or within a page of text if they fit conveniently.  |
|                               | It is <b>not</b> acceptable to group tables or figures at the end of a chapter or<br>document. It is not acceptable to use "insert table" notations where the<br>tables themselves should be placed. Tables or figures not critical to the<br>understanding of the body of the text may be placed in an appendix.<br>Tables and figures may be reduced so that the table or figure itself<br>appears on a single page provided that the text is readable. However,<br>if the table or figure is reduced, titles and captions must be in <b>the</b><br><b>same font and size as the text.</b> Two or more small tables or figures<br>may be grouped together on one page.   |
|                               | Figures, plates or tables too large to allow captions on the same page<br>must have the captions on the preceding numbered page. No text<br>should appear on the reverse side of a caption page, and that page<br>number appears on any List of Tables or Figures. <b>Multi-line titles and</b><br><b>captions must be single-spaced. Table numbers and titles must</b><br><b>appear above tables, and figure numbers and captions must</b><br><b>appear below figures. The format chosen for table titles and figure</b><br><b>captions must be <u>used consistently throughout the document.</u></b>   |
|                               | Wide tables and figures may be done in "landscape" form (i.e., lengthwise on the page), with the top of the table or figure at the binding (left) edge. The title and caption are landscaped with the page number placed in the center, under the landscaped table/figure so that they are read normally on the screen.  |

|   | If a table is longer than a single page a caption at the bottom right-<br>hand edge of the first and succeeding pages, or at the top left-hand<br>edge of each succeeding page must state "(table continued)", "(table<br>XX continued)", "(table cont.)", or "(table XX cont.)"; the word "table"<br>may be capitalized. The author must select one method and use it<br>consistently throughout. The complete caption appears only on the first<br>page at the top of the table. |
|---|--|
|   | A single figure may not be divided into more than one page. If the figure is too large to allow space at the bottom for a caption, the caption may be placed alone on the preceding numbered page. Multipart figures must have a single caption which incorporates the information about each part and can appear on two or more pages with the caption on the first page and (fig. cont'd) on subsequent pages. The parts must be labeled a, b, and c, etc.                       |
| Photographs &<br>Images                           | Photographs and images must be included as standard media images, .jpg, .tif, .gif, etc. within the body of the text.  |
| Footnotes   | Footnotes <u>cannot</u> be used.   |
| BIBLIOGRAPHY<br>Required if citations are<br>used | For examples of proper bibliographic citations refer to the <u>CBE Style</u><br><u>Manual: A Guide for Authors, Editors and Publishers in the Biological</u><br><u>Sciences.</u><br>Single space each entry, double space between entries.   |
| APPENDIX  | Appendices are optional; they may contain surveys, questionnaires,<br>extra relevant material such as tables, figures, computer data, etc. If<br>the document contains previously published material, letters of<br>permission to reprint copyrighted material must appear here. Any and<br>all material in appendixes must be numbered consecutively within the<br>document, with proper margins observed, consistent with the<br>remainder of the document.                      |
|   | Optional appendices, if used, must appear in the Table of Contents,<br>where they must conform to the format used there. They must also be<br>formatted in the body of the document consistent with other main<br>divisions of the document as to headings, capitalization, bold or not<br>bold, etc. If there is only one appendix, do not label it A or 1 or I.  |
| Approval Sheets                                   | Dissertation/Thesis Defense Final Examination Report is obtained from  |

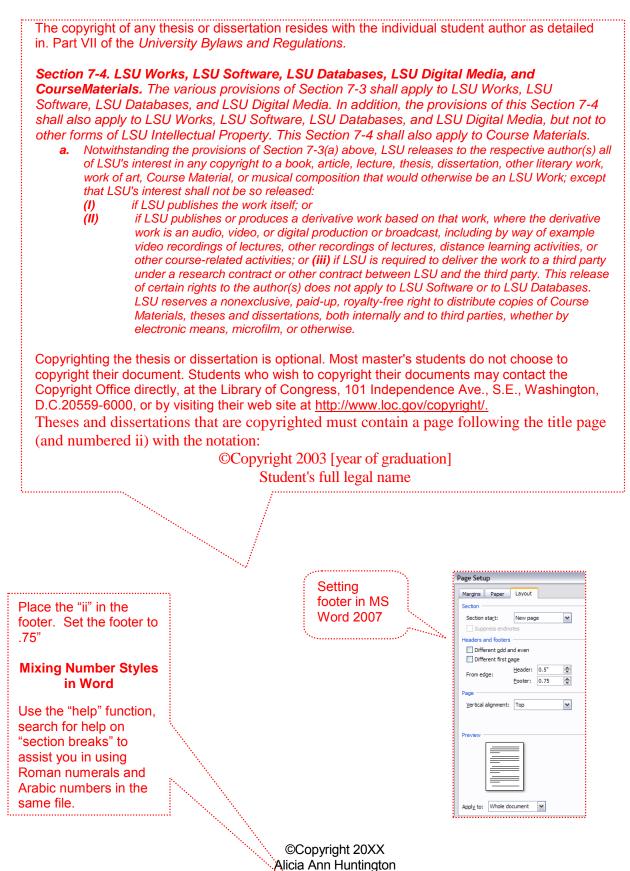
## THESIS/DISSERTATION CHECKLIST

## (This must be completed and turned in with your final document.)

| YES |  |
|-----|--|
|     | Have you thoroughly proofread the manuscript?  |
|     | Are your name and thesis/dissertation title identical on the title page, cataloging abstract, and approval sheets?   |
|     | Have you checked for missing pages and accuracy of pagination?   |
|     | Have all page number changes in the final copy been made in the table of contents, list of figures, and list of tables?  |
|     | Do the table of contents, list of tables, and list of figures reproduce, word-for-word, the headings and titles as expressed in the text?  |
|     | Does the thesis/dissertation meet margin and typeface font and size requirements?  |
|     | Have you included a separate cataloging abstract?  |
|     | If any previously published material (in part or in whole) authored by you appears as a part of the document, have you applied for and received permission to reprint from the publication in which it appeared? (A copy of any letter(s) of permission must appear in an appendix.) |
|     | Have you notified the Graduate School whether or not you will be attending<br>commencement?  |



12



Title is centered and all caps. Title is 1 inch (72 points) from top margin.

.....

#### ACKNOWLEDGEMENT

I would like to express my appreciation to Dr. Haden X. Holbrook who took me into his lab during tough times and presented me with a wonderful learning opportunity. His insight and guidance have been driving factors in my study. I would also like to express gratitude to my thesis committee members, Dr. X, Dr. Y and Dr. Z, for providing guidance and criticism that helped me throughout my work.

I would also like to thank my parents, Ruth and Howard Huntington for their encouragement and support.

Double spaced Tab to start a new paragraph

| In MS Word,<br>use indent on<br>toolbar<br>In MS Word,<br>use indent on<br>toolbar<br>In Single space<br>multi-line titles<br>ISINGE Space<br>Statustic of Double-Node Networks<br>ISINGE Space<br>Statustic of Double-Node Network<br>ISINGE Space<br>Statustic of Double-Node Network<br>ISINGE Space<br>Status |                     |  |             |                      |     |
|---|---------------------|--|-------------|----------------------|-----|
| COPYRIGHT   |                     |  |             | Bold, all caps       |     |
| ACKNOWLEDGMENTS   |                     | TABLE OF CONT  | ENTS        |                      |     |
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- b. Consecutively within each chapter or appendix, in which case they are coded to the chapter number or appendix letter (e.g., 1.1, 1.2, 2.1, etc.)

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## LIST OF ABBREVIATIONS

| ABC    | APT binding cassette                    |
|--------|---|
| ASL    | Airway surface liquid                   |
| CF     | Cystic Fibrosis                         |
| eGFP   | Enhanced green fluorescent protein      |
| FACS   | Fluorescence-activated cell sorter      |
| HFYLMP | His-Phe-Tyr-Leu-Pro-Met-NH <sub>2</sub> |
| ROS    | Reactive oxygen species                 |

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#### **CHAPTER 1: INTRODUCTION**

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|          | Median Parar | meters of Spontaneous Firing Pati | erns               |
|----------|--------------|-----------------------------------|--------------------|
|          |              | Mean rate ± S.E. (spikes)         | Range (spikes s/s) |
| Striatum | ci2/ci2      | 6.04±1.13                         | 1.18-17.08         |
|          | ci1/+        | 5.86±0.75                         | 1.79-13.4          |
|          | LEW/Ztm      | 5.25±2.55                         | 0.43-35.03         |
| SNr      | ci2/ci2      | 32.3±2.69                         | 9.25-67.4          |
|          | ci2/+        | 19.7±1.98                         | 10.8-33.0          |
|          | LEW/Ztm      | 17.44±1.36                        | 9.26-27.09         |

 Table 1

 Median Parameters of Spontaneous Firing Patterns

#### **1.2 Artificial Network Names**

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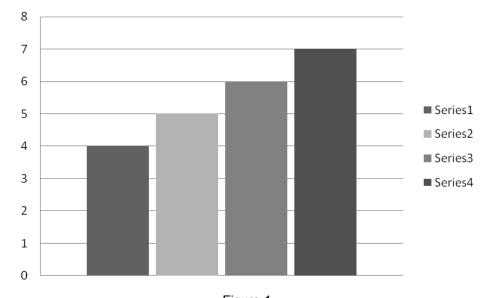


Figure 1 Quantitative evaluation of Xx parameters of SNr neurons recorded extracellularly from circling mutants (ci2/ci2), non-circling littermates (ci2)

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#### **CHAPTER 2: FEED FORWARD NETWORK PATTERNS**

#### 2.1 Double-Node Network

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#### 2.2 Linear Separation of Networks

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#### 2.2.1 The Forward Descent Method

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#### 2.2.2 Learning Based on Forward Descent

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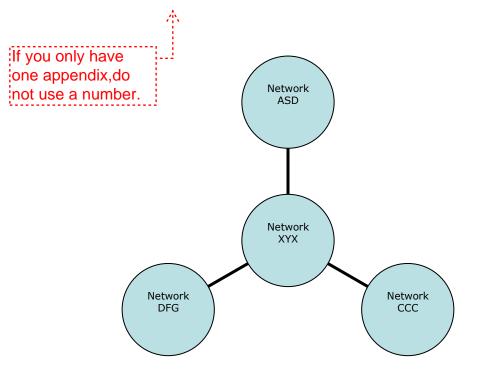
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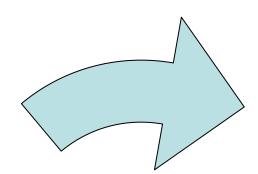
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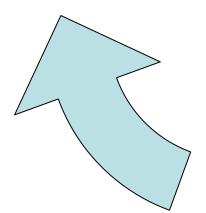


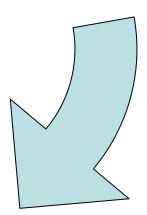
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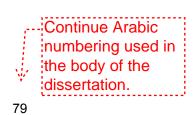
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