

**Instructions for Formatting your Senior Honors Thesis and Procedures for
Submission to the College of Natural Sciences and Mathematics**

(Revised August 2021)

A senior honors student who is prepared to submit a Senior Honors Thesis to the university should receive approval from the College of Natural Sciences and Mathematics. Your thesis should be submitted to the Dean's Office only after you and your committee members have carefully reviewed it to ensure that it is in complete compliance with the requirements stated in this document. Your thesis will be evaluated by one of the NSM readers, who may require additional edits.

Should your manuscript be deemed unacceptable, it will be returned and your graduation may be delayed. Make sure that the product reflects well on YOU, your advisor and committee, and this university. Treat it as though it becomes a part of your resume on which your future depends.

INSTRUCTIONS FOR SUBMISSION OF A SENIOR HONORS THESIS

1. Write your thesis following the rules set by the college, as described below in “Instructions for formatting a Senior Honors Thesis”.
2. Defend your work, and make all the corrections required by your advisor and your committee. The document that incorporates these corrections and that you submit to NSM is called the “**committee-approved thesis**”. Note that once the advisor has approved your thesis and it is submitted to NSM, the advisor will no longer be able to request further changes. Make sure that your advisor is aware of this and that all changes requested by the advisor and committee have been made prior to submission to NSM.
3. Collect the appropriate signatures on the signature page.
4. Email a PDF file of your committee-approved thesis containing the **signed** signature page (with ALL signatures – electronic signatures are approved) to Ms. Sharonda Glass (sglass@Central.UH.EDU) in the NSM Office of Academic Affairs.
5. The latest possible time for emailing your committee-approved thesis is 12:00 pm (noon) on the deadline date published on the NSM webpage “Senior Honors Thesis Guidelines”, (<https://uh.edu/nsm/students/undergraduate/senior-honors-thesis/>).
6. Ms. Glass will forward your PDF to one of the NSM readers for evaluation, on a first-come first-serve basis. The readers are assigned theses/dissertations by departments:
Dr. Bill Widger (widger@uh.edu): Biology & Biochemistry; Chemistry
Dr. Ernst Leiss (uhcsele@gmail.com) : Computer Science; Mathematics
Dr. John Miller (phys5k@Central.UH.EDU) : Earth & Atmospheric Sciences; Physics

7. The reader will provide his comments in a Word document called the “cover sheet”. Dr. Widger (reader for Biology & Biochemistry, and Chemistry) and Dr. Miller (reader for EAS, and Physics) also have sections highlighted in your PDF file. The cover sheet and the highlighted PDF, if applicable, will be sent to Ms. Glass by the reader. There are 3 possible outcomes:

- a) Approved: the manuscript is approved without corrections; you are done.
- b) Approved with corrections: the manuscript is in fairly good shape, and relatively minor corrections are required; a revised manuscript is required but will not be read by the reader again; Ms. Glass will verify that you made the corrections in the revised version.
- c) Re-read: the manuscript requires substantial editing due to poor formatting or grammatical errors; the reader will need to see the revised manuscript again after corrections are made.

8. Ms. Glass will email you the cover sheet and the PDF, if applicable. If corrections are required, in this email, she will also give you a deadline on when your revised version should be sent back to her. Depending on when you receive your reader-annotated version, you may have 1 to 3 days to make the corrections. We encourage you to make your corrections as quickly as possible, to ensure completion of the process in a timely manner. Your thesis must be approved by the College and finalized by the day grades are due for the semester, according to the official university calendar.

9. Make ALL the corrections requested by the reader. Save your corrected document as a PDF file again. Make sure to rename it with the words “REVISED” in the file name, so it is a distinct file, and email it again to Ms. Glass.

10. If your thesis was approved with minor corrections, Ms. Glass will check your revised file and ensure that all corrections have been made. If your thesis was a “re-read”, the revised version will be sent to the reader again, and the process starts again at step 6.

11. Once your thesis is approved by Ms. Glass, you are responsible for sending an electronic copy of the approved version of your Senior Honors Thesis to the Honors College and the library.

12. Regarding bound copies of the thesis/dissertation: The University and College do not require bound copies, but you may wish to have some copies bound for your advisor and yourself. You are free to do this at your own pace and with any company you choose.

INSTRUCTIONS FOR FORMATTING A SENIOR HONORS THESIS

A. ORDER OF PAGES

The manuscript must include the following required items in the order listed; no other order is acceptable. Only items in italics are optional.

Front matter: items 1 to 10; should be numbered with lower case roman numerals (“ii”, “iii”, “iv”, etc...), except for the title page, which should have no numbers printed but assumed to be page “i”.

1. Title Page - No page number should be printed, but page “i” is assigned. Must show the month and year of commencement for your graduation. Only three months are acceptable: December for Fall graduation, May for Spring graduation, or August for Summer graduation See detailed instructions in Section E below.

2. Signature page – Follow the format shown in the sample at the end of this document. Page “ii” is printed.

4. Dedication or Epigraph Page – Optional.

5. Acknowledgements –Optional. Double-spaced.

6. Abstract Title Page - Must show the month and year of commencement for your graduation. Only three months are acceptable: December for Fall graduation, May for Spring graduation, or August for Summer graduation.

7. Abstract – There should be only **one** abstract that summarizes the whole thesis. The abstract must be double spaced and no longer than 350 words. There should not be additional abstracts at the beginning of individual chapters.

8. Table of Contents – May be single spaced. All entries should match exactly the corresponding headings and subheadings in the manuscript. The page number listed for each entry must be correct.

9. List of Tables – Table titles and page numbers must be included and correct. All tables must be incorporated in the text, and not put at the end of the manuscript.

10. List of Figures – Figure titles and page numbers must be included and correct. Do not include figure legends in the list of figures. All figures must be incorporated in the text, and not put at the end of the manuscript.

11. Text of Manuscript – Must be double spaced. The first page of the text should show the lower-case Arabic numeral 1. The manuscript's format must be consistent throughout the complete work.

12. Appendices – Optional - Supplemental information (e.g., extensive data tables, detailed methods, ancillary proofs) may be placed either before or after the references.

13. Bibliography – The title of this section must be “Bibliography”, not “References”. The bibliography may be single-spaced or double-spaced; if single-spaced, there must be an additional space between references. Be consistent in your bibliographic format. The College preference is for only a single bibliography to appear at the end of the thesis/dissertation. However, if you prefer, you are allowed to have a bibliography at the end of each chapter instead of at the end of the thesis. In this case, make sure to revise the Table of Contents appropriately, i.e., each chapter should have a heading “Bibliography” listed in the Table of Contents.

B. NUMBERING THE PAGES

- Each page in the manuscript, beginning with the title page, is assigned a number;
- Do not write the word “page” in front of the number;
- Although assigned, the page number is NOT printed on the title page;
- All page numbers are centered at the bottom of the page, with the bottom (base) of the page number right at the one-inch margin;

- The following page numbering is required:
 - Front matter:
 - Use lower case Roman numerals (i, ii, iii, iv, etc.)
 - The title page is assigned page number “i”, but the number is not printed on the page.
 - Main body of the thesis/dissertation:
 - Use lower case Arabic numerals (1, 2, 3, 4, etc.) for the remainder of the manuscript, including the text, illustrations, appendices, and bibliography.
 - Each page must be numbered consecutively, starting with “1” on the first page of the main body.
 - Do not use letter suffixes, such as 10a or 10b.
- If a figure is too large or the caption (legend) for a figure is too long such that the entire caption does not fit on the same page as the figure, the figure number, title and caption should be placed on the previous page.

C. FORMATTING

Margins

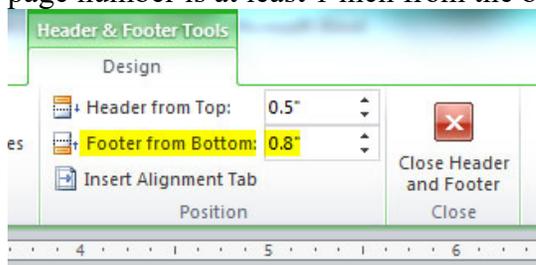
- The following margins are required:

Left: 1 inch

Right: 1 inch

Top: 1 inch

Bottom: 1 inch from the base of the page number. In WORD, set your margin at 1 inch, and your “Footer from Bottom” at 0.8 inch (see below). There might be slight variations on different printers. Print a page on your printer and double check that the bottom of the page number is at least 1 inch from the bottom edge of the sheet of paper.



- All text, captions, and figures (including charts, graphs, maps, tables, and photographs) must be inside these margins. There are no exceptions.

Spacing

- The abstract, acknowledgments, and main body of the manuscript must be double-spaced.
- The captions must be single spaced.
- The table of contents, list of tables, and list of figures may be single-spaced or double-spaced.
- The text of the references may be single-spaced (with an additional space between references) or double-spaced.

- Be consistent in the spacing you choose between sections and sub-sections.

Fonts

- Make sure that the font size is legible. We recommend that you use the following typefaces used by NSF for formatting grant proposals, which are:
 - Arial, Courier New, or Palatino Linotype at a font size of 10 points or larger;
 - Times New Roman at a font size of 11 points or larger; or
 - Computer Modern family of fonts at a font size of 11 points or larger.
- Do not change font between sections of the manuscript.

Headings

- You are free to choose how to format your headings and sub-headings, but remain consistent throughout the manuscript in terms of font type and size, capital letters versus lower case, underlined or not, etc.
- Make certain that your table of contents agrees with the manuscript regarding page numbers and exact titles of headings;
- Avoid sections that begin on the last line of a page or sections that end on the first line of a page.

D. FIGURES AND TABLES

- All figures and tables must fit within the prescribed margins:
 - Occasionally, charts, tables, maps, graphs, photographs, or figures that are larger than the standard page might have to be used in your thesis. If so, they should be saved as a separate document.
- All figures and tables should be placed within the body of the manuscript and not at the end.
- Figures and tables are allowed to be in color or in black and white.
- Graphs should have axes and axis labels, including units.
- **All lettering within the figure, graph or chart must be legible:** letters should be at least 1 mm tall in the printed form. Be aware that figures obtained from other sources or screen shots may have been reduced such that the lettering is no longer legible. In this case, the lettering should be eliminated or the figure relabeled.
- Scale bars should be provided, as appropriate.
- Maps should have scales and a north arrow.

- **Each figure and table must have a number and a title.**
 - The style of numbering figures and tables should be consistent throughout the manuscript. For figures, the full (“Figure”) or abbreviated (“Fig.”) word may be used, but consistently. For tables, the full word “Table” should be used;
 - The numbering of figures can be consecutive from beginning to end of the manuscript (Figure 1, Figure 2, etc.) or by chapter (for first chapter: Figure 1.1, Figure 1.2, etc.; for second chapter: Figure 2.1, Figure 2.2., etc.). A similar numbering format should be used for tables. Figures in appendices should also have captions and numbers (e.g., figure A.1, A.2, or A1.1, A2.1);
 - The number and title of a figure must be positioned below the figure;
 - The number and title of a table should be positioned a table above the table.
- **Each figure must have a caption (legend)**, which is complete enough to be self-contained (i.e., the reader should not have to go into the main text to understand the figure).
 - Captions should be single-spaced;
 - Captions should be positioned below the figure, next to the figure number and title;
 - Captions should be on the same page as the figure, unless there is not enough room on the page for the whole caption to fit; in this case, the figure number, title, and caption should be positioned on the page before the figure.
 - If the figure or caption is in landscape mode (rather than portrait), the bottom should be on the right (outside) edge of the page; however the margins remain the same and the page number remains at the bottom, as with all other pages.
- Captions or comments for tables are optional; if a table has a caption, it may be positioned above the table (next to table number and title) or below the table.

Reusing figures or any type of illustrations from the literature:

- You may reuse a figure or illustration from your own published articles, as long as you have: 1) permission to do so from the publisher (this may be automatic: see Publisher Policies on Pre-Published Content) and 2) you cite the reference in the figure legend;
- You may **NOT** reuse a figure or illustration from someone else’s article unless: 1) it has been **substantively** altered or adapted in some way or 2) you have received permission for its reuse. In either case, the citation must be made clear. You should treat these issues with as much care as you would when submitting an article for consideration with a journal, since you are directly liable for any infringement of copyright. It is recommended that you contact the [Copyright Team](#) in the Libraries for assistance if you have any questions regarding copyrighted material.
- Beware of the meaning of “open access”: only articles that have Creative Commons licenses attached to them allow the reproduction of figures. You should always follow the allowances of the license attached to that article. Generally, you can reuse anything in an article with a Creative Commons license for educational/non-commercial purposes without permission, so long as you cite the original author(s). It can occasionally happen, however, that a specific figure or illustration contained within an open access article has a separate license attached to it that is more restrictive.
- Articles found free online but that do not have a Creative Commons license are under full copyright protection and may not be reused or reproduced in any form without written permission from the author(s).

- Bottom line: a free online article or an “open access” article may or may not allow reuse of its contents. Make sure to check the copyright license for the specific figure you want to reuse.

E. PREPARING THE TITLE PAGE

- Your manuscript will be a valuable source for other scholars only if it can be located easily. Retrieval systems use the words in the title (and sometimes a few other descriptive words) to locate your manuscript. It is essential that the title be a meaningful description of the content of your research.
- Follow the format shown on the Sample. Each word of the title starts with a capital letter. Only the first letter of each word should be capitalized; the rest of the word is written in lower-case letters. Exceptions are allowed for species names and gene names, so they remain scientifically correct.
- The acceptable departments are:
 - Biology and Biochemistry
 - Chemistry
 - Computer Science
 - Earth and Atmospheric Sciences
 - Mathematics
 - Physics
- The degree is “Bachelor of Science”
- The date of the thesis is: December for Fall graduation, May for Spring graduation, or August for Summer graduation.

F. PREPARING THE SIGNATURE PAGE

- Follow the sample. Write the title in the same way as shown on the title page
- Write the names of your committee members preceded by Dr.;
- The name of the Dean is: Dan E. Wells
- The name of the college is: College of Natural Sciences and Mathematics

G. PREPARING THE ABSTRACT TITLE PAGE

- Follow the format shown on the Sample. Each word of the title starts with a capital letter. Only the first letter of each word should be capitalized; the rest of the word is written in lower-case letters. Exceptions are allowed for species names and gene names, so they remain scientifically correct.
- The acceptable departments are:
 - Biology and Biochemistry
 - Chemistry
 - Computer Science
 - Earth and Atmospheric Sciences
 - Mathematics

- Physics
- The degree is “Bachelor of Science”
- The date of the thesis is: December for Fall graduation, May for Spring graduation, or August for Summer graduation.

H. PREPARING THE ABSTRACT

- Word limit: 350 words;
- Line spacing: double-spaced;
- An abstract should be a short version of the thesis or dissertation, and contain the following:
 - statement of the problem
 - general description of procedures and methods
 - results
 - conclusions
- An abstract should NOT contain:
 - Mathematical formulas
 - Diagrams, and other illustrative materials
 - References

G. TEXT OF THE THESIS

Style

- Remain consistent in the style you choose for your thesis or dissertation. This applies to the following:
 - Formatting of headings and sub-headings
 - Formatting of tables and illustrations (see section D above)
 - Formatting of the cited references (see section H below)
 - Formatting indentations and spacing between sections and paragraphs
 - Abbreviations: remain consistent in the use and format of your abbreviations:
 - you can use “hr” or “h” for “hour”, but remain consistent
 - you can use “Fig.” for figures, but remain consistent (do not use “Fig.” in some places, and “Figure” in others)
 - you can use “Eq.” for equations, but remain consistent

Grammar

- Edit your manuscript for proper English sentence structure and check the following:
 - Spelling: use a spell checker, but beware that it is not always accurate;
 - Punctuation: Oxford commas are not required, but if you use them, be consistent and use throughout;
 - Noun-verb agreement: you can choose to write your work using the first person singular (“I”) or plural (“we”), but remain consistent;
 - Use of articles;
 - Proper use of tense: use past tense when describing work or observations done in the past; use past or present tense when describing conclusions or interpretations; use future tense when describing future work;

- Capitalization;
- Hyphens: required for common words, such as “state-of-the art”, “blue-green”; not required for scientific words or words in your specialization that are normally not hyphenated;
- Ensure that the sentences are understandable as written; keep them short.

Scientific terms

- Put a space between numbers and their units; for example: 25 m/s;
- Be consistent in the formatting of technical words, in terms of capitalization, hyphens and italics.

Hyperlinks

- In general the use of hyperlinks should be minimized in the thesis/dissertation, unless they are used for online datasets, source codes, and other resources which cannot be cited. In the bibliography, hyperlinks should be used only if there is no other way to cite the reference. They should not be used in the main text of thesis/dissertation to directly link to an article or a website. Instead, a reference should be used, and the hyperlink given in the bibliographical entry corresponding to that reference, if there is no other way to give the citation. Do not use internal links within the thesis/dissertation to connect different sections of the document (such as text to Table of Contents, text to figures/tables, text to bibliographical entries, etc.). On rare occasions, hyperlinks have created issues with uploading the document on TDL. If this is the case, you may need to revise your document accordingly.

Previously published content

- You must give the reference of your own paper(s) on the front page of the relevant chapter(s) or at the beginning of the relevant section(s), if you are re-using any results, figures or text that you have previously published in scientific articles.

H. REFERENCES AND BIBLIOGRAPHY

- Be consistent throughout your manuscript in the style you choose to cite references in the text, and in how you list your references in the bibliography. Inconsistencies in the references and bibliography typically result in a reject by the reader, which delays your thesis/dissertation approval by NSM;
- As a rule, the format and style of the bibliography should conform to acceptable standards of scientific and scholarly writing in the discipline. At the minimum, the following information should be given:
 - For journal articles: author(s), title of the journal, volume number, inclusive pages, year of publication;
 - For books: author(s) or editor(s), title of the book, publisher, publisher city and state (country if not U.S.), year of publication;
 - For articles or chapters in book: authors of article, editors and title of book, publisher, publisher city and state (country if not U.S.), year of publication;
 - For conference proceedings: author(s), title of proceedings (may include location), volume number and inclusive pages (if available), and date of publication;
- You may choose headline or sentence style for titles in the references, but be consistent in your style.

- In headline style titles, all first letters are capitalized except for articles (a, an, and the) and prepositions of fewer than five letters. Prepositions with five or more letters may be capitalized. For hyphenated words, generally only the first word is hyphenated.
- In sentence style titles, only the first word of the title and proper nouns are capitalized.
- If journal abbreviations are used, make sure to use the same abbreviations consistently every time the journal name appears in the bibliography;
- Be consistent in your use of underline, and/or italics;
- Do NOT use doi numbers in the bibliography;
- Be sure and check that all references cited in the text are in the bibliography, and all references in the bibliography are cited in the text.
- The College preference is for only a single bibliography to appear at the end of the thesis/dissertation. However, if you prefer, you are allowed to have a bibliography at the end of each chapter instead of at the end of the thesis/dissertation. In this case, make sure to revise the Table of Contents appropriately, i.e., each chapter should have a heading “Bibliography” listed in the Table of Contents.

I. AVOIDING COMMON ERRORS

- Oxford commas: In a series consisting of three or more words, phrases, or clauses, separate the elements with commas. NSM does not require Oxford commas, but if you use them, remain consistent throughout the manuscript;
Example: The elements included hydrogen, oxygen, and silicon.
- In headline-style capitalization (often used in titles, table of contents, and bibliographies), do not capitalize the second part (or subsequent parts) of a hyphenated compound unless it is a proper noun or adjective.
Examples: Self-regulated Genes; Genes that are Self Regulated; A Twenty-first-century History of Science; Helmholtz-Gibbs Equation
- Use a semicolon between the clauses of compound sentences that are joined by conjunctive adverbs such as *therefore*, *hence*, *however*, *nevertheless*, *accordingly*, *thus*, and *then*. The semicolon precedes the adverb, and a comma usually follows it.
Example: The temperature was much lower than we anticipated; therefore, we did not go outside to work.
- A comma should follow the words *namely*, *that is*, *for example*, *i.e.*, and *e.g.* There must also be a punctuation mark before each of these expressions, but the kind depends on the nature and complexity of the sentence.
Examples: a) The farmer brought several kinds of animals, namely, pigs, horses, and cows, into the classroom.
b) The temperature in some areas of the world normally exceeds 100 F; for example, the average daytime temperature in Death Valley is 102 F.
- A verb should agree with its subject in person and number.
Example: The employer of engineers and scientists has to be careful about hiring

practices. (The word employer is a singular subject and requires the singular verb has. Do not confuse the subject with one of its modifiers.)

- A reference using *et al.* is correctly written as Brady *et al.*, not Brady, *et al.* or Brady *et. al.*
- If you punctuate mathematical or chemical equations (e.g., follow with a comma or period), punctuate them all and do it correctly. If equations are numbered, do so consistently.
- The word *data* may be used in the singular or plural, but remain consistent throughout the manuscript.
Example: The data were inconclusive. OR The data is inconclusive.
- If you hyphenate a word, be consistent throughout the manuscript.
- Do not confuse *whose* with *who's* or *its* with *it's*.
- The word *respectively* is set off with commas, or with a comma and a period, if it comes at the end of a sentence.

EXAMPLES OF PAGES

In the following pages, see examples of the pages that precede the text in the thesis. A brief description of the contents of the page appears at the top in []. Each sample page represents an individual page.

[Sample 1 - *Title Page* - Must show the month and year of your graduation. Only three months are acceptable: December for Fall graduation, May for Spring graduation, or August for Summer graduation. (No page number should be printed, but page i is assigned)]

**Development Of A Radioimmunoassay For The Detection And Quantification Of
Immune Complexes In Canine Sera By A Solid Phase Clq Binding Assay**

A Senior Honors Thesis Presented to the
Faculty of the Department of Biology and
Biochemistry
University of Houston

In Partial Fulfillment of the Requirements for
the Degree of Bachelor of Science

By
Betty Sharon Brown
December 1979

[Sample 2 - *Signature Page* – Actual scanned signatures or electronic signatures are allowed]

**Development Of A Radioimmunoassay For The Detection And Quantification Of Immune
Complexes In Canine Sera By A Solid Phase Clq Binding Assay**

Betty Sharon Brown

APPROVED:

Dr. John Evans, Chairman

Dr. David S. Terman, Co-Chairman
Baylor College of Medicine

Dr. Alan Dudkiewicz

Dr. Peter Jurtshuk

Dr. John F. Oro

Dr. Dan E. Wells, Dean
College of Natural Sciences and Mathematics

[Sample 3 -- *Acknowledgements, Preface, or Foreword - Optional*]

ACKNOWLEDGEMENTS

My special thanks go to Dr. John E. Evans, Ph.D., for his guidance and support throughout this endeavor. My sincerest appreciation goes to Dr. David S. Terman, M.D., both for permitting me to pursue this research in his laboratory and for his numerous invaluable contributions to this thesis. I would also like to thank Messrs. Rick Tillquist, Joe Henry, Tsuyoshi Yamamoto, and most especially, Gary Cook for their technical efforts and suggestions, without which this project would never have reached fruition. Last, but certainly not least; my deepest gratitude goes to my parents for their constant encouragement and total support in my attainment of this goal.

[Sample 4 --*Abstract Title Page*: Must show the month and year of commencement for your graduation. Only three months are acceptable: December for Fall graduation, May for Spring graduation, or August for Summer graduation.]

**Development Of A Radioimmunoassay For The Detection And Quantification Of
Immune Complexes In Canine Sera By A Solid Phase Clq Binding Assay**

An Abstract of a Senior Honors Thesis

Presented to the Faculty of the

Department of Biology and

Biochemistry

University of Houston

In Partial Fulfillment of the Requirements for
the Degree Bachelor of Science

By

Betty Sharon Brown

December 1979

[Sample 5 -- *Abstract* - There is a 350-word limit for theses]

ABSTRACT

Staphylococcus aureus Cowan 1 strain (SAC) contains a cell wall protein that has an affinity for immune complexes and the IgG of most mammalian species. Dogs with spontaneous mammary adenocarcinoma whose plasma was perfused over immobilized SAC developed a potent, apparently humorally mediated tumoricidal response within hours after the perfusion. This response was accompanied by changes in the humoral concentrations of immune complexes, IgG, and tumor-specific antibodies. SAC efficiently removed the complexes from the plasma during the first 5-6 minutes of the perfusion, but as the perfusion continued, the concentration of complexes in the plasma immediately leaving the SAC filter equaled or exceeded the pre-perfusion values. Following the perfusion, the *in vivo* quantities of circulating immune complexes were elevated, the total serum IgG concentrations were depressed temporarily but rapidly rebounded to greater than pre-perfusion values, and the levels of tumor-specific antibodies became increased and remained elevated for varying periods of time. For these studies, a solid phase of Clq binding assay was shown to be reliable and reproducible in the quantification of canine immune complexes. This assay may also be useful in the identification of dogs with tumors that are amenable to the extra corporeal SAC perfusion treatment.

[Sample 6 – *Table of Contents* – All entries should match exactly the corresponding headings, subheadings, and fonts in the manuscript. The page number listed for each entry must be correct.]

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