

NORTH DAKOTA STATE UNIVERSITY GRADUATE SCHOOL FORMAT GUIDELINES FOR PAPERS,
THESES, AND DISSERTATIONS

A Handbook
Created for the Graduate Students
of the
North Dakota State University
of Agriculture and Applied Science

By
NDSU Graduate School

In Partial Fulfillment of the Requirements
for the Degree of
GRADUATE DEGREES

Department:
Graduate School

November 2025

Fargo, North Dakota

North Dakota State University

Graduate School

Title

[ADD THE TITLE OF YOUR DISQUISITION HERE]

By

[Student's full name]

The Supervisory Committee certifies that this ***disquisition*** complies with North Dakota State University's regulations and meets the accepted standards for the degree of

NAME OF DEGREE

SUPERVISORY COMMITTEE:

[Name of committee chair]

Chair

[Name of committee member]

[Name of committee member]

[Name of committee member]

Approved:

[Date of Approval]

Date

[Name of Department Chair]

Department Chair

ABSTRACT

NDSU requires its students to produce work that is polished and refined, and that meets certain standards of academic quality. Part of that quality includes documents that are readable, understandable, and good-looking. Since you have spent so much time and effort writing your disquisition, we want it to look as smart as you are. Our guidelines explain the various steps involved in formatting your disquisition for approval by the NDSU Graduate School. The Graduate School format guidelines are maintained by the [Dissertation & Thesis Coordinator](#) (a.k.a. the Disquisition Coordinator) in the Center for Writers; if you have any questions about the review process or guidelines herein, please contact them using the e-mail linked above.

TABLE OF CONTENTS

ABSTRACT	iii
LIST OF FIGURES.....	vii
GRADUATE SCHOOL FORMAT GUIDELINES.....	1
Finding Help with Formatting Your Disquisition	1
Style Manuals.....	2
Editing	2
Copyright.....	2
Co-Authored Materials	3
Previously Published Materials	3
PRE-SUBMISSION REQUIREMENTS	4
Research Compliance	4
Disquisition Approval Page	5
Electronic Submission	5
Deadlines	6
REQUIRED ORDER OF ELEMENTS.....	7
DIGITAL ACCESSIBILITY REQUIREMENTS	8
Item 9: Sections in different languages have a corresponding language attribute	46
Item 10: Images and other objects have alternative text	46
Item 12: The document contains links and/or controls.....	46
Item 14: The document contains color and/or sensory characteristics.....	47
Item 15: Color contrast.....	47
GENERAL REQUIREMENTS FOR FORMATTING AND CONSTRUCTION	10
Font	10
Hyperlinks.....	11
Margins.....	11
Paragraphs.....	11

Headings	12
Major Headings	12
Subheadings	13
Numbered Subheadings vs. Non-numbered Subheadings	13
Page Numbers	15
PREFATORY MATERIAL	17
Title Page	17
Disquisition Approval Page	19
Copy 1 (for Graduate School files).....	19
Copy 2 (within disquisition)	19
Abstract	20
Acknowledgments	20
Dedication	21
Preface	21
Table of Contents	21
List of Tables, Figures, Schemes, Etc.	23
List of Abbreviations/Symbols	25
List of Appendix Tables, Figures, Schemes, Etc.	26
BODY OF THE DISQUISITION	30
Chapters.....	30
Bulleted/Numbered Lists and Block Quotations.....	31
Tables, Figures, Schemes, Etc.	31
Equations	35
References/Works Cited	35
APPENDIX A. APPENDIX MATERIAL	38
If You Have One Appendix.....	39
If You Have Multiple Appendices	39
Tables, Figures, Schemes, and Non-text Items in Appendices	40

APPENDIX B. SUBMISSION CHECKLIST	41
Pre-submission Paperwork	41
Necessary Inclusions	41
General Appearance	41
Proofreading	42
Preparing to Submit	42
APPENDIX C. WORKING WITH LANDSCAPE-ORIENTED PAGES	43
Creating a Landscape Section	43
Disconnecting the Landscape Section	43
Adding Page Numbers to the Landscape Page(s)	44
APPENDIX D. CO-AUTHORSHIP NOTE EXAMPLE	45
APPENDIX E. ACCESSIBILITY	46
General Settings	48
Tables, Figures, Schemes, and Other Non-text Items	48

LIST OF FIGURES

<u>Figure</u>	<u>Page</u>
1. Example of numbered subheadings in a disquisition.....	14
2. Example of non-numbered headings in a disquisition.	15
3. Sample title page for a disquisition.	18
4. Example of a Table of Contents in a disquisition.	22
5. Example of a List of Tables in a disquisition.	23
6. Example of a List of Abbreviations in a disquisition.	26
7. Example of a List of Appendix Tables in a disquisition.	27

GRADUATE SCHOOL FORMAT GUIDELINES

As you [prepare to graduate](#), you will be completing and defending your disquisition, filing forms with the Graduate School, and submitting your disquisition for format review. The disquisition review process involves making sure that necessary steps are completed for graduation and that your disquisition meets the high standard of quality required of all disquisitions published by NDSU.

Before you submit your disquisition to the Graduate School, check that your [pre-submission requirements are met](#) and that your disquisition meets the formatting and construction requirements set out in these guidelines. Word [templates](#) are available on our website for you to use. Once your pre-submission requirements are met and you submit your disquisition [on our website](#), the disquisition coordinator will review it based on these formatting guidelines and will send you a memo with any required changes. With few exceptions, the Graduate School does not review disquisitions for content; as such, your disquisition must be complete, with all content edits finalized, before you begin the review process. If you make noticeable changes to the content of your disquisition after the initial review, your review will be delayed, and you may be required to restart the review process entirely, including paying the processing fee again. Once a final version of the disquisition has been approved, a memo with final instructions will be sent and your document will be published.

Finding Help with Formatting Your Disquisition

The workshop “Navigating the Disquisition Review Process” is held several times each semester through the [Center for Writers](#). E-mail announcements are sent to all Graduate Students each semester containing details and instructions for signing up. Consultants at the Center for Writers are also available year-round for individual meetings through the [Center for Writers scheduling portal](#), though please note that meeting times may be limited near the end of a semester. During a meeting, consultants will work with you directly on your document to prepare its formatting and can answer any questions you may have regarding formatting and the format review process.

Attending a workshop or a meeting--or both--before beginning the format review process is highly recommended. Students who work with a writing consultant or attend a workshop require one fewer review on average during the format review process.

Style Manuals

We highly encourage you to review and employ the style manual that is used in your field, such as MLA, APA, Chicago, IEEE, etc. However, in instances where the Graduate School guidelines conflict with the style manual for your discipline, the Graduate School guidelines take precedence. In instances where the Graduate School guidelines do not provide direction, such as how to format a table or figure, follow the style manual that is used in your discipline.

If you need help or more information about how to use style manuals, contact the Center for Writers to make an appointment for a writing consultation. Links to our scheduling portal as well as additional resources are available [on our website](#).

Editing

If desired, you can consult with or hire an outside editor to review your disquisition for content, spelling errors, grammatical mistakes, and other proofreading issues; hiring an editor is neither required nor prohibited for submission to the Graduate School. However, if you do consult an editor, you are still responsible for ensuring that your document meets the requirements of the Graduate School format guidelines, and that the document is submitted properly to the Graduate School for review.

Copyright

- **Use of Copyrighted Material** – You are responsible for the appropriate use and attribution of copyrighted materials in your disquisition. To better understand ownership, fair use, and your rights and protections, please refer to [Copyright and Your Dissertation or Thesis: Ownership, Fair Use, and Your Rights and Responsibilities](#) by Kenneth Crews. Note that fair use rarely applies to images from others' work.
- **Respecting the Copyright of Others** – If you take copyrighted material produced by another and reproduce it without express written permission, you may be violating copyright law. In such cases, you must request written permission from the copyright holder or leave the item out of your disquisition. If written permission to use copyrighted material is required, you are responsible for obtaining this permission.
- **Copyright and Your Previously Published Work** – If you include your previously published work as part of your disquisition, you need to ensure that the publisher who published your work

has not placed restrictions on your right to reproduce or redistribute this work. This information can usually be found in the publisher's author guidelines or in the publication contract.

Co-Authored Materials

If co-authored materials are included in your disquisition, a clear and complete description of your contribution must be included. No co-authored materials can be included in the disquisition if your contribution is modest, even though you may have been included as a co-author. The mandatory description of your role must be placed in a footnote, indicated at the chapter heading in which the co-authored material appears. [See an example](#) of the mandatory note.

Previously Published Materials

Your program has the option of allowing you to use materials submitted for publication or already published as an integral component of your disquisition. However, this material should be in a format that is consistent with the Graduate School formatting guidelines (outlined in this guide). Additionally, previously published materials may carry copyright restrictions on your ability to redistribute or reproduce your own work. As copyright is your responsibility, make sure you fully understand any publication agreements (a.k.a. transfer agreements) before signing them.

PRE-SUBMISSION REQUIREMENTS

Before you submit your disquisition to the Graduate School, you must complete the following steps:

1. Submit your Intent to Graduate.
2. Submit your Notification of Scheduled Preliminary Exam or Final Defense form to the Graduate School. This form must be received at least **seven calendar days before** you intend to schedule the defense.
3. Successfully defend your disquisition.
4. Submit the following forms within seven days of your final defense.
 - Report of Final Defense
 - IRB/IACUC/IBC Compliance Notification
5. Complete all revisions of your disquisition content, as required by your committee.
6. Submit your Disquisition Approval Page (Copy 1) to the Graduate School. This must include the signatures of all your committee members and your department chair.

Note: This is **NOT** the copy that you include in your final disquisition, which is named Copy 2. For more information, see the [Disquisition Approval Page](#) section of this guide.

7. Pay the disquisition processing fee.

If the disquisition is submitted for review before these steps are completed, your review will be put on hold until the pre-submission requirements have been met.

Further information and links to the correct forms for each item below can be found [here](#).

Research Compliance

If your research involves human or animal subjects, or the use of biohazardous substances (i.e., rDNA, infectious agents, or bodily fluids or tissues), you must obtain approval from the appropriate campus committee **before** you begin your research.

- Institutional Review Board (IRB) – For research that involves human subjects
- Institutional Animal Care and Use Committee (IACUC) – For research that involves animal subjects
- Institutional Biosafety Committee (IBC) – For research that involves biohazardous substances

After your supervisory committee has finalized your research design, you must submit the appropriate forms to the IRB, IACUC, or IBC for review. You must receive research approval **before** you begin the research.

Your disquisition will not be accepted by the Graduate School if it involves the non-approved use of human or animal subjects, or biohazardous substances. IRB, IACUC, and IBC approval cannot be obtained retroactively.

For more information, see “[Research Compliance \(IRB, IACUC, and IBC\)](#)” on the Graduate School Theses, Dissertations and Papers General Requirements website.

Note: You must submit the Compliance Notification form to the Graduate School, even if your disquisition research does not involve human subjects, animal subjects, or biohazardous substances.

Disquisition Approval Page

After your final examination, and after your major advisor and supervisory committee have approved the content of the disquisition, you must submit the Copy 1 version of the Disquisition Approval form to the Graduate School. This form includes original signatures from your committee members and the chairperson of your department. This form, Copy 1, will not be included in the disquisition.

You must also include a second version (Copy 2) of the Disquisition Approval form in the disquisition, when you submit the disquisition to the Graduate School. This second version does not contain original signatures, but instead has the information typed into the form and is included as the second page of your disquisition.

For more information, see the [Disquisition Approval Page](#) section of this guide.

Electronic Submission

To submit your disquisition, go to “[Submit Your Disquisition](#)” on the Graduate School website. Dissertations and theses are submitted through [ProQuest](#), while master’s papers are submitted as PDF attachments [via e-mail](#).

Disquisitions must be submitted as a single .pdf file. Disquisitions that are submitted in other file types (including .doc, .docx, and so on) will not be reviewed until they are submitted as a .pdf file.

Supplemental files may be submitted alongside your disquisition in these ways:

- **Dissertation or thesis** – ProQuest has an option for submitting supplemental files.

- **Master's paper** – Please e-mail the disquisition processor to arrange for submitting your files.

We strongly recommend that you write your document in Microsoft Word. You may use a different software program (such as LaTeX) if you are able to convert your finished document into a PDF without assistance.

If you need help with using Microsoft Word, contact the Instructional Design Center (IDC). You can use their walk-in consulting service located in QBB 150G, or you can find resources [on their website](#).

Deadlines

Degrees are posted three times per academic year: December, May, and August. The deadline for [initial submission](#) of disquisitions to the Graduate School is approximately one month prior to the commencement of each semester. The review process must be completed, and final revisions submitted by 11:59 p.m. on the last day of the semester, for your degree to post in that term.

Note: Documents submitted ahead of the initial submission deadline take priority for reviews over post-deadline initial submissions until the end of the semester. If you do not meet the initial submission deadline for a particular semester, the Graduate School cannot guarantee that your disquisition will be reviewed in time to graduate that semester, and your graduation could be delayed.

For specific dates for the current or upcoming academic year, see the [NDSU Academic Calendar](#).

REQUIRED ORDER OF ELEMENTS

The contents of the disquisition must be arranged in the following order. No additional elements may be included without prior authorization from the Dissertation & Thesis Coordinator.

Disquisitions must be submitted as a single PDF.

- [Title Page](#)
- [Disquisition Approval Page](#)
- [Abstract](#)
- [Acknowledgments](#) (Optional)
- [Dedication](#) (Optional)
- [Preface](#) (Optional)
- [Table of Contents](#)
- [List of Tables](#) (Required if disquisition chapters include tables)
- [List of Figures](#) (Required if disquisition chapters include figures)
- [List of Schemes](#) (Required if disquisition chapters include schemes)
- [List of \[_____ \]](#) (Any other material, such as equations, etc.)
- [List of Abbreviations](#) (Required if disquisition includes extensive abbreviations)
- [List of Symbols](#) (Required if disquisition includes extensive symbols)
- [List of Appendix Tables](#) (Required if appendices include tables)
- [List of Appendix Figures](#) (Required if appendices include figures)
- [List of Appendix Schemes](#) (Required if appendices include schemes)
- [List of Appendix \[_____ \]](#) (Any other appendix material, such as equations, etc.)
- [Chapters](#)
- [References/Works Cited](#) (Use the heading that is required by the style manual for your field)
- [Appendix/Appendices](#) (Optional)

DIGITAL ACCESSIBILITY REQUIREMENTS

[NDUS Policy 1203.1 section 1B](#) requires that all papers, theses, and dissertations are compliant with federal law, namely Section 508 of the Rehabilitation Act. From [the Section 508 website](#), use the 2019 authoring guide to test and correct your PDF before submission. This website also has demonstration videos, how-to guides, and other resources to help you make your document compliant.

The following eighteen items are required for your document to be compliant with NDUS Policy 1203.1. Thirteen of these requirements are built-in to the templates provided by the Graduate School through the use of Word styles (October 2025 templates and later only). The remaining five items require your attention; see [Appendix E](#) for more information.

1. Document properties
 - a. The PDF has a descriptive file name which identifies the document, or its purpose and the Initial View is set to show Document Title
 - b. Security settings is set to Allowed for Content Copying for Accessibility
 - c. Under the Advanced>Reading Options, the primary language is set correctly in the Language field.
2. The document contains renderable content
 - a. The document's content appears in the Content Pane
 - b. Optical Corrector Recognition (OCR) was performed on all scanned pages.
3. The PDF is tagged
 - a. When viewing the Tags Pane, tags are visible.
4. The tags follow the visual/logical reading order of the document
 - a. All meaningful content is associated with the correct tag.
 - b. All tags follow the visual/logical reading order of the page.
5. The document has decorative content
 - a. All decorative content (text and objects) are tagged as <Artifact>
 - b. Repeated content such as repeated headers and footers are tagged as <Artifact>
6. Vital information in headers, footers, and watermarks is duplicated in the document's text at least once
 - a. Vital information is duplicated as tagged content.
7. Headings are tagged with a <H>-<H6> Heading tag
 - a. Heading tags match document headings and follow the visual outline.
 - b. All non-standard heading tags map to standard heading tags.
8. Lists are tagged correctly
 - a. Lists have a parent tag and have one or more nested list item tags. Example <L> and .
9. Sections in different languages have a corresponding language attribute
 - a. The tag's property associated with the language change shows the selection's language or corresponding two-letter code.
10. Images and other objects have alternative text
 - a. All "Figures" have alternative text that describes its purpose/function.
 - b. All captions describe the purpose/function of associated images/objects.

- c. Descriptive text conveys the purpose and/or function of the image/object.
- 11. The document contains data tables
 - a. Tables are identified with a <Table> tag.
 - b. Table header cells have a <TH> tag and data cells have a <TD> tag.
 - c. Row/column span match the layout, and cells have scope and unique IDs.
 - d. Data cells are associated with corresponding header cells.
- 12. The document contains links and/or controls
 - a. Link names describe destination/purpose or describe context.
 - b. Links have unique names.
 - c. Tab order matches the visual/logical order of interactive elements.
- 13. The document contains fillable form elements
 - a. Each form field has a tooltip that matches the label or instruction.
 - b. Tab order matches the visual/logical order of form fields.
- 14. The document contains color and/or Sensory characteristics
 - a. Meaning of color or other sensory characteristics is duplicated in text.
- 15. Color contrast
 - a. Text and Large Text (including images of text) pass with the Color Contrast Analyzer.
- 16. The PDF contains meaningful audio-only, video-only, or synchronized media objects
 - a. Audio-only objects have a transcript that is accurate and complete
 - b. Video-only objects have text description that is accurate and complete
 - c. Synchronized media (audio and video) have synchronized captions and audio description that are accurate and complete
- 17. The document has no flashing objects
 - a. Flashing objects are excluded from the document.
- 18. An alternative, accessible version is provided if the PDF cannot be made fully Section 508 compliant
 - a. Alternate versions are equivalent and up to date.

As the author of your disquisition, you alone are responsible for making your document compliant.

If you are using a Graduate School template, using the pre-formatted styles for your content will, wherever possible, meet the aforementioned accessibility requirements. However, items 9, 10, 12, 14, and 15 (above) pertain to your individual content and must be implemented by you.

GENERAL REQUIREMENTS FOR FORMATTING AND CONSTRUCTION

General requirements for formatting and construction have been set for your disquisition's appearance to ensure it reflects well upon your work as a student. This section details the guidelines for font, margins, paragraphs, headings, and page numbers that must be applied to all sections of your disquisition. Particular sections of the disquisition that have special formatting will be detailed in the [Prefatory Material](#), [Body of the Disquisition](#), and [Appendix Material](#) sections of this guidelines document.

The following requirements apply to all sections of the disquisition.

Font

- **Font type** – All elements of the disquisition (including body text, tables, and headings) must appear in the same font type. Exceptions include the font that is used within figures, illustrations, equations, or other special elements.
- **Font color** – Use standard (black) font color throughout all body text. Exceptions may be allowed if a single word or phrase within a paragraph or table must use color for descriptive effect (and only if this practice is accepted by your academic discipline).
- **Approved list of fonts** – To ensure proper conversion to .pdf format, disquisitions must use one of the following fonts. The font size given is the baseline font size (used for most elements, including body text, subheadings, table/figure titles, and page numbers). Certain elements may be in a slightly larger font size (for example, major headings), and these exceptions are outlined in the individual sections of this guide.
 - Arial (size 10)
 - Century (size 11)
 - Courier New (size 10)
 - Garamond (size 12)
 - Georgia (size 11)
 - Lucida Bright (size 10)
 - Microsoft Sans Serif (size 10)
 - Tahoma (size 10)

- Times New Roman (size 12)
- Trebuchet MS (size 10)
- Verdana (size 10)
- Computer Modern (size 11) (for disquisitions created using LaTeX)

If you are writing a doctoral dissertation or a master's thesis, ProQuest requests that you embed all fonts when you convert your disquisition to a .pdf file. This is to help ensure the quality of your pdf file. For more information about how to embed fonts, refer to the instructions provided [here](#).

Hyperlinks

When you include a URL (or other linked text) in the document (such as links to internet sources), it should be in black text and not underlined or otherwise appear as a hyperlink.

Note: Although this document has conformed to the formatting it espouses in most other respects, this document is not itself a disquisition, but a reference document, and thus hyperlinks are blue and underlined as a matter of readability. The hyperlinks in your disquisition should not emulate this.

Margins

One inch (1") top, bottom, left, and right margins should be set for all pages, and no content may extend into these margins except page numbers, which should be set at three-quarter inches (0.75") from the bottom of the page.

Paragraphs

All paragraphs in the disquisition must meet the following requirements.

- **Alignment** – All paragraphs in the disquisition must be aligned along the left margin of the page, except on the [Dedication page](#). Full justification may be used, but it must be applied consistently to all paragraphs in the document.
- **Indents** – The first line of all body text paragraphs in the disquisition must be indented one-half inch (0.5"). If you include a [Dedication](#) section, the Dedication text should be center-aligned, with no first-line indent.
- **Spacing** – Use double-spacing throughout all body text paragraphs in the disquisition. There should be no extra line spacing between body text paragraphs.

- **Widowed and orphaned text** – Avoid separating the first or last line of a paragraph from the rest of the paragraph because of a page break. These separated lines are called orphans and widows. In Microsoft Word, you can turn on “Widow/Orphan Control” to automatically prevent this from occurring in your document.

Headings

Headings identify new sections of your disquisition and must be easy to distinguish from the paragraph text. If you use several levels of headings, the different levels must be easily identifiable from both the text and from the various heading levels. Levels can be established by their placement, their font style (bold, underline, italics), or their number. Examples are provided in this section.

- **Formatting** – All headings of the same level must share the same formatting throughout the disquisition, including in appendices. For example, if a first level subheading in Chapter 1 is bolded, center aligned, and uses title case, then first level subheadings in all other chapters and any appendices must use the same formatting.
- **Running headers** – Do not use running headers in the margins at the top of each page in the disquisition. Headings should appear only at the beginning of each section.

Major Headings

Major headings are used at the beginning of the main sections of the disquisition, such as on the Abstract page, the Acknowledgments page, and the first page of each chapter.

Major headings must use the following format:

- **Location** – At the top of the first page of a major section (prefatory section, chapter, or appendix).
- **Alignment** – Fully centered on the page.
- **Case** – Use ALL CAPS in the same type of font as the rest of the disquisition.
- **Font size** – Use a font size no larger than four points larger than the normal text in the disquisition. For example, if your paragraph text is size 12, then the major headings can be no larger than size 16.
- Major headings must be included in the [Table of Contents](#), including prefatory sections, chapter headings, and each appendix. **Note:** The Table of Contents should not include an entry for the “TABLE OF CONTENTS”.

Subheadings

Subheadings are used in chapters to subdivide the chapter content into subsections. If you use several levels of subheadings, the different levels of subheadings must be easily identifiable (either through numbering or formatting).

You can distinguish between different levels of subheadings using italics, bolding, underline, or alignment (centered or left). Subheadings of the same level must share the same formatting method throughout the entire disquisition, including chapters and appendices. For example, if the first level subheading of Chapter 1 is bold and center aligned, then the first level subheadings in all other chapters and appendices must also be bold and centered.

Subheadings must meet the following requirements:

- All subheadings of the same level should be in either title case (capitalize all major words) or sentence case (capitalize only the first word and any proper nouns), but not both. We recommend using the same casing for all subheadings. Subheadings may not be in ALL CAPS; only major headings may be in ALL CAPS.
- Subheadings should not begin a new page unless it appears at a natural page break. Do not force breaks before headings.
- Subheadings should not be orphaned from the first paragraph in the section. If a subheading appears on the bottom of a page and the first paragraph in the section appears on the next page, then move the subheading to the next page.
- For non-numbered headings, each subheading level must use a unique combination of italics, bolding, underline, or alignment and this formatting must be consistent throughout the entire disquisition. For example, first-level non-numbered subheadings must look different from second level non-numbered subheadings.

See the following section for examples of numbered and non-numbered headings.

Numbered Subheadings vs. Non-numbered Subheadings

Subheading numbers are optional. When using numbered headings, the following apply:

- All subheadings in the disquisition must be numbered, as shown in Figure 1.

- You must number major headings for chapters, but do not number major headings outside the chapters, such as the prefatory pages or appendices.
- The heading number must be followed by a period, both in the text and in the Table of Contents. For example, the first subheading in the second chapter would be numbered “2.1. Title of Subheading”.
- The first number in the heading number must correspond to the chapter in which it appears. Subsequent numbers correspond to the heading level and order of appearance of the heading.

1. INTRODUCTION: THE PROBLEM AT LARGE AND SOLUTIONS THAT HAVE NOT SUCCEEDED PREVIOUSLY

The heading above is an example of a major heading with a number. Major headings are always centered on the page and written in all caps. Notice that long headings are always double-spaced, with natural line breaks. Do not force a line break in a major heading.

1.1. First Level Subheading

Different heading levels must be clearly distinguishable, both from the paragraph text and from each other. In this example, the heading is bolded, and each major word is capitalized (title case). Other format variations can be used, if the style is consistent for all headings of the same level.

1.1.1. Second Level Subheading

Numbered subheadings do not require any additional special formatting, such as bold, italics, or underlining, because the numbers help to distinguish the headings from the paragraph text.

1.1.1.1. Third level subheading

Because this example uses numbered headings, no additional special formatting is necessary. However, you can still choose to apply additional formatting styles, as long as they are consistent for all headings of the same level that appear in the disquisition.

Figure 1. Example of numbered subheadings in a disquisition. Note that it is acceptable for the second and third level subheadings to both be bold and left-aligned with no other distinguishing features because numbered subheadings are employed.

In summary, numbered subheadings can use the same formatting method between levels, because the heading numbers indicate the heading level (as shown in Figure 1). If you use non-numbered headings, then each level of subheading must use a different formatting method to help differentiate between the superior and subordinate subheading (as shown in Figure 2).

INTRODUCTION: THE PROBLEM AT LARGE AND SOLUTIONS THAT HAVE NOT SUCCEEDED PREVIOUSLY

The heading above is an example of a major heading without numbers. Major headings are always centered on the page and written in all caps. Notice that long headings are always double-spaced, with natural line breaks. Do not force a line break in a major heading.

First Level Subheading

Different heading levels must be clearly distinguishable, both from the paragraph text and from each other. In this example, the heading is bolded, and each major word is capitalized (title case). Other format variations can be used, if the style is consistent for all headings of the same level.

Second Level Subheading

Non-numbered headings can require additional special formatting, such as bold, italics, or underlining, to help distinguish them from the paragraph text.

Third level subheading

Because this example does not use numbered headings, additional special formatting might be necessary for subheadings, especially if your headings are in-line with the paragraph text. Readers should be able to skim your page and clearly see where the headings are.

Figure 2. Example of non-numbered headings in a disquisition.

Page Numbers

Page numbers must appear on each page of the disquisition, except for the [Title page](#) and the [Disquisition Approval page](#). These two pages should not contain page numbers.

- **Appearance** – In the prefatory material (such as the [Abstract](#), [Table of Contents](#), [List of Tables](#), etc.), page numbers must use lower-case Roman numerals (such as iii, iv, v, etc.). In the body of the disquisition (including [Chapters](#), [Tables](#), [References](#), [Appendices](#), etc.), page numbers must use Arabic numerals (1, 2, 3, 4, etc.). In the prefatory material, the page numbering should begin at iii on the page containing the Abstract, as the Title page and Approval page are still counted even though they do not contain page numbers. In the main document, the first page of the first chapter must be identified as page 1.
- **Font** – Page numbers must use the same type and size of [font](#) as the text in the body paragraphs.

- **Location** – Page numbers must be center-aligned in the bottom [margin](#) of the page, at three-quarter inches (0.75") from the bottom edge of the page, and they should not intrude into the text of the body of the disquisition. Likewise, content of the disquisition (such as paragraph text) should not obscure the page numbers.
- **Page orientation** – If you have [a table or a figure](#) that uses landscape page orientation, then page numbers must still appear in portrait orientation. In other words, the page number should appear in the same location as a portrait-aligned page number when the page is printed. This ensures that if your disquisition is printed, all of the page numbers appear consistently throughout the document. For help formatting landscaped pages, see [Appendix C](#).

PREFATORY MATERIAL

The prefatory material, also known as the prefatory pages, consists of the following sections:

- [Title page](#)
- [Disquisition Approval page](#)
- [Abstract](#)
- [Acknowledgments](#)
- [Dedication](#)
- [Preface](#)
- [Table of Contents](#)
- [List of Tables, Figures, Schemes, etc.](#)
- [List of Abbreviations/Symbols](#)
- [List of Appendix Tables, Figures, Schemes, etc.](#)

All prefatory material must adhere to the same general requirements as the rest of the disquisition, including font type, font size, and margin size. For more information, see [General Requirements](#).

Title Page

The Title page must appear as the first page of the document. See Figure 3 on the next page for further information about each Title page section.

- **Alignment** – All content on the Title page must be center-aligned. Do not indent the center alignment.
- **Font** – The [font](#) on the Title page must be the same type as the rest of your disquisition. The font size can be up to four points larger than the paragraph text, if desired. If you use bold font on the Title page, all content on the Title page must be bolded.
- **Page numbers** – Do not include a [page number](#) on the Title page.
- **Spacing** – Some elements use single space or double space, diagrammed below. Between the sections, a larger space of 4 single-spaced lines is required.

<p>DISQUISITION TITLE: THE TITLE OF MY DISQUISITION</p> <p>A Dissertation Submitted to the Graduate Faculty of the North Dakota State University of Agriculture and Applied Science</p> <p>By John David Smith</p> <p>In Partial Fulfillment of the Requirements for the Degree of DOCTOR OF PHILOSOPHY</p> <p>Major Program: Education Option: Institutional Analysis</p> <p>February 2021</p> <p>Fargo, North Dakota</p>	<div style="border: 1px solid black; padding: 5px; margin-bottom: 10px;"> <p>Title of disquisition: In ALL CAPS. Do not force a line break. If the title is longer than one line it should be double spaced.</p> </div> <div style="border: 1px solid black; padding: 5px; margin-bottom: 10px;"> <p>University Recognition: In the first line use "Dissertation" "Thesis" or "Paper" and do not change the official name of the university (it should always include "of Agriculture and Applied Science").</p> </div> <div style="border: 1px solid black; padding: 5px; margin-bottom: 10px;"> <p>There should be roughly four lines of space between each section. Also, note which sections are single spaced (and that the section containing your name should be double spaced).</p> </div> <div style="border: 1px solid black; padding: 5px; margin-bottom: 10px;"> <p>Include your full name (including middle name(s)), as it appears in NDSU's records (i.e., in Campus Connection), OR include your preferred name, as it appears in NDSU's records.</p> </div> <div style="border: 1px solid black; padding: 5px; margin-bottom: 10px;"> <p>The first two lines should be as shown ("In Partial Fulfillment of the Requirements for the Degree of"), and the third line should be your degree in ALL CAPS.</p> </div> <div style="border: 1px solid black; padding: 5px; margin-bottom: 10px;"> <p>Include either "Major Department:" or "Major Program:" in the first line (do not include both), and the correct name of your Department/Program in the second line. If you have an approved, transcribable degree option you may also include this information as shown here.</p> </div> <div style="border: 1px solid black; padding: 5px; margin-bottom: 10px;"> <p>Include the month and year of your final examination. Do not include the day (only the month and year).</p> </div> <div style="border: 1px solid black; padding: 5px;"> <p>This should always be given as shown (in other words, do not include a different city or state, and spell out "North Dakota").</p> </div>
--	---

Figure 3. Sample title page for a disquisition. Note the title page has particular spacing and phrasing that should be maintained.

Disquisition Approval Page

Two separate copies of the Disquisition Approval page must be completed. Copy 1 will have your student ID number and the original signatures of your committee and department chair; this copy is kept in the Graduate School files. Copy 1 must be submitted to the Graduate School before you submit your disquisition for review. Conversely, Copy 2 is included in your disquisition right after the title page, and it will have the committee members' names, department chair's name, and the date of approval typed in. Copy 2 should never contain hand-signatures or your student ID – it is only meant to be a representation of the original.

Copy 1 (for Graduate School files)

After you have completed all of the revisions that are required from your Final Examination, the Copy 1 Approval Page can be found as a DocuSign form [here](#), under “Disquisition Approval Page.” **Do NOT INCLUDE THE COPY 1 APPROVAL PAGE WITHIN YOUR DISQUISITION.**

Copy 2 (within disquisition)

Copy 2 of the Disquisition Approval Page is included in the disquisition itself. It contains the same information as Copy 1, but **do not include signatures or your student ID number** on Copy 2. Instead, you must **type** the names of your committee members, the name of the department chair, and the date of approval in the appropriate fields.

After you have completed all the revisions that are required from your Final Examination, and after you have submitted Copy 1 of the Disquisition Approval page to the Graduate school, complete the following steps:

1. Download the Copy 2 version of the Disquisition Approval Page appropriate for your needs from the “Disquisition Approval Page – Copy 2” section of the online [Format Guidelines](#).
 - a. You may need to download a new version of Copy 2 even if you are using a Graduate School template, as the included Disquisition Approval page may not be suitable for you, such as if you have a co-chaired supervisory committee.
2. **Type the required information into the appropriate fields**, including the names of your committee members, the name of your department chair, and the date of approval.

3. Insert Copy 2 of the Disquisition Approval page into your disquisition as the second page, immediately after the [Title page](#).
 - **Font** – The [font](#) on the Disquisition Approval page must be the same type as the rest of your disquisition.
 - **Page numbers** – Do not include a [page number](#) on the Disquisition Approval page.

Abstract

The Abstract is a brief summary of the content of your disquisition, including your research question or argument and your conclusions. It should be written with brevity and clarity in mind. Your abstract could be read by people who are both inside and outside of your field of specialty, and they will use the abstract to determine if the rest of your disquisition is beneficial to them. Therefore, you should write the Abstract with a general audience in mind and use plain language (without jargon or unnecessary technical terms). It should summarize the main points of your disquisition, including the primary arguments that are made and the conclusions that are reached.

- **Word count** – Abstracts for doctoral dissertations must use 350 words or less. Abstracts for master's papers or master's theses must use 150 words or less.
- **Heading** – The Abstract must include the "ABSTRACT" major heading and must be formatted like other major headings in the disquisition, including the use or non-use of bold font. The Abstract should also be included in the Table of Contents, like the other prefatory material.
- **Spacing** – The line spacing and indentation of the Abstract's [paragraphs](#) must be consistent with the rest of your disquisition.

Acknowledgments

This is an optional section.

The Acknowledgments section can give thanks to people who provided assistance or support while you researched or wrote the disquisition. If you received funding from an outside source, you can use this section to give credit to that source (when such a statement is required by the funding source).

Follow the General Requirements for font, spacing, and page numbers for prefatory materials. Special considerations include:

- **Heading** – The Acknowledgments must include the “ACKNOWLEDGMENTS” major heading, which must be formatted like other major headings in the disquisition, including the use or non-use of bold font.
- **Spacing** – The line spacing and indentation of the Acknowledgments section’s [paragraphs](#) must be consistent with the rest of your disquisition.

Dedication

This is an optional section.

The Dedication is often a brief note that dedicates the disquisition to one or more persons, groups, or causes as tribute to their support or influence. Follow the General Requirements for font and page numbers for prefatory material.

- **Alignment** – Body text in the Dedication should be **center aligned** and double-spaced.

Preface

This is an optional section.

The Preface can provide an autobiographical account of how the disquisition came to be or include a significant quote that drove your research. Follow the General Requirements for font, spacing, and page numbers for prefatory materials.

- **Heading** – The Preface must include the “PREFACE” major heading, which must be formatted like other major headings in the disquisition, including the use or non-use of bold font.
- **Spacing** – The line spacing and indentation of the Preface section’s [paragraphs](#) must be consistent with the rest of your disquisition.

Table of Contents

The Table of Contents is a required section that lists the headings that appear in the disquisition and the page number for finding them (Figure 4).

- **Location** – The Table of Contents appears after the [Abstract](#) (and [Acknowledgments](#), [Dedication](#), and [Preface](#), if used), and before the [List of Tables](#), [List of Figures](#), etc. It must use the same font type, size, and margins as the rest of the disquisition. The Table of Contents is part of the prefatory material and must use lower-case Roman numeral page numbers.

- **Bold and italics** – In general, bold and italic fonts should not be used in the Table of Contents as a reflection of the style used in the main document headings and subheadings (in other words if your headings are set to use bold you should not also use bold in the Table of Contents entries). However, if a particular word in a heading is in italics (such as a scientific term) then you may set this word to also be in italics in the corresponding entry.
- **Font** – The [font](#) of the entries must be the same size and type as the text used in the body paragraphs, even if you used a larger font size for major headings.

TABLE OF CONTENTS	
ABSTRACT	iii
LIST OF TABLES	vii
LIST OF FIGURES	viii
INTRODUCTION	1
A Brief Explanation of Significant Related Events That Have Transpired in Recent Times Along With a Brief Explanation of Their Causes	2
LITERATURE REVIEW	4
MATERIALS AND METHODS	14
Materials	15
Methods	18
RESULTS AND DISCUSSION	21
CONCLUSIONS	31
REFERENCES	33
APPENDIX	41

Figure 4. Example of a Table of Contents in a disquisition.

- **Entries** – All major headings that appear in the disquisition must be included in the Table of Contents, except for the major heading “TABLE OF CONTENTS.” Do not include an entry for the Title page or the Disquisition Approval page.
 - *Subheadings* – You are not required to list subheadings in the Table of Contents; however, once you include one subheading of a particular level, then you must include all subheadings of that same level that appear in the disquisition. For example, if your Table of Contents includes any first level subheadings, then it must include all first level subheadings in the entire disquisition.

- *Entries must match contents* –The headings that are included in the Table of Contents must be identical to the headings that appear in the text. This includes wording, punctuation, and capitalization. If you use numbered headings in the text, the headings must also be numbered in the Table of Contents.
- **Alignment and indentation** – Entries for major headings (prefatory material, chapters, and appendices) must be aligned flush against the left margin and in ALL CAPS. Entries for subheadings must be indented according to their outline level.
- **Consistency** – Alignment and indentation must be consistent for all headings of the same level.
- **Justification** – To avoid awkward gaps between words, do not justify the alignment.
- **Long entries** – Do not allow headings to extend into the page number column. You might need to force a line break.
- **Spacing** – Set entries to be single spaced, with one line of space between each entry.
- **Dot leaders** – Use dot leaders to connect the last word of each heading with the page number where that heading appears.
- **Automated Table of Contents** – Microsoft Word can create an automated Table of Contents, and they are used within the NDSU disquisition templates. If you do use an automated Table of Contents, make sure that you follow the guidelines that are listed here.

List of Tables, Figures, Schemes, Etc.

If you use tables, figures, schemes, or other non-text items in your disquisition chapters, then you must also include a list of those items in the prefatory material (Figure 5).

LIST OF TABLES	
<u>Table</u>	<u>Page</u>
1. Samples used in Experiment I	5
2. Samples used in Experiment II, where the control sample represented the average crop yield for average summer rainfall in Casselton, ND	15
3. Samples used in Experiment III	25

Figure 5. Example of a List of Tables in a disquisition.

All tables, figures, schemes, and non-text elements that appear in the text must be included in their respective prefatory lists.

Do not combine multiple types of items into the same list. For example, if you use both tables and figures in your disquisition, then you must include a List of Tables and a List of Figures.

Note: If you use tables, figures, schemes, and non-text elements in the appendix or appendices, then you must create a [List of Appendix Tables, Figures, Schemes, etc.](#) as well, which identifies the items in the appendices. The List of Tables, List of Figures, etc. must list only the non-text items that appear in the chapters.

- **Order** – The Lists appear after the [Table of Contents](#). The List of Tables always appears before the List of Figures, which appear before the List of Appendix Tables, and so on. For more information, see [Required Order of Elements](#). As prefatory material, these pages will use lower-case Roman numerals.
- **Column headings** – Each prefatory list must include two column headings that appear under the major heading and above the entries in the List: the name of the items being listed (like “Table” or “Figure”), and the page numbers on which the items appear (“Page”). The item column must be flush against the left margin, and the “Page” column must be flush against the right margin of the page. Each column heading should be underlined. See Figure 5 for an example of these columns and layout.
- **Alignment** – Numbers for items must be aligned flush against the left margin and appear under the descriptive column heading. Page numbers must be aligned flush with the right margin, and appear under the “Page” column heading.
- **Justification** – To avoid awkward gaps between words, do not justify the alignment.
- **Dot leaders** – Use dot leaders to connect the last word of each title with the page number where that item appears.
- **Entries** – List entries must be identical to the titles that appear in the text. This includes wording, punctuation, and capitalization. However, when an item title consists of multiple sentences, and the first complete sentence provides a description of the entire item (not just a component), then the entry in the prefatory List can end after the first complete sentence.

- *No label* –The label of an item (like “Figure” or “Table”) should *not* be included in the List entry, though the label must appear in the title of the item where it appears in the disquisition chapter.
- *Long entries* – Do not allow entries to extend into the page number column. You might need to force a line break.
- *Subsequent lines* – If the title for an entry is longer than one line, indent the subsequent lines to align with the first word of the title. Subsequent lines for an entry should not align with the number for that entry.
- **Numbering** – Item numbers that appear in the descriptive column (“Table”, “Figure”, etc.) must be identical to the item numbers that appear in the disquisition chapters. For example, if the first figure that appears in the disquisition chapters is named as Figure 1.1, then the item number for that entry in the List of Figures must be 1.1.
- **Spacing** – Set entries to be single spaced, with one line of space between each entry.
- **Automated lists** – Microsoft Word can create automated lists, and automated lists are included in the NDSU disquisition templates. If you use automated lists, make sure that you follow the guidelines that are listed here.

List of Abbreviations/Symbols

If you use many abbreviations or symbols, you should include a List of Abbreviations or List of Symbols (Figure 6).

This type of list identifies the abbreviations or symbols that are used in the body and appendices of the disquisition and provides a definition for each item. This is for the benefit of those who will read your disquisition and can eliminate the need for defining each term as it appears in-text.

Do not combine abbreviations and symbols into a single list. If you create a List of Abbreviations or List of Symbols, all abbreviations or symbols that are used in the text and appendices should be included.

LIST OF ABBREVIATIONS	
DNA	Deoxyribonucleic acid
mDNA	Mitochondrial DNA
RNA	Ribonucleic acid
SCUBA	Self-contained underwater breathing apparatus

Figure 6. Example of a List of Abbreviations in a disquisition.

- **Order** – The List of Abbreviations/Symbols must appear after the List of Tables, Figures, Schemes, etc., and before the List of Appendix Tables, Figures, etc. For more information, see [Required Order of Elements](#). As prefatory material, number the page/s with lower-case Roman numerals.
- **Alignment** – Abbreviations and symbols must be aligned flush against the left margin. Definitions should be left-aligned approximately 3” from the left margin.
 - When the definition of an item is longer than one line, subsequent lines should be aligned with the first word in the definition.
- **Justification** – To avoid awkward gaps between words, do not justify the alignment.
- **Dot leaders** – Use dot leaders to connect the abbreviation or symbol with its definition.
- **Spacing** – Set entries to be single spaced, with one line of space between each entry.

List of Appendix Tables, Figures, Schemes, Etc.

If you include one or more appendices, and an appendix contains multiple tables, figures, schemes, and other non-text items, then you should create a List of Appendix Tables, Figures, Schemes, etc. (Figure 7). **Note:** if your appendix includes only one item it may not need to be included in a list. See the [Appendices](#) for further information.

LIST OF APPENDIX TABLES		
<u>Table</u>		<u>Page</u>
A1.	Additional samples used in Experiment I	111
A2.	Additional samples used in Experiment II, where the control sample represented the average crop yield for average summer rainfall in Casselton, ND	112
B1.	Additional samples used in Experiment III	114

Figure 7. Example of a List of Appendix Tables in a disquisition.

Do not combine multiple types of items into the same list. For example, if you use both tables and figures in the appendices of your disquisition, then you must include a List of Appendix Tables and a List of Appendix Figures.

The List of Appendix Tables, List of Appendix Figures, etc. must contain only the items that appear in the appendices of the disquisition. Also, do not place entries for the appendix items into the Lists of Tables, Figures, Schemes, etc.

- **Order** – The lists of appendix material appear after the List of Tables, Figures, Schemes, etc., and after the List of Abbreviations or Symbols (if included). For more information, see [Required Order of Elements](#). As prefatory material, these page numbers will use lower-case Roman numerals.
- **Column headings** – Each prefatory list must include two column headings that appear under the major heading and above the entries in the List: the name of the items being listed (like “Table” or “Figure”), and the page numbers on which the items appear (“Page”). The item column must be flush against the left margin, and the “Page” column must be flush against the right margin of the page. Each column heading should be underlined. Do not add “Appendix” to the column headings, as the major heading of the List is descriptive enough. See Figure 7 for an example of these columns and layout.
- **Alignment** – Numbers for items must be aligned flush against the left margin, under the descriptor column. Page numbers must be aligned flush with the right margin, under the “Page” column.
- **Justification** – To avoid awkward gaps between words in the list, do not justify the alignment.

- **Dot leaders** – Use dot leaders to connect the last word of each title with the page number where that item appears.
- **Entries** – List entries must be identical to the titles that appear in the text. This includes wording, punctuation, and capitalization. However, when an item title consists of multiple sentences, and the first complete sentence provides a description of the entire item (not just a component), then the entry in the prefatory List can end after the first complete sentence.
 - *No label* –The label of an item (like “Figure” or “Table”) should *not* be included in the List entry, though the label must appear in the title of the item where it appears in the disquisition chapter.
 - *Long entries* – Do not allow entries to extend into the page number column. You might need to force a line break.
 - *Subsequent lines* – If the title for an entry is longer than one line, indent the subsequent lines to align with the first word of the title. Subsequent lines for an entry should not align with the number for that entry.
- **Numbering** – Item numbers that appear in the descriptive column (“Table”, “Figure”, etc.) must be identical to the item numbers that appear in the appendices. For example, if the first figure that appears in the first appendix is named as Figure A1, then the item number for that entry in the List of Appendix Figures must be A1.
 - If you use only one appendix, then non-text items should be numbered sequentially within the appendix and distinguished with the letter “A” that precedes the number (such as A1, A2, A3, and so on). For more information about using non-text item in an appendix, see [Appendix/Appendices](#).
 - If you use multiple appendices, then use letters that correspond with the letter of the appendix where the item appears. For example, the first table that appears in Appendix B would be numbered “Table B1”. For more information about using non-text items in appendices, see [Appendix/Appendices](#).
- **Spacing** – Set entries to be single spaced, with one line of space between each entry.

- **Automated lists** – Microsoft Word can create automated lists and they are included in the NDSU disquisition templates. If you do use automated lists, make sure that you follow the guidelines that are listed here.

BODY OF THE DISQUISITION

The body of your disquisition consists of the following sections:

- [Chapters](#)
- [References or Works Cited](#)

All material in the body of the disquisition must adhere to the same general requirements as the rest of the disquisition, including font type, font size, and margin size. For more information, see [General Requirements](#).

Page numbers must use Arabic numerals (1, 2, 3, and so on). The first page of the first chapter should be designated as page 1.

Chapters

The chapters contain the main content of your disquisition. This section of the guidelines covers formatting considerations for chapter naming, numbering, headings, and setting an individual paper or study as a chapter.

- **Chapter titles are major headings** and should be consistent with all other major headings in the document, such as the major headings on the prefatory material. The titles should be centered, written in ALL CAPS, and appear at the top of a new page.
 - You may not have more than one heading level formatted as a major heading.

Subsections within a chapter must be formatted as subheadings. See the [Headings](#) section in General Requirements for more information and examples on different levels of subheadings and numbered subheadings.
- **Chapter label not required** – You are not required to use the label “Chapter” in the title of each chapter. However, each chapter must begin with a major heading and appear at the top of a new page.
- **Numbering chapters** – You are not required to number each chapter unless you use numbered headings. For more information about numbered headings, see [Headings](#).
 - *When using numbered headings* – If you use numbered headings, then the heading number must precede the chapter title (such as “1. INTRODUCTION”). You must use a period after the chapter number.

- *When using non-numbered headings* – If you choose not to use numbered headings in the body of the disquisition but still want to use numbers in the chapter titles, then you must integrate them into the chapter title (such as “CHAPTER ONE. INTRODUCTION” or “CHAPTER 1. INTRODUCTION”). If you use a number in a chapter title, either written or numeric, you must use a period after the chapter number.
- **Papers as chapters** – If a chapter is an individual paper, study, or experiment, only the title of the paper or study should appear as a major heading (such as “PAPER 1. THE EFFECT OF RAINFALL ON SUGARBEET PRODUCTION”). The section headings within the paper (such as “Abstract”, “Introduction”, “Literature Review” and so on) are subsections within the chapter and must appear as subheadings under the major title heading.
 - You are not required to use “Chapter” in the name of each chapter. If you use individual papers, studies, or experiments for each chapter, then you can name the chapters “Paper 1”, “Study 1”, “Experiment 1”, and so on. However, the naming must be consistent for all chapters of such content.

Bulleted/Numbered Lists and Block Quotations

- **Bulleted or Numbered Lists** – When you include bulleted or numbered lists in the paragraph text, indent the bullets/numbers from the left margin so that the list is easier to read and distinguish from the rest of the normal paragraph text. Additionally, the text should be aligned with each other to the right of the bullet or number. Bulleted or numbered lists should be double spaced. We recommend aligning top-level bullets or numbers at one-quarter inches (0.25”) and the text at one-half inches (0.5”).
- **Block quotations** – Make sure block quotations use the same indent (one-half inches (0.5”) is recommended) throughout the document. Block quotations may be single spaced, as long as this is applied consistently to all block quotations.

Tables, Figures, Schemes, Etc.

Tables, figures, schemes, and other non-text items should be integrated into the text of your disquisition rather than grouped at the end of a chapter. All non-text items should be inserted at the first natural break point (between paragraphs or at the top or bottom of the page) after the first in-text

reference; ideally, a non-text item should appear on the same page with its first in-text reference, but this is frequently not possible. All tables, figures, schemes, and other non-text items must have a label, number, and title, must fit within the page margins, and must have consistent styling across all occurrences of that type of item in the disquisition.

Our guidelines outline the general requirements for non-text items in your disquisition; beyond these general requirements, the tables and figures in the disquisition should follow the requirements of the style manual of your disquisition (to include titles, borders, alignment, and so forth). For example, if your citations follow APA style, then your table and figure titles should also follow APA style. For more information about how to format tables, figures, schemes, and non-text items, refer to the style manual for your discipline.

- **Location in the text** – When you insert a table, figure, or non-text item into the text, try to do so as close to the first in-text reference as possible, and at a natural break on the page (at the top or bottom of a page, between pages, or between paragraphs). In other words, as much as possible, body paragraph text should not be interrupted by an item. If a non-text item cannot fit on the same page where it is mentioned, then move it to the next page.
- **Do not split the item, if possible** – If a table or figure can feasibly fit onto a single page (to include its title and any notes), it should not be broken across two pages (some white space at the bottom of a page is acceptable to allow for this).
- **Multiple-page items** – Sometimes a non-text item simply cannot fit on a single page. When a table or figure continues over multiple pages, make sure that the title of the item appears on all pages of the item. On the subsequent pages, add the phrase “(continued)” to the end of the first sentence of the item title.
 - When a table must extend for multiple pages, the header row of the table should appear at the top of the table on all subsequent pages.
- **Portrait vs landscape orientation** – Tables, figures, and non-text items should appear in portrait orientation unless they are too large to fit within the required margins; then they can be converted to [landscape orientation](#). However, the page numbers for such landscape items must appear in portrait orientation (on the landscape page, page numbers should appear in the *left* margin,

centered vertically, and rotated 90 degrees). For an example of a landscaped figure, see Figure 3.

- **Note:** If a table or figure appears in landscape orientation, only that table or figure (and its title/notes) may appear on the landscape-oriented page (in other words, headings or paragraph text should *not* appear on a landscape page).
- **Numbering** – All tables, figures, schemes, and non-text items must be labeled and numbered sequentially based on the type of item (such as “Table 1” and “Figure 1”). For example, you can have a “Table 1” and a “Figure 1”, but you cannot have two tables named “Table 1”.
 - There are two numbering scheme options. You can number the items sequentially according to the chapter in which they appear (such as 1.1, 1.2, 1.3, 2.1, 2.2, 2.3, and so on). Alternatively, you can number the items in the order that they appear, regardless of chapter or section (such as 1, 2, 3, 4, 5, and so on). Whichever option is chosen, it should be used in all item types (i.e., a disquisition should not contain both a Table 1 and a Figure 1.1).
- **Titles** – All tables, figures, schemes, and non-text items must have a label, number, and title (such as “Figure 1. Diagram of scientific method”) and must be included in the appropriate [lists](#) in the prefatory material. See the section on [lists](#) for how to format item titles within the appropriate list.
 - *Long titles* – When the title for a table, figure, scheme, or other non-text item is longer than one line, set it to be single spaced with a single blank line after, to help set it apart from the body text paragraphs.
- **Font** – The [font](#) used in the item titles must be same type as the rest of your disquisition.
 - In *titles* of tables, figures, schemes, etc., the font must be the same size and type as the text in the body paragraphs.
 - *Within tables*, the font must be the same type as the rest of your disquisition. The size can be adjusted as needed to fit the table onto the page.
 - *Within figures, schemes, and other non-text items*, the font may be different from the rest of your disquisition. However, the text must be easily readable at 100% view size/zoom.

- **Formatting of item titles** – The titles of tables and figures should follow the formatting rules for the style of your discipline. This includes capitalization (title case or sentence case), special formatting (like bold or italics), punctuation (after the item number and in the rest of the title), and location relative to the item being described (above or below). Note that the formatting must be consistent for all items of the same type throughout the disquisition. Refer to the style manual of your discipline for more information about how to format the titles of tables, figures, schemes, etc.
- **Alt-text** – If your document contains images (such as figures, schemes, etc.), every image must have alt-text. Automatically generated alt-text is not sufficient to meet this requirement. See page 20 of the 2019 PDF Testing and Remediation Guide on the Section 508 website for more information.
- **Margins** – Tables, figures, schemes, and non-text items must fit in the required 1 inch margins. Non-text items that are too wide to fit in the margins of the page in portrait orientation can be placed on their own page in landscape orientation. However, the page numbers must still appear in portrait orientation. (This requirement ensures that when your disquisition is printed, all the page numbers will appear consistently and correctly.)
- **Spacing** – Minimize the amount of blank space that appears before and after tables, figures, schemes, and other non-text elements. However, tables and figures and the titles for those items should be clearly distinguishable from the paragraph text. We recommend two lines of space between non-text items (including their title and notes) and the content above and below them.
- **Citations** – Academic honesty is essential in all disquisitions. If you use a table, figure, or non-text item that is not your original design, you must cite the original source of the item, and ensure the appropriate copyright permissions to use the item have been obtained (if necessary). You may use an in-text citation in the text of the title or caption of the item, or you may include the citation as a footnote under the item. Refer to the style manual of your discipline for more information about citations of non-text items.
 - If you have adapted the design of a figure or non-text item from another source's original design, then you must include the citation of the original source in the title or caption of the image and ensure the appropriate permissions to use the item have been obtained (if

necessary). You must also state that your figure or image has been adapted from the original source.

Listings and Code

You are encouraged to include relevant code snippets within the body of your disquisition, but we recommend placing large amounts of code in a public repository and including a link in your disquisition. You may also place your code in one or more appendices. Listings (code blocks) generally follow the same guidelines as [other non-text items](#), with some exceptions noted below.

- **Multiple-page listings** – If a listing cannot fit on a single page, you should consider placing it in an appendix. Listings that continue over multiple pages do not need their titles repeated on each page, as the borders around the listing are sufficient to indicate its continuation.
- **Font** – The [font](#) used in listing titles and notes must be same type as the rest of your disquisition. The font used within the listing may be the same type as the rest of your disquisition, or you may use a monospaced font from our [list of approved fonts](#): Courier New (size 10) or Computer Modern Typewriter (size 11).
- **Border** – The code should be enclosed in a border, with only one top and one bottom border that appear at the beginning and end of the listing, even if it extends over multiple pages.
- **Line numbers are optional** – Line numbers help readers distinguish between lines of code, especially when the code must wrap onto a new line. If you use line numbers in any listings, you must use them for all listings. You may include the line numbers within the listing border, or not, but all listings should be formatted similarly. We recommend, but do not require, including a period or colon after the line number to help separate it from the code on its line.

Equations

Equations should be integrated into the text of your disquisition and not grouped at the end of a chapter. Equations may be introduced and integrated into body paragraphs or placed at a natural break point (between paragraphs or at the top or bottom of a page) following their first in-text reference.

- **Equation position** – Equations should be centered on the page. (Using the requisite 1" margins, the center of the page is at 3.25".)

- **Numbering is optional** – When you use several equations in your disquisition, you may want to number the equations to make it easy to reference them within the text. If you number one equation, then you should number all of the equations that appear in the disquisition; if your disquisition contains proofs or series of equations, you may elect to number only the final step or result.
- **Number sequence** – All equation numbers must be sequential. You can number the equations sequentially by chapter (such as 1.1, 1.2, 1.3, 2.1, 2.2, 2.3, etc.), or you can number them in order of appearance, regardless of chapter or section (such as 1, 2, 3, 4, and so on).
- **Number position** – If an equation is numbered, the equation number should be flush with the right 1" page margin and enclosed in parentheses, e.g. "(1.1)".
- **Number label** – Equation numbers must be enclosed in parentheses (such as "(1)"), and you may optionally include the label "Equation" or "Eq." in the parentheses before the equation number: "(Equation 3.2)" or "(Eq. 3.2)". If you include a label, you must use the same label for all equation numbers.
- **Font** – The number of an equation must use the same font type and size as the paragraph text, while the numbers in an equation can use different font, if necessary for the equation.

Examples of formatted equations with an equation number can be found in our example document of non-text items.

If you use a large number of equations in your disquisition, you should include a List of Equations in the prefatory material. Unless otherwise directed by the style manual of your discipline, including a List of Equations is optional. In the List of Equations, a brief title or description of the equation should be included in each entry. However, equations in the document chapters should not be given a title, and the equation should be described in your text. For information about how to format a List of Equations, see [our wiki page on List of Tables, Figures, Schemes, Etc.](#)

References/Works Cited

Whenever you use information from another source, or reference data that you did not create or discover, you must cite the original source of the data. This includes, but is not limited to, text, tables, figures, and other forms of data.

Academic honesty is essential in all disquisitions. For more information, see the [NDSU Policy on Academic Responsibility and Conduct](#).

- **Citations** – For in-text citations, footnotes, endnotes, or other citation formats, refer to the style manual of your discipline (such as MLA, APA, Chicago, and so on). References should follow one style manual consistently throughout the disquisition. When you include a URL (or other linked text) in a citation (such as citations for internet sources), make sure that it is not underlined or otherwise appearing as a hyperlink.
- **Copyright** – In some instances, [copyright](#) permission might be required to re-print content in its entirety. Most commonly, copyright permission is required to reprint your own previously published work.
- **References sections (individual chapters and general)** – If each chapter in your disquisition is a self-contained study or experiment, then you may insert a References or Works Cited section at the end of each chapter that lists the sources used in that chapter. Otherwise, you should insert a References or Works Cited section after the body of the disquisition, but before the appendix or appendices (if used).

In other words, you may include a References section either as a subsection at the end of each chapter (containing only the references that appear in that chapter), or as one References section at the end of the main document (containing all references used in the entire document). If you have a mix of content, such as previously-published works and chapters containing as-yet-unpublished material, you may have References sections at the end of each chapter as well as a References section at the end of the document.

For detailed information about how to format a References or Works Cited section, and where to place the section in the disquisition, refer to the style manual of your discipline.

- **Spacing and indentation** – The line spacing and indentation should follow the directions of the style manual that is used in your discipline. Spacing must be consistent throughout the References or Works Cited section(s).

For more information about how to use the style manual that is used in your discipline, contact your advisor or the [NDSU Center for Writers](#).

APPENDIX A. APPENDIX MATERIAL

An appendix (or appendices) is an optional section and is not required. An appendix (or appendices, if you have more than one) is used to include additional material that is not integral to the body of the disquisition.

Although an appendix contains supplementary material and must be numbered differently from the normal chapters, it should be considered similar to the chapters of the disquisition and its content should be formatted consistently to any similar content in the chapters. Page numbers should be continuous from the preceding chapters—do not restart page numbers at the appendix section. Follow the General Requirements for page numbering, [font](#), [margins](#), and [paragraphs](#).

- **Citations** – If you use or reference material that is not your own, use scholarly citation practices that are consistent with the rest of the disquisition and with the style manual of your discipline. For more information, see [References/Works Cited](#) and [Style manuals](#).
- **Headings** – [Headings](#) in the appendices must use the same formatting, style, and size as the equivalent headings in the disquisition chapters. If headings are numbered in the disquisition chapters, then appendix headings must be numbered as well, where the letter of the appendix is used instead of the chapter number (for example, B.1. would denote the first first-level subheading in the second appendix, Appendix B).
- **Major headings for each appendix** – The first page of each appendix must include the major heading “APPENDIX” and be formatted like other major headings in the disquisition. If you have one appendix, do not number or letter the appendix. If you have multiple appendices, each appendix must be labeled with a capital letter (see section below about multiple appendices).
- **Subheadings** – Subheadings in the appendices must share the same formatting as equivalent subheadings in the disquisition chapters, including numbering, font size, and additional formatting. If you use numbered headings in the disquisition, then use the letter of the appendix in place of the chapter number (for example, the first first-level subheading in Appendix B would be numbered as B.1.).
- **Entries in the Table of Contents** – Each appendix must be included in the Table of Contents as a major heading, just like the disquisition chapters. If you include chapter subheadings in the

Table of Contents, then you must also include the subheadings that appear in the appendices (see [Table of Contents](#)). Do not identify your appendices in a list that is separate from the Table of Contents.

If You Have One Appendix

- **Appendix must be labeled** – The major heading on the first page of the appendix can consist of simply “APPENDIX”, or can have an additional title (like “APPENDIX. SUPPLEMENTARY TABLES”). Do not include an additional letter for the appendix (such as “APPENDIX A” – that method is for multiple appendices, as mentioned in the next subsection).
- **Tables, figures, non-text items** – If you include multiple non-text items in the appendix, the number of each item must begin with “A” to indicate that it is an appendix item. Do not continue item numbering from the chapters (see the section below). You must also include a [List of Appendix Tables, Figures, Schemes, etc.](#)

If You Have Multiple Appendices

- **Each appendix must be labeled with a capital letter** – If you have more than one appendix, each appendix must use a different letter in the title (“APPENDIX A”, “APPENDIX B”, etc.). If each appendix contains only one type of item, such as Research Compliance forms, then you may include that information in the major heading for that appendix, like “APPENDIX A. RESEARCH COMPLIANCE FORMS”.
 - **Note:** When you have multiple appendices, highly consider adding a title to each appendix that describes the content of that appendix. Then, the corresponding entries in the Table of Contents provide more information to your reader about your appendix material. For more information about labeling and titling multiple appendices, refer to the style guide of your discipline.
- **Tables, figures, non-text items** – If you include multiple non-text items in an appendix, the number of each item must begin with the letter of the appendix in which it appears. For example, the first table that appears in Appendix B would be numbered “Table B1.” You must also include a [List of Appendix Tables, Figures, Schemes, etc.](#) For more information about non-text items in the appendix, see the related section below.

Tables, Figures, Schemes, and Non-text Items in Appendices

- **Numbering** – Non-text items that appear in an appendix must include the letter “A” in the number, or, if you have multiple appendices, use the letter of the appendix in which the item appears. Numbering must also start from the beginning of each appendix (and *not* be continued from the chapters).
 - For example, the first table in the first (or only) appendix would be titled “Table A1”. The first table in the second appendix would be labeled as “Table B1”, and so on. If you are numbering non-text items sequentially according to the chapter in which they appear, the first table in the first (or only) appendix would be titled “Table A.1”, and the first table in the second appendix would be labeled as “Table B.1”, and so on.
- **Appendix contains a single non-text item** – If a particular appendix consists of only a single non-text item, the title of the appendix can serve as the title of the non-text item, taking the place of the normal title for the non-text item. For example, if Appendix B consists of a single table about crop blight, then the appendix heading could be titled “APPENDIX B. FREQUENCY OF CROP BLIGHT IN NORTH DAKOTA FIELDS”, and the table would not have a separate table number or table title.
- **List of Appendix Tables, Figures, Schemes, etc** – If you include tables, figures, schemes, or other non-text items in any appendices, then you must include a corresponding appendix-specific prefatory list in the prefatory material, after the normal List of Tables, List of Figures, List of Schemes, etc. (See [List of Appendix Tables, Figures, Schemes, etc.](#)) These lists of appendix items must contain entries *only* for the non-text items that appear in the appendices. For more information about how to organize the prefatory material, see [Required Order of Elements](#).
 - **Note:** If an appendix consists of a single non-text item and the item title is integrated into the title of the appendix, then the item should *not* be included in the appropriate List of Appendix items. For example, if there are two tables in Appendix A, two tables in Appendix C, and a solitary table in Appendix B, wherein the major heading is serving as the table’s title, there would only be four entries in the List of Appendix Tables, one for each of the tables in Appendices A and C.

APPENDIX B. SUBMISSION CHECKLIST

Before you submit your disquisition to the Graduate School for review, make sure that you have met all the requirements for submission. Use the following checklist to double-check your work before you submit:

Pre-submission Paperwork

- ☐ Have I submitted all of the [pre-submission paperwork](#)?
- ☐ Have I paid the [disquisition processing fees](#)?
- ☐ Am I aware of the [deadlines](#) for submission?

Necessary Inclusions

- ☐ Have I included all of the [required sections in my disquisition](#)?
- ☐ Have I included the [Copy 2 version of the Disquisition Approval page](#)? Is all of the required information typed into the form?
- ☐ Is my [Abstract](#) the appropriate length?
- ☐ Have I included all of the optional pages ([Acknowledgments](#), [Dedication](#), or [Preface](#)) that I want?
- ☐ Have I included all the appropriate [List of Tables, List of Figures, List of Schemes, or other material](#) (if I use them)? Are all the entries and page numbers correct?
- ☐ Do I need one or more [appendices for additional material](#)?
- ☐ If I included appendix material, have I included all necessary [lists of appendix material](#) after the Table of Contents?
- ☐ Are the sections in the correct order?

General Appearance

- ☐ Do all my pages use at least 1-inch [margins](#) on all sides? Does all of my content, including [tables, figures, and non-text items](#), fit inside of those 1-inch margins?
- ☐ Are all my [paragraphs](#) formatted correctly and consistently, including the use of line spacing and indentation?
- ☐ Is there any empty space that I can minimize, such as before and after non-text items?
- ☐ Are all my [pages numbered](#) correctly?

Proofreading

- ☐ Are all my [headings](#) correct and consistent throughout the disquisition?
- ☐ Are all my [tables, figures, schemes, etc.](#) correct and consistent, following the style manual of my discipline? Do the titles and notes for these items appear on the same page as the items?
- ☐ Are my [citations](#) correct, according to the style manual of my discipline?
- ☐ Are my [Title page](#) and [Disquisition Approval](#) pages correct?
- ☐ Do all the headings in the [Table of Contents](#) match up with the headings in the chapters, including phrasing and capitalization? Does every heading have the correct page number?

Preparing to Submit

- ☐ Have I converted my document into a single .pdf file? When I open the .pdf file, does everything display correctly?
- ☐ Have I tested my PDF's accessibility compliance using the [Section 508 testing and remediation guide](#)?
- ☐ Have I completed all the [other requirements for submission](#)?

APPENDIX C. WORKING WITH LANDSCAPE-ORIENTED PAGES

When you change the orientation of a section of page to landscape, the header and footer of that section do not change orientation. Instead, the header and footer are at the top and bottom of the page on your screen, but when you print, they are in the left and right margins of the page, not the top and bottom. Any page numbers in the header or footer will appear sideways on the left or right of the printed page. These steps will help you move the page numbers to the appropriate spot and turn them on their side so they print correctly, using Microsoft Word. If you are using older versions of Word, our PDF guide can be downloaded [here](#).

Creating a Landscape Section

1. Click on the last line of the page *before* the page you want to have landscape orientation.
2. On the **Page Layout** tab, in the **Page Setup** group, click on the arrow next to the **Breaks** icon and select *Next Page* under the *Section Breaks* section.
3. This will create a new page and a section break. If you need to, use the *Delete* key, **not** the *Backspace* key (sometimes called the *backwards delete* key), on the keyboard to bring the next page's content back up to the page you are currently on.
4. Click on the last line of the last page that you want to have landscape orientation (or if you don't have content yet, press *Enter* on the keyboard a few times), and repeat steps 2 and 3.
5. Click anywhere in section you want to have the landscape orientation.
6. On the **Page Layout** tab, in the **Page Setup** group, click on the arrow next to the **Orientation** icon and select *Landscape*. Word understands that you want landscape only for this section.

Disconnecting the Landscape Section

1. Click somewhere in the first page of the section with landscape pages. On the **Insert** tab, in the **Header & Footer** group, click on the arrow next to the Header icon and select *Edit Header*.
2. In the **Header & Footer** tab, in the **Navigation** group, unlink this section's Header from previous sections' headers by clicking the highlighted **Link to Previous** icon.
3. Click on the **Go to Footer** icon and repeat step 3.

4. Scroll down to the first portrait page following your landscape section and repeat steps 3 and 4 for this section. The goal is to remove all "Same as Previous" tabs from the header and footer of all sections.

You have now disconnected the headers and footers in the sections prior to and following the landscape section of pages. This will prevent any changes you make to the page numbers on the landscape pages from affecting the numbering on other pages.

Adding Page Numbers to the Landscape Page(s)

1. Delete the page numbers from the footer of the landscape section.
2. On the **Insert** tab, in the **Header & Footer** group, click on the arrow next to the **Page Number** icon, choose *Page Margins*, and then in the *Plain Number* section, choose *Large, left* (unfortunately, they don't seem to have just a plain left option).
3. A large number will now appear in the left margin, and it should be correctly centered.
4. Highlight the page number and set it to be in the same font type and size as all other page numbers.
5. In the **Shape Format** tab, in the **Text** group, click on **Text Direction** icon and select *Rotate all text 90°*.

APPENDIX D. CO-AUTHORSHIP NOTE EXAMPLE¹

This appendix details how an example of how a co-authorship footnote should appear. To add a footnote in Word, it is easiest to use the built-in footnote feature located in the **References** tab of the ribbon. Another example document can be found [here](#).

The text at the bottom of this page is an example of how a footnote may look. The description of your contribution will likely be different, but it should be written following the same general pattern. Since co-authored materials are often published, you may also wish to include the publication information for the source material in the same or a separate footnote as the co-authorship note.

¹The material in this chapter was co-authored by StudentName and FacultyName. StudentName had primary responsibility for collecting samples in the field and for interviewing users of the test system. StudentName was the primary developer of the conclusions that are advanced here. StudentName also drafted and revised all versions of this chapter. FacultyName served as proofreader and checked the math in the statistical analysis conducted by StudentName.

APPENDIX E. ACCESSIBILITY SETTINGS

There are 18 requirements in Section 508 of the Rehabilitation Act that must be met for your document to be compliant. If you are using an NDSU Word template, 13 of these 18 have been pre-programmed into the template; however, the following 5 require your attention. The item numbers referenced here correspond to the items in [the Digital Accessibility Requirements](#) list.

Item 9: Sections in different languages have a corresponding language attribute

Requirements:

- The tag's property associated with the language change shows the selection's language or corresponding two-letter code.

If your document contains content that is in language other than English, you must set the language tag for that content. See page 21 of the 2019 PDF Testing and Remediation Guide on the Section 508 website for more information on this process.

Item 10: Images and other objects have alternative text

Requirements:

- All "Figures" have alternative text that describes its purpose/function.
- All captions describe the purpose/function of associated images/objects.
- Descriptive text conveys the purpose and/or function of the image/object.

If your document contains images (such as figures, schemes, etc.), every image must have alt-text. Automatically generated alt-text is not sufficient to meet this requirement. You can add alt-text to an image in Word by right-clicking the image and selecting Edit Alt Text... from the context menu. See page 20 of the 2019 PDF Testing and Remediation Guide on the Section 508 website for more information on this process.

Item 12: The document contains links and/or controls

Requirements:

- Link names describe destination/purpose or describe context.
- Links have unique names.
- Tab order matches the visual/logical order of interactive elements.

If your document contains URLs, the destination and purpose of the URL should be clear, regardless of whether they are a plain text URL or embedded in text.

Case 1: Within your bibliography, you have included links to the DOI page for your citations. An explanation or description is unnecessary for these URLs because it's clear from the context of the section itself that the URL is a link to the source material.

Case 2: In an appendix section titled "APPENDIX B. CODE USED IN CHAPTER 3 ANALYSIS", you have included a link to the GitHub repository containing the code you used for one of your experiments. In this case, the destination and purpose of that GitHub link should be made clear. For example, including the link in a sentence is sufficient: "The code found in this section can be found on our [GitHub repository](#)" or "The code found in this section can be found on our GitHub repository: <https://github.com/myndsurepository>".

Item 14: The document contains color and/or sensory characteristics

Requirements:

- Meaning of color or other sensory characteristics is duplicated in text.

If your document contains images that employ color to differentiate elements or express meaning, that meaning must be explained in text, such as within the item's caption or within the paragraph text.

As detailed in our formatting wiki, colored text is acceptable in your disquisition under certain circumstances. If you have employed colored text, such as to match colors used in an accompanying figure, the purpose of that coloring should be made clear either in the item's caption or within the paragraph text.

Item 15: Color contrast

Requirements:

- Text and Large Text (including images of text) pass with the Color Contrast Analyzer.

Text within your document should be black, with few exceptions. By contrast, page backgrounds must always be white, yielding a contrast ratio of 21:1 using these default settings. If you use colored text within your paragraphs, the contrast ratio cannot be less than 4.5:1. You may use the WebAIM Contrast Checker to test color contrast.

Additionally, if you overlay text onto an image or have created an image of text, that text must have a contrast ratio of 3:1 to its background. With the exception of images of text, text within an image itself is not required to meet this contrast ratio; however, we do recommend using high-contrast text in your figures, schemes, and other images in order to improve readability.

For more information, see the Web Content Accessibility Guidelines (WCAG) published by W3C and the 2019 PDF Testing and Remediation Guide on the Section 508 website, particularly pages 14 and 22.

Optional Settings

The settings in this section are recommended but are not required to meet Section 508 compliance. See the [chapter on required settings](#) for more information.

General Settings

- **Font** – There is [inconclusive evidence](#) that serifs impact readability for readers with normal or impaired vision; however, federal regulations ([ADA](#), [ABA](#)) proscribe sans serif fonts in federal communications. Your document is not a federal communication and is exempt from this requirement, but you may wish to create a [compliant](#) document for other reasons using the following sans serif fonts from the [list of approved fonts](#).
 - Arial (size 10)
 - Microsoft Sans Serif (size 10)
 - Tahoma (size 10)
 - Trebuchet MS (size 10)
 - Verdana (size 10)

Tables, Figures, Schemes, and Other Non-text Items

- **Font** – Use the same consistent sans serif font in figures, schemes, or other non-text items that is used in the body paragraph text, with a size not smaller than the body paragraph text at 100% view size/zoom.
- **Alt-text** – Descriptive alt-text should be set for all non-text items, to aid readers with impaired vision. Alt-text can be set on non-text items by right-clicking it and selecting the “edit alt-text” option from the menu. Alt-text should complement the information about the non-text item from

the text. For example, the alt-text in figure 7 above describes the layout of the List of Appendix Tables contained in the image.

- **Color contrast** – Whenever color is used in a non-text item, ensure there is a contrast ratio of 3:1 or greater with the surrounding element. For example, a black trace (#000000) in a line graph against a white background provides a contrast ratio of 21:1, whereas a green trace (#00FF00) against a white background provides a contrast ratio of only 1.37:1. The higher the contrast, the more visually distinct each element will be. (You may use [this site](#) to test color contrast.) For more information, see the [Web Content Accessibility Guidelines \(WCAG\)](#) published by W3C.
- **Color & complimentary elements** – Whenever color is used to distinguish elements in a non-text item, use additional indicators such as symbols or patterns to differentiate visual elements. For example, in a line graph with two traces and a white background, one trace could be red (#AA0000) with a dotted line and the other trace could be dark teal (#008080) with a dashed line.