

A HANDBOOK FOR THESES
AND DISSERTATIONS

The Graduate School
The University of Utah

2022

Copyright © The Graduate School of the University of Utah 2022

All Rights Reserved

The Thesis Office of The Graduate School of the University of Utah
is located in the Park Building, room 302

Mailing address: 201 South Presidents Circle #302, Salt Lake City, UT 84112-9016

Kelly Harward
Thesis Office Manager
kelly.harward@gradschool.utah.edu
801-581-7643

Trista Emmer
Manuscript Editor
trista.emmer@utah.edu
801-581-8893

Kristina Heitkamp
Manuscript Editor
kristina.heitkamp@utah.edu
801-581-5076

Ericka Findley
Manuscript Editor
Ericka.Findley@utah.edu
801-213-6438

Emily Lyver
Assistant Manuscript Editor
emily.lyver@utah.edu
801-581-7642

Revision 11/02/22

TABLE OF CONTENTS

LIST OF TABLES	v
LIST OF FIGURES	vi
GLOSSARY	viii
Chapters	
1 GENERAL INFORMATION AND UNIVERSITY REGULATIONS	1
Procedures	1
Statement of Completion	6
University Regulations.....	6
Copyright	11
Use of Journal Articles in Theses or Dissertations	13
Property Rights	15
2 CONTENT AND ORGANIZATION OF THE MANUSCRIPT	18
Preliminary Pages	18
The Text	26
Headings	30
Tables and Figures	34
Equations.....	39
Footnotes and Reference Citations	40
The Appendix or Appendices	42
References or Selected Bibliography	44
Vita.....	46
3 DOCUMENTATION STYLE AND WRITING STYLE.....	60
Documentation Style.....	60
Writing Style.....	61
4 PREPARATION AND SUBMISSION OF THE MANUSCRIPT	62
Print Quality	62
Margins	63

Accessibility in the PDF	64
Electronic Version Submitted for Thesis Release.....	64
Distribution of Theses and Dissertations	65
Fees	65

Appendices

A ACCESSIBILITY	67
B COMPARISON OF SPACING REQUIREMENTS	74
C USING PUBLISHED ARTICLES AS DISSERTATION CHAPTERS	76
D ALTERNATE FIGURE / TABLE PLACEMENT.....	79

LIST OF TABLES

Tables

1.1 Copyright guidelines.....	16
2.1 Order of preliminary pages, indicating which are mandatory and where page numbers should be included.....	47
4.1 Recommended fonts and print sizes. Each font is in the style indicated.	66

LIST OF FIGURES

Figures

1.1 Acquiring reuse, reprint, or adaptation permission for copyrighted material.....	17
2.1 Sample title page of a master’s thesis with degree and department the same.	48
2.2 Sample title page of a doctoral dissertation with a different degree and department.....	49
2.3 Sample of a copyright page.....	50
2.4 Sample page of the Statement of Thesis Approval for master’s students.....	51
2.5 Sample page of the Statement of Dissertation Approval for doctoral students.	52
2.6 Sample table of contents using chapters and a local numbering scheme for subheads.....	53
2.7 Sample table of contents using main sections rather than chapters.	54
2.8 Sample table of contents using main sections with Roman numerals.	55
2.9 Sample of a page from a previously published article inserted as a chapter in the manuscript.....	56
2.10 Sample of the subheading scheme.	57
A.1 Example of appropriate alternate text for a figure.	70
A.2 Example of alternate text for a table.	71
A.3 Unacceptable contrast using the black & white/grayscale method.....	72
A.4 The same information improved by using colors with more contrast, using borders between segments, and labeling each segment separately.....	72
A.5 Acceptable contrast displayed using Colour Contrast Analyser.....	73

A.6 Unacceptable contrast displayed using Colour Contrast Analyser.	73
D.1 Illustration of table/figure placement.	82

GLOSSARY

Block quotation: A single quotation that is greater than three lines in length. Block quotes are block indented from the left and either single or double spaced. They are not enclosed in quotation marks.

Body text: The narrative or descriptive text that comprises most of your manuscript. This is all text that is not: headings, subheadings, figure captions, table titles, figure or table notes, footnotes, endnotes, equations, algorithms, and so forth.

Double space: Extra space between lines of text. The majority of this handbook is double-spaced. In this glossary, there is a double space between each entry.

Em/En dashes: Punctuation that can be used in place of commas, parentheses, or colons. In many style guides, an en dash is used to indicate a range (e.g., 10–20) or to give equal weight between two items (e.g., a London–Chicago flight). An em dash is used similarly to a comma or colon to amplify a digression from the text (e.g., Studies—published and unpublished—are included). Consult your style guide for exact uses. An em dash (—) is longer than a hyphen (-) or en dash (–).

Embargo: A period of time after your manuscript has been accepted for publication before it is released to the public.

Final Reading Approval form: This is one of two forms gathered electronically by the OnBase manuscript submission system when the defended manuscript is submitted to the Thesis Office for format approval. The supervisory committee chair signs to indicate that a final reading has been performed and no more content changes are required. The department/college/school chair/dean signs to indicate that all the appropriate departmental procedures and policies were followed. The signature also indicates that the manuscript is free from grammatical and format errors. The Thesis Office obtains the signature of the dean of The Graduate School after the editing process is completed.

Format approval: Indicates that the thesis/dissertation may be uploaded to ProQuest to begin the thesis release process.

Format approval process: Refers to the back-and-forth process in which students 1) submit a document, 2) receive corrections from an editor, 3) make the edits and resubmit a revised document to the editor. This process is repeated until format approval is granted.

Freestanding subheading: A subheading that appears on its own line.

Gaps (see white space): Spaces between text that have no relation to the end of the chapter, margins, or spacing scheme, for example, an extra space between paragraphs and a large margin or white space at the bottom of the page when it is not the end of a chapter. Some word processing programs may have a default to automatically add a gap between each paragraph. This paragraph setting should be turned off.

Heading space: A space that is larger than the double spaces used in a document. Heading spaces are used below main headings and above subheadings. Regardless of the word processing program being used to write the document, the heading spaces must be created consistently throughout the document so that they are always the same size.

Headline style: A capitalization scheme in which the first letter of all major words is capitalized. For example: *This Is Written in Headline Style*. Some style guides differ on which words should be capitalized in headline style, check your style guide for details. Subheadings, figure captions, and table titles must consistently use either headline style or sentence style capitalization.

Hyphen: Punctuation used between compound terms, compound adjectives, and syllable breaks at the end of a line of text. Please note that words with common prefixes (e.g., non, re, anti, pro, post, pre, micro, multi, etc.) should be treated as one word except when preceding a capitalized word or number (e.g., post-1970, pre-Renaissance) or when the word could be misunderstood (e.g., un-ionized would be confused with unionized). Hyphens are also generally used when the prefix ends and the base word begins with the same vowel (e.g., meta-analysis).

Local numbering: Numbers given to subheadings, tables and/or figures, equations, etc. to indicate the chapter and number within that chapter of a given subheading, table, or figure, etc. For example, a table numbered 2.3 would indicate that it is the third table to appear in Chapter 2.

Main headings: Headings that indicate a new chapter or main section of the document. Examples include ABSTRACT, CHAPTER 5, SELECTED BIBLIOGRAPHY, LIST OF FIGURES, and chapter titles (or main sections if not using chapters). Main headings always start on a new page, centered 2 inches from the top, and are in all capital letters.

Main section: The main divisions of a manuscript. These divisions can also be called chapters. Main section titles are main headings.

Paragraph subheading: A subheading level that serves as the first sentence of a new paragraph and does not require a heading space above. The paragraph subheading can be in either sentence style or headline style capitalization.

Part-title page: A page that contains only the title of the next element (i.e., section, appendix, chapter, part, or a large figure or table). The text or element that follows begins at the 1” top margin of the next page.

Period leaders: Evenly spaced periods placed closely together to align information in a list. Period leaders are used most commonly in the Table of Contents, List of Figures, and List of Tables.

Preliminary review: A cursory review of a document in which the editor addresses only formatting issues such as margins, spacing scheme, placement of tables/figures, gaps/white space, use of main heading, subheadings, etc. Preliminary reviews are performed by the Thesis Office at the student’s request prior to a defense and can be performed on a single chapter).

Reprint: Previously published material included in a thesis/dissertation as it appears in its published form. Permission from the copyright holder and multiple author releases from coauthors are required to reprint any previously published material.

Sentence style: A capitalization scheme in which only the first letter of the first word is capitalized (also proper nouns and acronyms). For example: *This is written in sentence style*. Subheadings, figure captions, and table titles must consistently use either sentence style or headline style capitalization.

Single space: Text with no additional space between lines of text. The individual entries in this glossary are single-spaced but are separated from other entries by a double space.

Spacing scheme: The size of single spaces, double spaces, and heading spaces within a document. All of these spaces must be of consistent size, that is, all single spaces are the same size, all double spaces are the same size, and all heading spaces are the same size.

Statement of Approval form: A form that takes the place of the Supervisory Committee and Final Reading Approval forms in a thesis/dissertation. It is placed after the copyright page and before the abstract. The student’s name, the committee members’ names, the dates of their approval, the name of the department/college/school chair/dean, and the student’s department are typed on the form. This form does not get signed.

Style guide: A manual/journal used to determine the writing style of a document. Manuals of style include IEEE, ACM, AIP, Turabian, ACA, and APA among others. Academic journal author guides are also accepted. Students must follow a style guide approved by their department when writing the manuscript. The style guide determines the method of in-text citations, references, and the use of numerals, terms, etc. The Thesis Office must be informed of which style guide was followed. Chapters prepared for or submitted to journals may use different style guides.

Subheadings: Headings that divide chapters or main sections into subsections. Unlike main headings, subheadings are not in all capital letters and can have several levels, including paragraph subheadings.

Subsection: Smaller sections within chapters or main sections. Subsections are indicated by subheadings.

Supervisory Committee Approval form: This is one of two forms gathered electronically by the OnBase manuscript submission system when the defended manuscript is submitted to the Thesis Office for format approval. The Supervisory Committee Approval form indicates that 1) the committee has read the thesis/dissertation, 2) the content and style of the thesis/dissertation are acceptable, and 3) by majority vote, the manuscript has been found to be satisfactory.

Thesis release: Issued in the student's file in Graduate Student Tracking on Campus Information Services when the final upload to ProQuest has been approved.

White space (see gaps): Parts of a page that contain no marks, text, tables, figures, etc. White space is usually used to indicate margins and the end of chapters. Large white space should not appear on the top or bottom of the page except a) when the page is used only for figures or tables (i.e., no text appears on the page), b) when a subheading at the bottom of a page has to be moved to the top of the next page because there is not room for at least two lines of continuous text following the subheading, or c) at the end of the chapter. It is incorrect to have a large white space between text and figures or tables.

CHAPTER 1

GENERAL INFORMATION AND UNIVERSITY REGULATIONS

This handbook has been prepared by The Graduate School of the University of Utah to aid students writing theses and dissertations. The handbook is formatted using the University's format requirements (as outlined herein), and it serves as an example. The handbook must be used in conjunction with a style manual accepted by the student's department (see Chapter 3) for references, citations, and other stylistic considerations. It is the student's responsibility to be familiar with the regulations governing theses and dissertations and all other requirements for graduation. These regulations are set forth by the Academic Senate and are enforced by the Thesis Office at the Graduate School. All format requirements must be followed (some exceptions may apply for creative works).

The following is a general outline for preparing a thesis or dissertation for approval by the student's department and The Graduate School.

Procedures

1. Plan a schedule for the research and writing of the thesis or dissertation with the chair of the supervisory committee.

2. Consult this handbook and the thesis and dissertation editor with questions about style guide selection, the use of illustrations, acceptable print size, the use of copyrighted materials, and other aspects of manuscript preparation.
3. Submit the thesis or dissertation to members of the supervisory committee. The chair must receive a copy at least 3 weeks before the final oral examination. The other members of the committee must receive a copy at least 2 weeks before the oral examination. Some departments require more than 3 weeks; check with your chair. **A manuscript (PDF copy only) may be submitted to the Thesis Office for “preliminary review” at any time before the defense. The sooner in the writing process a preliminary review is requested, the more helpful the preliminary review will be for the student. One formatted chapter is all that is needed for a preliminary review.** The manuscript will be examined for obvious errors in Thesis Office format. After the defense, manuscripts are accepted for Format Approval only.
4. Defend the thesis or dissertation at a public oral examination scheduled and announced by the committee. The defense should be scheduled early enough for the student to make any changes requested by the committee and to still submit the departmentally approved manuscript to the Thesis Office for Format Approval no later than 2 weeks prior to the closing date of the semester (i.e., the last day of final examinations; see the Calendar on the Thesis Office website for specific dates). All graduate students must be registered for at least one course from the time of formal admission through

completion of all requirements for the degree they are seeking including the defense, unless granted an official leave of absence.

5. Make any changes to the manuscript that the committee may require after the oral defense. Receive permission from the supervisory committee chair to submit the manuscript to the department chair or dean of the student's college or school for approval to submit to our online portal for processing for Thesis Release. Make sure you have the correct University ID, also called uNID, of your committee members and department chair or dean. UNIDs can be found on your Campus Information Services (CIS) webpage under the Committee tab, or they can be found in the Overview section of email details. When you submit the manuscript to our online system you will input the uNIDs of your committee on the submission form. The system will then send them a link to electronic signature forms. The signature forms are signed digitally by the committee members. By majority vote the members of the supervisory committee certify on the digital Supervisory Committee Approval form that the thesis or dissertation has been found satisfactory for the degree.
6. The committee chair and the department chair or dean digitally sign the Final Reading Approval form and certify that the final thesis or dissertation has been read and approved, that all materials are in order, and that the manuscript is correctly formatted and ready to submit to the Thesis Office for processing for Thesis Release. **A manuscript will not be processed for Format Approval until it has been successfully defended and digital signatures of a majority of the supervisory committee, the final reader, and the chair of**

the department have been obtained. It is the responsibility of students to ensure that signatures come in from their committee members and department chair in a timely manner. Students will receive confirmation emails as signatures are submitted. Students should track these emails and follow up on any missing signatures directly with their committee. The signature of the dean of The Graduate School is given after the final manuscript is approved by the manuscript editor. The information from the approval forms is included in the Statement of Approval within the manuscript itself, which includes only the dates of the signatures, not the signatures themselves.

7. Submit a PDF copy of the thesis or dissertation that has been publicly defended and approved by the supervisory committee, the final reader, and the chair of the department to the Thesis Office for Format Approval. To be considered for graduation in a particular semester, the defended and committee-approved thesis or dissertation must be submitted by the target date prior to the closing date of the semester. Students should plan to submit their manuscript within 2 weeks of the defense. Students with lengthy manuscripts should consider the increased time to process their manuscript and submit well before the target date for better assurance they can graduate in their chosen semester. **IMPORTANT: The manuscript submitted must adhere to the formatting guidelines in this handbook in order to qualify as meeting the target date.** Graduation in the semester is not assured and is contingent on the number of manuscripts submitted before that of the student, the quality of the formatting, and the availability of the student to meet

stringent turn-around deadlines. Graduation cannot be guaranteed for a specific semester if manuscripts are submitted after the target date (see the Calendar on the Thesis Office website). They will only be considered for graduation in that semester after processing the manuscripts already in the queue. **Manuscripts are reviewed in the order in which they are received and signatures are provided.**

8. After notification by the Thesis Office that the submitted manuscript has been evaluated and requires corrections, contact the manuscript editor if you have questions about any corrections. **Discussion of corrections in person or via Zoom is by appointment only.** Once all corrections have been made, a Format Approval is issued.
9. After receiving Format Approval, the student will be given instructions for submitting a PDF file to ProQuest. The final manuscript should be uploaded no later than the Wednesday before the last day of examination week (the final week of the semester; see upload date listed in the Calendar on the Thesis Office website). If the final manuscript is satisfactory, the dean of The Graduate School signs the Final Reading Approval form, and a Thesis Release is issued. **All processing of the manuscript must be completed by the last day of the semester for graduation in the semester.**

If a Thesis Release cannot be issued by the closing date of the semester, the student will need to reapply for graduation for the next semester. The diploma also is dated that semester, but the student may obtain a Statement of Completion from the Office of the Registrar.

Statement of Completion

A Statement of Completion may be obtained from the Office of the Registrar after the Thesis Release is issued if the student's file is complete in the Graduate Records Office and all grades have been recorded for the Application for Admission to Candidacy (for master's candidates) or the Program of Study (for doctoral candidates). The Statement, which may be used in place of the diploma, shows the month of graduation and the date all the requirements for the degree were completed. Diplomas are mailed to students by the Office of the Registrar approximately 3 months after the closing date of the semester of graduation.

University Regulations

Topic Approval

The supervisory committee is responsible for approving topics for theses and dissertations. No thesis or dissertation subject may be approved that prevents the completed manuscript from being made available for public use eventually (see Publication of Theses and Dissertations Involving Patents and Restricted Data for policies around embargos and delayed releases).

Contract Research

According to the standard research agreement for sponsored, contract work, the University of Utah,

... as a state institution of higher education, engages only in research that is compatible, consistent and beneficial to its academic role and mission and therefore significant results of research activities must be reasonably available for publication. The University agrees, however, for a period not to exceed six (6)

months following completion of the project, that it will obtain sponsor approval prior to publication, which approval will not be unreasonably withheld by sponsor. The University agrees to keep confidential any sponsor proprietary information supplied to it by sponsor during the course of research performed by the University, and such information will not be included in any published material without prior approval by sponsor. (Office of the University of Utah Vice President for Research)

Oral Defense

The supervisory committee schedules a public oral examination at which time the candidate must defend the thesis or dissertation satisfactorily. The departmental director of graduate studies and the supervisory committee determine how the oral defense is publicized. The supervisory committee approves the manuscript after a successful defense.

Submission of Thesis or Dissertation for Publication

Following the editing and Format Approval process, the final thesis or dissertation is submitted through the Thesis Office for distribution to ProQuest and the University of Utah libraries for public use.

Publication of Theses and Dissertations Involving Patents and Restricted Data

Departures from the policies above must be approved by the dean of The Graduate School, in consultation with the Graduate Council, and can be made only in exceptional circumstances in which a delay is required. Examples are (a) to protect the rights of patent applicants, (b) to prevent unjust economic exploitation, (c) to protect the privacy of research subjects, and (d) to avoid copyright conflicts. To protect the rights of

patent applicants and to prevent unjust economic exploitation, the dean of The Graduate School, in consultation with the Graduate Council, may delay granting of the degree and/or publication of the thesis or dissertation. The committee chair, with the knowledge of the department chair, must approve requests for this action. In either case the delay should be no longer than three years, with possible extension if approved by the dean of The Graduate School.

Students may request a delayed release of their thesis or dissertation (also called an embargo) of up to two years through ProQuest. Students who need to add an additional year, for a total of three years, need to contact the Thesis Office Manager about extending the embargo after the manuscript has been given Format Approval and uploaded to ProQuest. Please review the Resource section on the website for more information.

Content Requirements

Master's and doctoral candidates must submit a thesis or dissertation "... embodying the results of scientific or scholarly research or artistic creativity which gives evidence of originality and ability in independent investigation and is a contribution to knowledge or the creative arts." Manuscripts "... must show a mastery of the relevant literature and be represented in acceptable style. The style and format. . . are determined by departmental policy and registered with the manuscript editor, who approves the style and format of individual [theses and] dissertations in accordance with departmental policy" (University Regulations Library 6-203-III-F).

The contents of the thesis or dissertation must meet the standards of the college, the department, and the supervisory committee of the candidate. Style, content, and documentation of the thesis or dissertation are approved by the supervisory committee. The manuscript editor approves format and editorial style of the manuscript prior to graduation.

Coauthored Theses and Dissertations

Coauthors as Degree Candidates

In the rare instance that a student has coauthored a single thesis with another student (or students), each of whom is a candidate for a master's degree, it may be submitted provided the supervisory committee gives prior recommendation and approval to each student's role in the collaboration, the thesis represents the work equivalent of a single, independent thesis for each coauthor (i.e., the scope, depth of analysis, and sophistication of approach reflect the work of more than one author), and it is evident that each student has made a significant contribution to the thesis. Candidates for the doctoral degree may not collaborate on a single dissertation.

Material Coauthored with Nonstudent(s)

A degree candidate may use previously published or submitted material that has been coauthored with a nonstudent (e.g., faculty member, research director) as part or all of a thesis or dissertation if the supervisory committee recommends the material be included and has determined the candidate's role in the collaboration "... gives evidence

of originality and ability in independent investigation and is a contribution to knowledge or the creative arts” (University Regulations Library 6-203-III-F).

Multiple Author Releases Required

In all cases of multiple authorship (even in first-authorship), releases from the coauthor(s) must be submitted to the manuscript editor prior to graduation. A link to the electronic submission form for the gathering of the legal release(s) required is located on the Thesis Office website on the electronic submission page.

Approval Requirements

Before the final submission of the manuscript for a Thesis Release, approvals must be received from the supervisory committee members, who sign the Supervisory Committee Approval form; from the final reader of the manuscript and the chair of the department (or dean of the college/school), who sign the Final Reading Approval form; and from the manuscript editor, who issues Format Approval.

Publication Requirements

Doctoral dissertations and master’s theses must be available to other scholars and to the general public. The University publication requirement is met if one of the following occurs:

- A. The entire dissertation or thesis is submitted to ProQuest and copies are made available for public sale.

- B. The abstract only is published if the entire dissertation or thesis has been previously published and distributed, exclusive of vanity publishing. The candidate may elect to publish the entire previously published work.

Copyright

U.S. copyright law is complex. Details of the law, including an explanation of “fair use,” may be found at <http://copyright.gov> and <https://lib.utah.edu/research/copyright.php>. “Fair use” is a legal defense and does not grant students the right, even for education or research purposes, to use other researchers’/authors’ text, images, tables, figures, etc. without obtaining the appropriate permission. Table 1.1 provides a general guideline for determining if material is likely to be copyrighted based on age, authorship, and publication status.

It may be advisable to obtain permission early, or to avoid using material with uncertain/questionable copyright. **Students are responsible for obtaining and providing proof of permission to use copyrighted material to the Thesis Office.** Students preparing theses and dissertations must be aware of how to protect their own works and how to avoid infringing upon the works of others. Protection of one’s own work is accomplished through placement of a copyright notice and/or registration of copyright.

Some materials that require permission:

- Long Quotations: Quotations from published material or another’s thesis/dissertation, research, etc. that is over one and one-half single-spaced pages.

- **Reproduced Publications:** Any material, including journal articles, figures, tables, survey instruments, questionnaires that has been previously published requires permission even if the student is the original creator of these works as copyright is usually transferred in order to publish.
- **Internet Sources:** Material found on the Internet is no different than material from a book, journal, or other publication. Easy access and wide availability does not nullify copyright.

Notice of Copyright

Copyright protection is obtained by placing notice of copyright on the thesis or dissertation.

Copyright © Your Name (as it appears in CIS/on the Title Page) 2022

All Rights Reserved

Registration of Copyright

Registration is not required, but it does place details of a copyright claim on public record. Registration is accomplished by filing federal form TX with the U.S. Copyright Office, Library of Congress, Washington DC 20559, or having ProQuest register the claim.

Registration of copyright allows the owner to qualify for an award of statutory damages in cases of infringement. Otherwise, a copyright owner will be awarded actual damages only.

Avoiding Infringement

Students will submit the request for Multiple Author Release through the online submission portal on the Thesis Office website. Students will need accurate email addresses for each coauthor. Obtaining permission to quote or reprint copyrighted material is federal law. Students are required to obtain written permission for any figure or table in its entirety, any poem or musical composition, words or music of popular songs, questionnaires, prose beyond the amount defined as “fair use,” etc. Students can begin this process by visiting either the publisher’s website or copyright.com. For copyright held by private individuals there is a “Permission to Quote Copyrighted Material” form on the Thesis Office’s website. Figure 1.1 provides general guidance on how to begin the process of obtaining permission. Students must email the permission documents to either thesis@gradschool.utah.edu or the email address of their editor.

Students must use the credit line specified by the copyright owner and place it where required by the owner.

All sources must be cited whenever use is made of the material of others, even if the use is limited and no copyright permission is necessary. Direct use of the work of others without citing the source is plagiarism.

Use of Journal Articles in Theses or Dissertations

Obtaining Approval

If students wish to use articles accepted or published by reputable scholarly journals in a thesis or dissertation or to type the thesis or dissertation in the style of a

particular journal for subsequent submission, they must first obtain the recommendation and approval of the supervisory committee.

Use of Previously Published Material

Appendix C outlines the procedures for the incorporation of previously published, accepted, and submitted articles as chapters of a thesis or dissertation.

A thesis or dissertation containing one or more articles published by a scholarly journal must meet all format specifications outlined in this handbook. Previously published articles are treated as separate chapters (or main sections). They may be combined in a manuscript with chapters that have not been previously published.

Reprints used in theses and dissertations must meet University margin requirements. Pages of previously published material/articles must still be numbered in sequence with the rest of the student's manuscript.

More than one reprint may be used in the thesis or dissertation if the specifications noted above are met and the supervisory committee considers the subject materials to be related. One reprint may be used as the entirety of the thesis or dissertation if the specifications noted above are met.

The title of the thesis or dissertation must reflect the entire work. There must be an abstract summarizing the entire work, even though individual chapters may have abstracts. Citation and reference style may vary for published chapters.

Any use of previously published material requires that permission to quote copyrighted material be obtained from the copyright owner(s) and filed in the Thesis Office. Multiple author release(s) also must be filed.

Use of Material Accepted for Publication

An article or articles that are accepted by journals but have not yet been published may be used as part of a thesis or dissertation. Articles/chapters that have been submitted or accepted for publication but are not yet published must follow the formatting as illustrated in this handbook. Running heads (i.e., an abbreviated title of the manuscript often with the author's last name printed in the upper margin of each page) may not be used, and tables and figures must be referred to by number in the text and placed according to the placement rules within this handbook.

Property Rights

Publication rights (copyright) are reserved by the author, subject to the provisions of research contracts, patent rights, or other agreements made by the author with the University.

Table 1.1 Copyright guidelines.

Adapted from “Duration of Copyright Circular 15A” United States Copyright Office, U.S. Government Publishing Office, © copyright 2022).

Creation / Publication	General Rule of Copyright Duration
Created in or after 1978 by a named author acting in an individual capacity, whether published or not.	Life of the author, plus 70 years.
Created in or after 1978 by an anonymous or pseudonymous author, or by a corporate author, or a work-made-for-hire.	The earlier of either 95 years from publication, or 120 years from creation.
Created before 1978, but not published.	The latter of either 70 years after the death of the author, or through December 31, 2002. The expiration date is extended through December 31, 2047, if the copyright owner publishes the work before the end of 2002.
Published after 1992 and before 1978 with copyright notice and renewed if required.	95 years from the date of original publication.
Created and published before 1923.	Copyright has expired.

Note: The circular can viewed and/or downloaded (for free) in its entirety at:
<https://www.copyright.gov/circs/circ15a.pdf>

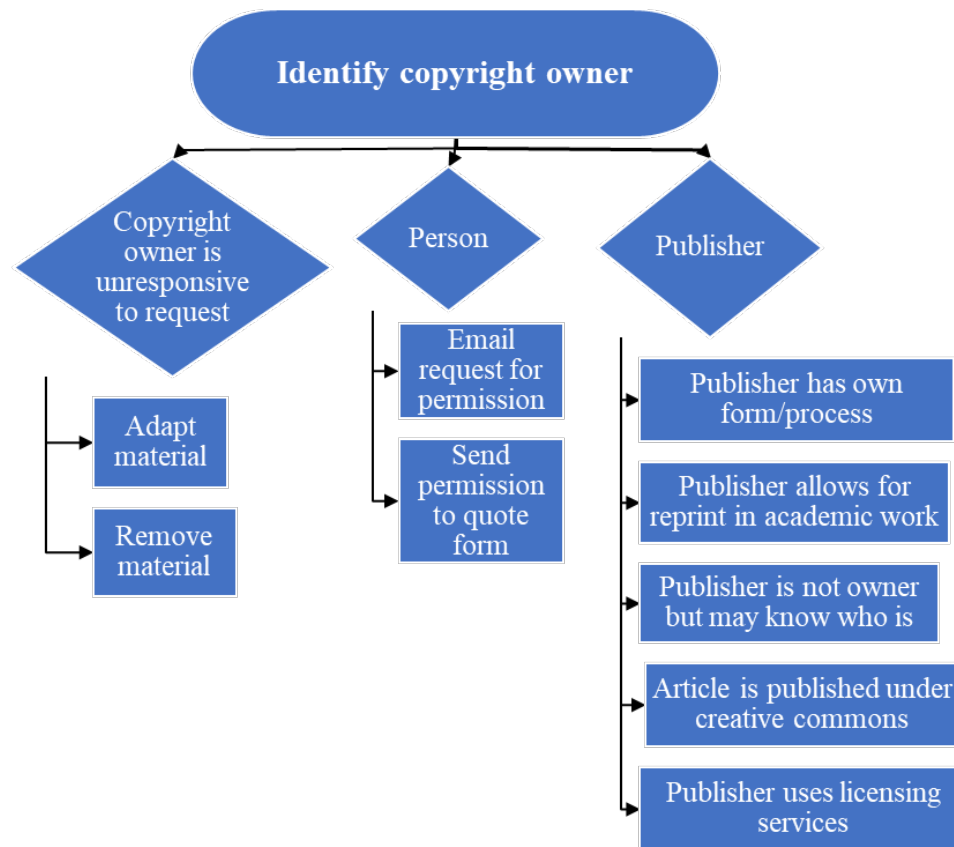


Figure 1.1 Acquiring reuse, reprint, or adaptation permission for copyrighted material. For all previously published content (e.g., articles, figures, etc.), permission to reuse, reprint, or adapt must be provided by the student to the Thesis Office. The first step is to identify the copyright holder. For many publications/journals, the publisher is the owner of the copyright. Start at the publisher's website. You may find the following options: 1) The publisher will have a specific form or process that they use to grant permission. Students must follow the publisher's official process. 2) Often journals will allow for a free reprint of articles in academic work. Take a screenshot of where it states this on the webpage and email the image (as a PDF or JPEG) to thesis@gradschool.utah.edu or to your manuscript editor. 3) Some journals publish content under a Creative Commons license (see their website for the different types of creative common license and their permitted uses). 4) Many publishers use Copyright Clearance Center (copyright.com) licensing services. If the publisher is not the copyright owner, a permissions representative at the publisher may be able to offer assistance or direct you to the copyright owner. Send a written request for permission to use the material to the copyright holder. When sending a request, it should include a precise identification of the material to be used and how you plan to use it. If none of these are available, please see the permissions to quote form found on our website. If the copyright owner is unresponsive to your request, then consider adapting or removing the material.

CHAPTER 2

CONTENT AND ORGANIZATION OF THE MANUSCRIPT

In this chapter, each component of the manuscript is listed in the order it occurs. Format details are specified for each page. Samples of the major parts of the manuscript are provided as figures.

Preliminary Pages

Preliminary pages are, in order, the title page; copyright page; statement of thesis/dissertation approval; abstract; dedication (optional); frontispiece (optional); epigraph (optional); table of contents; lists of tables, figures, symbols, and abbreviations (necessary only in certain situations); and acknowledgments (optional). Table 2.1 lists all the possible preliminary sections in order and if they are required or not.

The preliminary pages are counted in sequence (except the copyright page, which is neither counted nor numbered). Any page with a main heading on it (title page, abstract, table of contents, etc.) is counted, but no page number is typed on the page. Second pages to the abstract, table of contents, lists, and acknowledgments are numbered with lower case Roman numerals centered within the thesis margins and .5" from the bottom of the page. See the preliminary pages in this handbook for an example.

Title Page

The title page is page i (Roman numeral) of the manuscript (page number not shown).

The title of the thesis or dissertation is typed in all capital letters. The title should be placed in the same size and style of font as that used for major headings throughout the manuscript. If longer than 4 1/2 inches, the title should be double spaced and arranged so that it appears balanced on the page. The title should be a concise yet comprehensive description of the contents for cataloging and data retrieval purposes. Initials, abbreviations, acronyms, numerals, formulas, super/subscripts, and symbols should be used in the title with careful consideration of clarity and maximizing search results for future readers. Consult the manuscript editors if in doubt.

The word “by” follows the title. The **full legal name** of the author as it appears in CIS follows after a double space. The name is not typed in all capital letters. These two lines of text are centered between the title and the statement described in the following paragraph.

The **statement** “A thesis submitted to the faculty of The University of Utah in partial fulfillment of the requirements for the degree of” appears single spaced in the middle of the title page (see Figure 2.1). For doctoral candidates, the phrasing reads “A dissertation submitted. . .”

The appropriate **degree** follows the statement. The space between the statement and the degree should be the same size that is between the author’s name and the statement. In the event the name of the degree differs from the name of the department, e.g., Master of Science in Environmental Humanities, the words “Master of Science” are

placed below the statement, followed by “in” and then the degree program; the lines of the degree name and program are double spaced (see Figure 2.2). Thus, a student receiving a doctorate in history need use only the words “Doctor of Philosophy.” A student receiving a doctorate in Geophysics must put “Doctor of Philosophy in Geophysics.”

Below the degree field, the full name of the **department** is listed on the title page.

“The University of Utah,” is listed a double space below the department name.

The **date** appears on the title page a double space below “The University of Utah.” Only the month and year appear, with no punctuation separating them. The month indicates the **last month** in the semester the degree is granted: fall semester, December; spring semester, May; summer semester, August.

Again, the spaces below the title, the full legal name, the statement, and the degree should be of equal size.

Copyright Page

The second page is the copyright page, which is uncounted and unnumbered. A copyright notice appears in every copy of the thesis or dissertation. The notice, as illustrated in Figure 2.3, is centered within the side margins and the top and bottom margins of the page.

Copyright © Student’s Full Legal Name 2022

All Rights Reserved

There is a double space between the two lines.

Statement of Thesis/Dissertation Approval

The statement of thesis/dissertation approval is page ii (Roman numeral) of the manuscript (page number not shown). This statement is prepared as shown in Figures 2.4 (for master's students) and 2.5 (for doctoral students).

The statement of thesis/dissertation approval signifies that the thesis or dissertation has been approved by the committee chair and a majority of the members of the committee and by the department chair and the dean of The Graduate School. The names of any committee members who did not approve or digitally sign the forms for the thesis or dissertation are not dated. The dates entered should match the date when you received notification that the committee member electronically signed the form.

The full name of the student, as it appears on the title page and copyright page, must be used.

As with the digital signature forms, full legal names of committee members must be listed. The full legal names of committee members and department chair or dean can be found on your CIS page under the Committee tab. Neither degrees nor titles should be listed with the names of faculty members. No signatures are required.

Abstract

The abstract is page iii, unnumbered; if there is a second page, it is page iv, and a number appears on the page. The abstract is a concise, carefully composed summary of the contents of the thesis or dissertation. In the abstract, the author defines the problem, describes the research method or design, and reports the results and conclusions. No diagrams, illustrations, subheadings, or citations appear in the abstract. The abstract is

limited to 350 words (approximately 1.5 double-spaced pages). A copy of the abstract of all doctoral candidates is published in Dissertation Abstracts International. The word ABSTRACT is placed 2 inches from the top of the page in all capital letters. Following a heading space, the abstract text begins, with the first line indented the same size space as for the paragraphs in the remainder of the manuscript. The text of the abstract must be double spaced.

If a manuscript is written in a foreign language, the abstract is in the same language, but an English version (or translation) of the abstract must precede the foreign language abstract. The two abstracts are listed as one in the table of contents. The first page of each version is unnumbered but counted. If there is a second page to each version of the abstract, the page number (lower-case Roman numeral) is centered between the left and right margins and between the bottom of the page and the top of the bottom margin.

Dedication

The dedication is an optional entry; enumeration continues in sequence, but no page number appears on the page. It follows the abstract and precedes the table of contents. Often only one or two lines, it is centered within the top and bottom margins of the page and within the thesis margins. It is not labeled “Dedication” and is not listed in the table of contents.

Frontispiece and/or Epigraph

These are infrequently used entries. The frontispiece is an illustration that alerts the reader to the major theme of the thesis or dissertation. An epigraph is a quotation of unusual aptness and relevance.

Contents or Table of Contents

The table of contents follows the abstract (or dedication if one is used). The word CONTENTS (or TABLE OF CONTENTS) is placed 2 inches from the top of the page in all capital letters. Following a heading space, the table of contents begins. The table of contents, essentially an outline of the manuscript, lists the preliminary pages beginning with the abstract (page iii). It does not list a frontispiece, dedication, or epigraph if these are used, nor is the table of contents listed in the table of contents; these pages are, however, counted. The list of figures and list of tables, if used, are included (see the Table of Contents in this handbook for a sample using numbered chapters; see Figures 2.6, 2.7, and 2.8 for additional options).

All chapters or main sections and all first-level subheadings of the manuscript are listed in the table of contents. No lower subheadings levels are to appear in the table of contents. Beginning page numbers of each chapter or section listed are lined up with each listing by a row of evenly spaced, aligned period leaders. The numbers, titles, and subheadings of chapters or sections used in the table of contents must agree exactly in wording and capitalization with the way they appear on the actual page.

The table of contents reflects the relationship of the chapters and subheadings. Chapter titles appear in all capital letters, as do titles of appendices. First-level

subheadings can be headline style or sentence style in capitalization. Subheadings are neither underlined nor italicized in the table of contents. If the table of contents continues to a second page, it begins 1 inch from the top of the page, and it is not labeled “Table of Contents Continued.” Main headings are followed by a double space in the table of contents; all subheadings are single spaced. The words “Chapters” and “Appendices” are used as referents only, printed above the list of entries. The word “Chapter” or “Appendix” is not repeated with each entry.

List of Figures / List of Tables

The enumeration continues in sequence; no number appears on pages with main headings (those in all caps). A list of tables, a list of figures, a list of symbols, a list of abbreviations, or a glossary may be used. All lists follow the table of contents. The title is placed 2 inches from the top edge of the page in all capital letters: LIST OF TABLES. Following a heading space, the list begins. A list of tables or a list of figures is required if there are 5 to 25 entries. Lists with fewer than 5 entries or more than 25 are not included. It is not permissible to combine a list of tables and figures. The word “Table” or “Figure” is not repeated with each entry.

As noted for entries in the table of contents, the listing of tables and figures must agree **exactly** in wording, capitalization, and punctuation with the table title or figure caption. (An exception to this rule occurs if the table title appears in all capital letters on the table itself; table titles in the list of tables are not typed in all capital letters.)

Capitalization styles may not be mixed. In the case of long titles or captions, the first

sentence must convey the essential description of the item. The first sentence alone then is used in the list. Long captions may not be summarized.

The table or figure number begins at the left margin and is followed by the title or caption. The page on which each table or figure appears is at the right margin. As in the table of contents, the page numbers are lined up with each entry by a row of evenly spaced, aligned periods (period leaders). If a table or figure occupies more than one page, only the initial page number is listed. If the title or caption of a table or figure appears on a part-title page preceding the table or figure, the page number in the list refers to the number of the part-title page.

If a list continues to a second page, the second page of text begins 1 inch from the top of the page. The second page is not labeled “List of Tables Continued” or “List of Figures Continued.” Individual entries are single-spaced with a double space between each entry.

A list of symbols and abbreviations or a glossary does not replace defining terms, symbols, or abbreviations upon their first occurrence in the text. When introducing terms, always introduce terms upon their first usage in the document.

Acknowledgments

The enumeration continues in sequence; no number appears on the first page. Acknowledgments are optional. If a preface is used, the acknowledgments are added to the end of the preface without a separate heading. The word ACKNOWLEDGMENTS is placed 2 inches from the top of the page in all capital letters. Following a heading space, the acknowledgments begin. The text of the acknowledgments must be double spaced. In

the acknowledgments, students may wish to recognize special assistance from committee members, friends, or family members who may have helped in the research, writing, or technical aspects of the thesis or dissertation. Research funding, grants, and/or permission to reprint copyrighted materials should be acknowledged. Individuals employed to prepare the manuscript are not acknowledged.

Preface

The enumeration continues in sequence; no number appears on the first page. This is an optional entry. The word PREFACE is placed 2 inches from the top of the page in all capital letters. Following a heading space, the preface begins. The text of the preface must be double spaced. A preface includes the reasons for undertaking the study, the methods and design of the researcher, and acknowledgments. Background data and historical or other information essential to the reader's understanding of the subject are placed in the text as an introduction, not in the preface. Theses and dissertations generally do not contain a foreword (i.e., a statement about the work by someone other than the author).

The Text

The text follows the preliminary pages and is numbered with Arabic numerals. Page numbers of the text are in the upper right corner of the page centered between the top of the page and the bottom of the top margin. The number is placed so that it does not extend into the right margin. Pages with MAIN HEADINGS (the first page of chapters or

main sections that are used in the place of chapters) are counted in sequence with the rest of the text (beginning with page 1); however, no number appears on main heading pages.

The organization of the text is the responsibility of the student and the supervisory committee and varies by discipline and subject. The text must be well organized and must adhere to standards in the student's field. The text may begin with a separate introduction, or the introduction may form all or a portion of the first chapter or main section.

It is the student's responsibility to ensure that all language used follows Standard American English grammar and punctuation rules (some exceptions may apply for creative works). Manuscripts submitted with extensive grammar and punctuation deficiencies will be returned unprocessed. **Please use Grammarly on your Thesis or Dissertation prior to submitting it to the Thesis Office for review.** Using Grammarly can speed up the approval of your manuscript and make the Thesis Release process smoother and more efficient.

Text may be divided into chapters, numbered with Roman or Arabic numerals (but not both), each chapter having its own title. Another option is to divide the text into main sections. If this option is chosen, the section divisions may or may not be numbered. For example, if the text is divided into INTRODUCTION, REVIEW OF LITERATURE, METHODS, RESULTS, and DISCUSSION (or other similar divisions), the INTRODUCTION may be assigned the number "1" and other sections numbered sequentially or only the word INTRODUCTION may stand as the section title. Note that such section titles are in all capital letters. See Figure 2.8.

The heading of each chapter or main section (e.g., CHAPTER 1, CHAPTER 2, INTRODUCTION) is placed 2 inches from the top of the page in all capital letters. If the word chapter is used, the title for numbered chapters appears in all capital letters a heading space below the word chapter. Following another heading space, the text begins. If chapter numbers are not used, a heading space separates the title from the first paragraph of text.

The text must be double-spaced throughout (except for entries in the table of contents, references, lists of figures and tables, and block quotes, all of which are single spaced as illustrated in this handbook). No additional space is inserted between paragraphs. All paragraphs must be uniformly indented. *Please note that some word processing software will automatically add extra space between each paragraph and care must be taken to ensure that the double spaces between paragraphs are the same size as all other double spaces within the manuscript.

For helpful hints in formatting refer to the FAQ and Student Resources on the Thesis Office website.

Parts Composed of Related Chapters

On rare occasions, long manuscripts may be divided into separate parts composed of related chapters. Individual parts may or may not be titled, but they must be numbered. Each part is then preceded by a part-title page (see the part-title pages for the appendices at the end of the handbook as an example). The part number and title (if used) are typed in all capital letters, centered within the thesis margins and between the top and bottom margins of the page. If both part number and title are used, there is a heading space after

the number and before the title. The page is counted in sequence with the rest of the manuscript, but no number appears on the page. The chapter number or title of the first section of the first part begins on the page following the part-title page 2 inches below the top of the page. The chapters or main sections (if numbered) are numbered consecutively throughout the text. Page numbering is also consecutive.

If part-title pages are used to designate separate parts in a manuscript, they also must be used before each appendix (if used) and before the references (or selected bibliography). Format and numbering are the same as described in the preceding paragraph. When part-title pages are used with appendices and references, the title of each section is not repeated on the following page, and the text begins 1 inch from the top of the page.

If a reprint of a previously published article is incorporated as a chapter, a part-title page will precede the first page of the reprint. The chapter title is placed on the part-title page. A full credit line (stating “Reprinted with permission from” followed by the source) must be placed on the part-title page. Publishers will frequently require special wording. See Figure 2.9 for an example of a part-title page for a reprinted chapter.

Quotations

Quotations three lines of print or fewer require double quotation marks. They also must have citation and page numbers listed for them. Quotations longer than three lines of print must be in block quote form. They are indented from the left margin the same amount that the first line of new paragraphs are indented. They may be single or double spaced. Whether double or single spaced, they are separated from the text by a double

space. Quotation marks are not used with a block quotation unless quotation marks appear within the source quoted. Citation and page numbers must be listed for block quotations.

Headings

Headings establish the organization of the manuscript. There are two types of headings in any manuscript: main headings and subheadings.

Main Headings

Main headings always begin on a new page, are centered 2 inches down from the top of the page, printed in all capital letters, and used for chapters or main sections (e.g., CHAPTER 1, INTRODUCTION), the titles of the preliminary divisions of the paper (i.e., ABSTRACT, TABLE OF CONTENTS, LISTS, ACKNOWLEDGMENTS), and other major sections of the paper (APPENDIX, REFERENCES).

Spacing

Main headings start 2 inches from the top of the page and are always followed by a heading space. Main headings more than two lines are always double spaced. If the main heading is preceded by the word “CHAPTER” and its numerical designation, the word “CHAPTER” and the Roman or Arabic numeral following it begin 2 inches from the top of the page. After a heading space, the title of the chapter follows. The text begins after a heading space if no subheadings are used. If a subheading follows the main heading, the text begins after a double space.

Length

Main headings over 5 inches in length are split and placed on two or more lines so that the lines appear visually balanced.

Subheadings

Subheadings are used for divisions of the various chapters or sections of the manuscript. There are two types of subheadings: freestanding and paragraph. Freestanding subheadings are always higher in level than paragraph subheadings. See the glossary for the definitions of freestanding and paragraph subheadings.

Appearance and Order

Subheadings must be used in hierarchical order, levels cannot be skipped (e.g., a first-level subhead followed by a third-level subhead would be incorrect), they and must be used consistently throughout the manuscript. Many students use no more than one or two levels of subheadings. Some, however, require additional levels (see Figure 2.10 for a description and illustration of main headings, subheadings, and spacing). Subheadings must follow the subheading scheme as outlined in Figure 2.10. If the student wants to use paragraph subheadings, they may eliminate some of the higher levels of subheadings as long as the new scheme is done consistently throughout the manuscript.

Capitalization

Unlike main headings, subheadings are not printed in all capital letters. Either a headline style or sentence style capitalization scheme is used for subheadings. Although

capitalization schemes may vary across subheading levels, within each level capitalization schemes must be consistent (e.g., all first-level subheadings could be headline style while all second-level subheadings could be sentence style).

Placement

For a subheading to end the page there must be room for the heading space, the subheading and at least two lines of text. If there is not enough room, the subheading moves to the top of the next page. This is the only time a gap is allowed in the text when it is not the end of a chapter or before an equation too long to fit at the bottom of a page.

Spacing

Freestanding subheadings (i.e., all subheadings except paragraph headings) are preceded by a heading space and followed by a double space. Two or more freestanding subheadings in a row are separated only by a double space. Paragraph subheadings are preceded by a double space only and are indented the same amount as the regular paragraphs in the manuscript. (See Appendix B for a comparison of spacing requirements.) Subheadings of two or more lines are double spaced.

Heading Spaces

A heading space is a space that is larger than the double spaces used in a document. Heading spaces are used **below main headings** (a title in ALL CAPS) **and above freestanding subheadings**. Regardless of the word processing program being

used to write the document, the heading spaces must be created consistently throughout the document so that they are always the same size.

There are only a few instances when a heading space is not required:

1. When a freestanding subheading begins the page
2. Above a paragraph subheading
3. When two or more subheadings are in a row (without text between). In this case, the subheadings are separated by a double space (not a heading space)

Again, **all heading spaces must be the same size**. Please see Figure 2.10 for an example.

Numbering

In some disciplines, subheadings are numbered with a local numbering system. If this system is used, chapters or main sections must be numbered with Arabic numerals. The first subheading is then numbered 1.1 followed by the title, the second 1.1.1, and so on. If this system is used, all chapters/main sections and all levels of subheads (including paragraph subheadings) must be numbered.

Accessibility of Headings and Subheadings

In order to ensure that our publications are accessible to readers and researchers who are visually impaired, headings and subheadings must be tagged or styled as headings so that screen reading software can distinguish the headings and subheadings from the rest of the text of the manuscript. This function is built into the official Word template offered by the Thesis Office. If students wish to use a different word processing

or layout program to create their manuscript, they must use the accessibility tools within the program to ensure accessibility.

Tables and Figures

A table is a compilation of data in columns or rows (tabular form). A figure is a visual or graphic presentation or illustration. Photographs, maps, diagrams, plates, or schematic presentations all are figures. **Tables and figures must be referred to by number in numerical order in the text.** The expressions “the following table/figure” or “the table/figure below” or “see the table/figure on p.##” may not be used. It is incorrect to refer to the placement of a table or figure in a manuscript.

Accessibility Issues for Figure and Tables

It is necessary to create tables and figures that are accessible to readers who are visually impaired. Print within a figure must be sharp and legible. Figure captions and table titles should be coded in such a way that a screen reader parsing the converted PDF can distinguish the figure caption and table title from the rest of the text. The official Word template provided by the Thesis Office has this function built in. If students use a different word processing or layout program, they should utilize the accessibility tools within the program. Color should not be relied upon to convey information in a figure unless it is necessary. If color is necessary, high contrast colors must be used. Alternate text must be inserted within the manuscripts for any images and tables. Further information about color and suitable alt text for figures and tables can be found in Appendix A.

Table and Figure Order

The first reference to a table or figure must be in numerical order (e.g., Table 1.1, Table 1.2, Table 1.3, and so forth). Once the table/figure has been referred to, it can be mentioned again out of its numerical order (e.g., it would be perfectly appropriate at this point in the handbook to refer to Figure 2.1 because it has been mentioned previously. It is not appropriate to refer to Figure 2.13, however, because Figure 2.12 has not been mentioned yet). **Each table and figure must be mentioned in the text.** Each figure or table appears only once; a figure or table cannot be used twice. Refer to previous tables and/or figures if relevant.

Table and Figure Placement

The easiest placement of tables and figures is by type (all figures grouped together and all tables grouped together) in numerical order at the end of the chapter or main section in which they are first referenced. They appear after the first-level subheading “Figures” and/or “Tables. Whether you place figures first or tables first is at the student’s discretion but must be consistent from chapter to chapter. Each table and figure must be accompanied by a title or caption. In other words, a list of titles or captions may not be placed prior to the tables and figures, as is common in some journal submission formats.

A large table or figure is placed by itself on the page, centered within the thesis margins. Although it is not necessary for large tables or figures to be centered precisely between the top and bottom margins of the paper, tables and figures should be placed so that they look balanced on the page. If the entire caption cannot fit on the same page with

its figure, create a part-title page for the caption and place the figure on the page following (see the section on Part-title pages later in this chapter, as well as Figure 2.10).

If two or more items are placed on a page, they must be separated by a space larger than a double space to separate the items visually.

When a table or figure continues to a second page, the number and the word “continued” are placed at the bottom of the figure or at the top of the table. On continued tables, column heads should also be repeated.

See Appendix D for other methods of figure and table placement.

Figure Numbering and Captions

All figures must be numbered consecutively (1, 2, 3 . . .) throughout the manuscript and appendices or numbered locally with decimals (1.1, 1.2 . . . 3.1 . . . A.1) by chapter. If figures are numbered locally with decimals, the divisions of the manuscript must be numbered with Arabic numerals. Figures cannot be numbered by subsection (within subheadings). The number and caption are placed below the figure within the thesis margins (note that this is different from tables, where the title is placed above). In the case of long captions or captions for figures with parts, the first sentence needs to be a general caption that describes the whole figure. Subsequent sentences explain the individual parts. The first sentence of the caption appears in the list of figures, if used. Parts must be labeled (a, b, c, d). Figure captions must be in one consistent format throughout the manuscript. All captions for figures should be single spaced. If there are super- or subscript numbers in the figure captions, however, lines may be double spaced.

All figure captions must be in the same font style and size as the text. Figures should not be enclosed in thick-lined boxes if they can be avoided.

Table Numbering and Titles

Tables also are numbered consecutively (1, 2, 3 . . .) throughout the manuscript and appendices or numbered locally with decimals (1.1, 1.2 . . . 3.1 . . . A.1) by chapter or numbered section. Tables cannot be numbered by subsection (within subheadings). The number and title of each table is placed above the table (note that this is different from figures, where the caption is below). Table titles may be double- or single-spaced, but the spacing should be consistent throughout the manuscript. One consistent format must be used throughout. All table titles must be in the same font style and size as the text. Table titles are separated from the table by a double space. Regardless of the style guide selected, there are solid, horizontal lines spanning the data presented, below the title, after the column headings, and at the end of the table. Generally, vertical lines are not necessary in a table. Tables should not be enclosed in thick-lined boxes. Spacing between entries in a table is dependent on the best method of presenting the material. When a table continues to a second page, the table number and the word “continued” are placed above repeated column headers before the table continues. While text within the table may be in a different font or font size than the rest of the text in the manuscript, print within a table must be crisp and legible regardless of size. To increase accessibility, color should not be relied upon to convey meaning in a table (see Appendix A for more information).

Local Numbering

If tables and figures are numbered locally with decimals (i.e., within each chapter or main section), the first table or figure within the first main heading is given the number 1.1, the second 1.2, and so on. If local numbering is used for figures, it also is used for tables. If local numbering is used, the main divisions of the manuscript must be numbered with Arabic (1, 2, 3) numerals. Tables or figures in the appendices of a manuscript numbered locally are numbered A.1, A.2, B.1 and so on. Local numbering of tables and figures never exceeds one decimal place (i.e., tables and figures are never numbered according to the number assigned to a subheading)

Landscape (Broadside) Placement

Tables and figures may be placed on landscape-oriented pages to better accommodate width. If the title or caption to a full-page landscaped table or figure is on a separate page, however, the title or caption is placed on a portrait-oriented page.

Page Number Placement

Page numbers are placed in the upper right corner on all pages with figures or tables. Page numbers throughout should be placed in the same position.

Reductions

Tables and figures may be reduced to fit within the thesis margins, but the title or caption must be the same size print as the rest of the manuscript. Print size in a reduced table or figure must be crisp and legible.

Oversize Tables and Figures

Oversize tables and figures can be reproduced electronically, but the print may not be readable. Therefore, two hard copies of any oversize table or figure are required: one to be submitted to the Thesis Office to be forwarded to Special Collections in the Marriott Library and one students submit to their department.

Part-Title Pages

A long table title or a long figure caption may be placed on a part-title page preceding the item if the table or figure is so large that the caption or title cannot be accommodated on the page. When a part-title page is used, the caption or title begins at or slightly above mid-page (depending on length) and is single spaced. (The caption or title may be double spaced if there are super- or subscript numbers within.)

If part-title pages are used for titles or captions, the pages are counted and numbered in sequence with the manuscript. Page numbers appear in the upper right corner in the same position as page numbers in the text. The page number that is listed in the List of Tables or List of Figures is the number of the part-title page.

Equations

Format of display equations is dictated by the style guide the student is following. Short equations are centered within the thesis margins. All equations are set off from preceding and following text by a double space.

In general, equations that are numbered should be numbered at the right margin of the manuscript with the number either in brackets or parentheses. Equations may be

numbered consecutively or locally with decimals. If they are locally numbered, the main divisions of the manuscript must be numbered with Arabic numerals. Local numbering of equations never exceeds one decimal place (i.e., equations are never numbered according to the number assigned to a subheading). Equation numbers must be aligned with each other throughout the manuscript.

Footnotes and Reference Citations

Whether a student uses a footnote or a reference citation system depends upon the discipline. The format of footnotes or reference citations should adhere to the format specified in the department-approved style manual the student has selected. Footnotes must adhere to the same margins as the rest of the text. Font should be a minimum of 2 millimeters.

If a number reference citation system is employed, numbers in the text may be superscript, in brackets, or in parentheses on the line of text depending on the style guide used. Superscript numbers always are placed outside all punctuation marks; if more than one reference is cited at a time, the numbers are separated by commas (e.g., many^{6,7,10-12} agree with the findings of Einstein.⁴). Numbers in brackets or parentheses on the line of text are placed inside or outside punctuation depending on the style guide followed. A comprehensive reference list in numerical order is placed at the end of the manuscript or, in cases where the manuscript is comprised of journal articles as chapters, at the end of each chapter.

Note that the Latin term “et al.” stands for “et alii” (and others). “Et” is not an abbreviation; it is never followed by a period. “Al.,” however, is an abbreviation and is followed by a period. The style guide dictates whether “et al.” is italicized.

Spacing of Footnotes and Endnotes

Whether footnotes appear at the foot of the pages on which they occur or as notes at the end of each chapter or main section (endnotes), they must be single-spaced within each entry with a double space between entries. If print quality is clear, the footnote entries may be single spaced rather than separated by a double space. The choice of spacing must be consistent from chapter to chapter. Notes at the end of each chapter begin with a new page of text. The word “Notes” or “Endnotes” should appear as a first-level subheading on the page listing them. Entries are single spaced and there is a double space between entries. Notes are not placed at the end of the manuscript; they are more accessible at the end of each chapter or at the foot of the page. In case of error, many notes would have to be renumbered if all were placed at the end of the manuscript. Notes (endnotes) must be listed in the table of contents as a first-level subheading.

Placement of Footnotes

Footnotes placed at the bottom of the page appear in numerical order. If multiple references occur on the same page of text, all the notes referred to must begin on the same page as the reference. In the case of lengthy footnotes, what will not fit above the bottom 1-inch margin should be carried over to the area reserved for footnotes on the following page.

Footnotes are separated from the text by a solid 20-space line. This line does not extend into the left margin. The first line of the note begins a double space below the solid line and is indented using the same size indent as used in the text. The numeral is raised above the line and the note is not followed by a period or a space before the note begins (see example at foot of page).¹ Multiple footnote entries have no space between lines, with a double or single space between entries (see example at the foot of the page).²

The Appendix or Appendices

If used, an appendix follows the text but precedes the references or bibliography. The pages of the appendix are numbered consecutively with the rest of the text. There is considerable flexibility in the kind of material that may be placed in appendices: computer programs, tables of raw data, questionnaires, letters, original historical source material, etc. Each appendix should be sequenced with upper-case letters of the alphabet (APPENDIX A, APPENDIX B). If there is only one appendix, no letter is used; one appendix may or may not have an explanatory title. If there is more than one appendix, each has an explanatory title. The appendix title(s) must be listed in the table of contents in all upper-case letters. Subheadings in an appendix, however, are not listed in the table

¹ Footnote sample. Note the font style is the same as the rest of the text. The size of the font may be the same size as the text or smaller, so long as it is consistent for all the footnotes.

² Footnote sample. Style guide used determines whether the footnote is inside or outside punctuation such as periods, commas, etc.

of contents. Subheads in an appendix follow the same subhead scheme selected for the main text.

The enumeration of any illustrative material (tables, figures, etc.) in the appendix is continuous with the text (e.g., if Table 20 is the last table in the text, the first table in the appendix is Table 21). Or if illustrative materials are locally numbered by chapter or section, the tables, figures, and so forth in the appendix are also locally numbered (e.g., Table A.1 for Appendix A, Table B.1 for Appendix B, etc.). The format and type font used in the appendix must be consistent with the rest of the manuscript. Exceptions are computer programs, reproduced documents, or similar items. Consult with the manuscript editor if there are questions concerning appendix materials.

Material in the appendix must adhere to the same margin specifications and print size specifications (characters may be no smaller than 2 millimeters) as the rest of the manuscript.

A separate page for the title of each appendix (i.e., part-title page) is often used when diverse, previously printed materials (e.g., computer printouts, letters used in questionnaire surveys, questionnaires, etc.) are included. If a part-title page is used with one appendix, part-title pages must be used with all appendices. The first line of the title (e.g., APPENDIX A) is centered within the left and right thesis margins and begins either at mid-page or 2 inches from the top of the page in the same spot as the chapter headings or section titles; the choice of placement must be the same for each appendix. The title of the appendix (e.g., QUESTIONNAIRES) follows below a heading space and is centered within the thesis margins. The part-title page is counted in sequence with the rest of the

manuscript, but no number appears on the page. The part-title page is considered the first page of the appendix for the purposes of the table of contents (see appendices herein).

Sometimes students will have large tables or data sets or large numbers of schemes that they want to include as supplementary information, but which are not necessary for inclusion in the main text and increase the length of the manuscript. These appendices can be uploaded directly to ProQuest after the rest of the manuscript is processed through the Thesis Office. In these instances, a part-title page is added to the manuscript as an appendix that lists the titles and file names of the appendices that will be uploaded as supplementary files to ProQuest. Consult with the manuscript editors if you are in doubt about whether something should be included in the final manuscript or as a supplementary file uploaded directly

Some departments require submission of a DVD. DVDs may not be submitted electronically because of copyright issues. However, students in departments with this requirement must submit two DVDs: one to the Thesis Office to be forwarded to Special Collections in the Marriott Library and one the students submit to their department.

References or Selected Bibliography

The style of the references or selected bibliography must be patterned after the department-approved style guide the student has selected from the list of department-approved journals and manuals of style on the Thesis Office website (see also Chapter 3 herein). Please note that reference management software, such as EndNote, do not necessarily follow the chosen style guide correctly. It is the students' responsibility to make sure that all references are correct according to their selected style guides.

The list of references is placed at the end of the manuscript in numerical or alphabetical order depending upon the system used. Scientific papers usually do not list any material in the references that has not been referenced in the text. The reference section is generally entitled “REFERENCES,” or less commonly, “LITERATURE CITED.” The references must be placed at the end of each chapter or section in manuscripts composed of a series of articles previously published or accepted for publication. In this case, the subtitle “references” is treated as a first-level subheading.

Writers in the humanities often consult background material that is not directly cited but is included in a bibliography. The compilation of direct and indirect reference material is entitled “SELECTED BIBLIOGRAPHY.”

The first page of the references or selected bibliography begins 2 inches from the top of the page with the main heading typed in all capital letters. A heading space follows. Entries are single spaced within an entry and double spaced between each entry. The reference section is listed as the last item in the table of contents (unless a vita is used).

If a separate part-title page is used with the reference section, the first reference begins 1 inch below the top of the page and no major heading is used on the page with the references (see “Parts Composed of Related Chapters”).

Citation of Web-Accessed Information

Web citations must include name of author, title of publication, and date of publication. These items are formatted according to the style guide selected. In addition, the Uniform Resource Locator (URL) must be provided in the following form:

- protocol or access-mode identifier (i.e., http, https), followed by a colon and two forward slashes (e.g., http://)
- host name, always typed in lower case (e.g., http://www.ieee.org/)
- pathway to the document, including file names, typed exactly as it appears, including upper and lower case and punctuation
- A sample URL is: <http://www.ieee.org/Policy/Submis/Abstract/pabs587.cfm>

URLs may be broken only after a slash or double slash or after a period. Never insert a hyphen, and never break a URL at a hyphen.

Vita

A vita may be included but is not required. If used, it follows the references or selected bibliography and is listed in the table of contents as the last main heading of the manuscript. The author should use a standard short curriculum vita format that includes professionally relevant information such as name, colleges and universities attended, degrees and certificates, professional organizations, positions held, and publications. Do not include personal information such as birthdate, home address, or social security number.

Note that the spelling of the title of this section may be VITA or CURRICULUM VITA. Vitae is incorrect.

Table 2.1 Order of preliminary pages, indicating which are mandatory and where page numbers should be included.

Page	Required	Counted	Visible Page Number
Title Page	Mandatory	Yes	No
Copyright Page	Mandatory	No	No
Statement of Thesis/Dissertation Approval	Mandatory	Yes	No
Abstract	Mandatory	Yes	First page no, additional pages yes
Dedication	Optional	Yes	No
Frontispiece	Optional	Yes	No
Epigraph	Optional	Yes	No
Table of Contents	Mandatory	Yes	First page no, additional pages yes
List of Tables	Mandatory if between 5-25	Yes	First page no, additional pages yes
List of Figures	Mandatory if between 5-25	Yes	First page no, additional pages yes
List of Symbols/List of Abbreviations	Optional	Yes	First page no, additional pages yes
Acknowledgements	Optional	Yes	First page no, additional pages yes
Preface (includes Acknowledgements)	Optional	Yes	First page no, additional pages yes

Note: Page numbers in the preliminary pages appear centered on the bottom of the page in lower case Roman numerals. This differs from page numbers in the text, which appear on the top right of the page and use Arabic numerals.

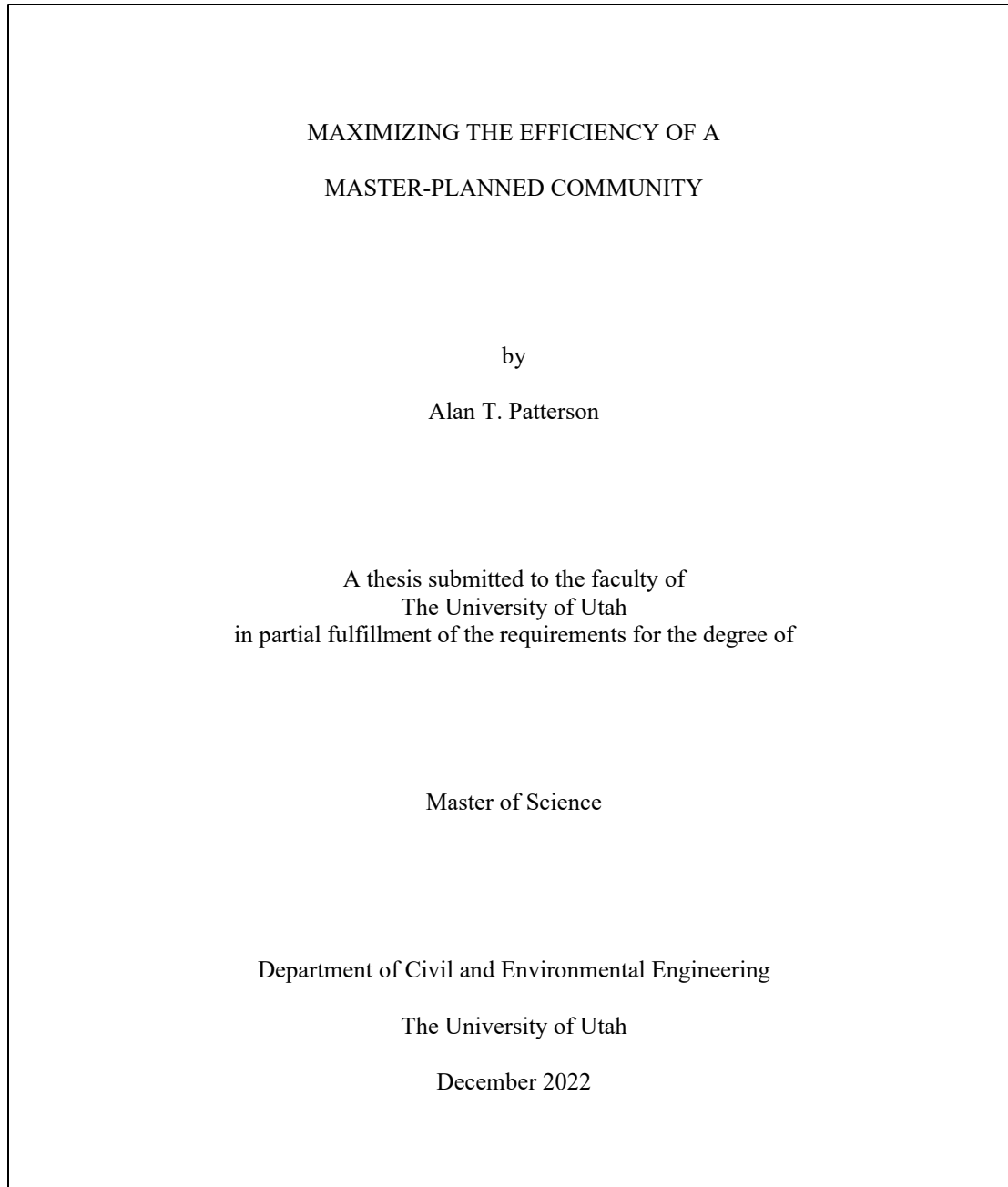


Figure 2.1 Sample title page of a master's thesis with degree and department the same. Students submitting a dissertation would simply change the word thesis to dissertation. Note the spacing of elements on this sample title page and that the entire block of text is centered on the page.

A NEW SET OF ALGORITHMS FOR INCREASING
MEMORY CAPACITY

by

Jennifer Lynn Stanford

A dissertation submitted to the faculty of
The University of Utah
in partial fulfillment of the requirements for the degree of

Doctor of Philosophy

in

Computer Science

School of Computing

The University of Utah

August 2022

Figure 2.2 Sample title page of a doctoral dissertation with a different degree and department. Students submitting a thesis would simply change the word dissertation to thesis. Note the spacing of elements on this sample title page.

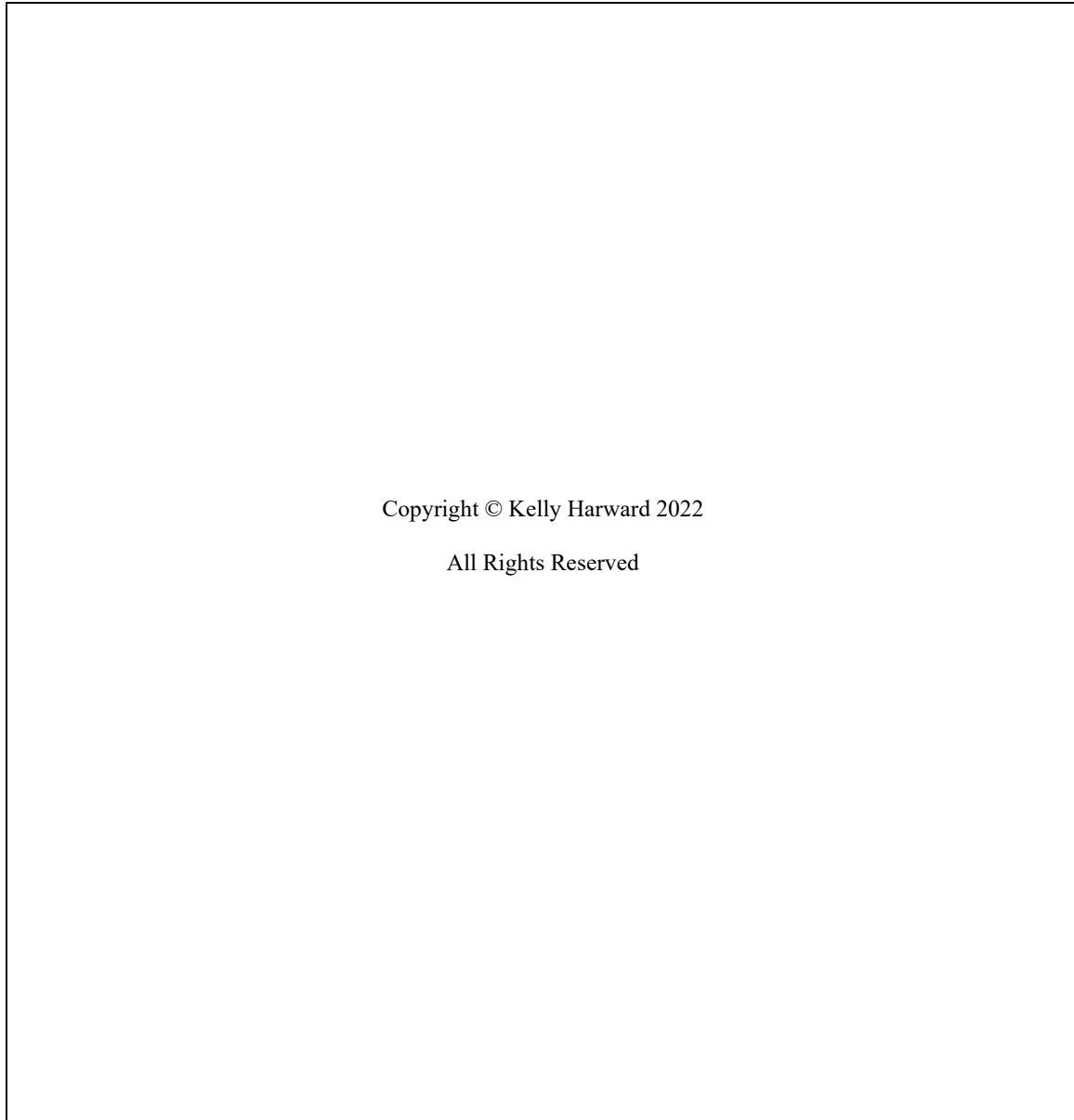


Figure 2.3 Sample of a copyright page. The student's name should match what is listed in CIS, the title page of the thesis/dissertation, and the Statement of Approval. Note the spacing of elements on this sample copyright page.

The University of Utah Graduate School

STATEMENT OF THESIS APPROVAL

The thesis of Kelly Harward
has been approved by the following supervisory committee members:

<u> Melanie Rae Thon </u>	, Chair	<u> 01/07/2014 </u> <small>Date Approved</small>
<u> Lance Olsen </u>	, Member	<u> 01/07/2014 </u> <small>Date Approved</small>
<u> Michael Mejia </u>	, Member	<u> 01/07/2014 </u> <small>Date Approved</small>

and by Vince Pecora , Chair/Dean of
the Department/College/School of English

and by David B. Kieda, Dean of The Graduate School.

Figure 2.4 Sample page of the Statement of Thesis Approval for master's students. The student's name should match what is listed in CIS, the title page of the thesis, and the copyright notice. Note the names are all typed (there are no signatures) and committee members' names do not include Dr., PhD, Professor, or any other such title.

The University of Utah Graduate School

STATEMENT OF DISSERTATION APPROVAL

The dissertation of _____ **Natalie J. Lecy** _____
has been approved by the following supervisory committee members:

_____ Joanna Bettmann Schaefer _____	, Chair	_____ date approved _____ <small>Date Approved</small>
_____ Adam Hanley _____	, Member	_____ date approved _____ <small>Date Approved</small>
_____ Tasha Keyes _____	, Member	_____ date approved _____ <small>Date Approved</small>
_____ Mary Beth Vogel-Ferguson _____	, Member	_____ date approved _____ <small>Date Approved</small>
_____ Paul Rubin _____	, Member	_____ date approved _____ <small>Date Approved</small>

and by _____ **Philip Osteen** _____ , Chair/Dean of
the Department/College/School of _____ **Social Work** _____

and by David B. Kieda, Dean of The Graduate School.

Figure 2.5 Sample page of the Statement of Dissertation Approval for doctoral students. The student's name should match what is listed in CIS, the title page of the dissertation, the Supervisory Committee and Final Reading approval forms. Note the names are all typed (there are no signatures) and committee members' names do not include Dr., PhD, Professor, or any other such title.

TABLE OF CONTENTS	
ABSTRACT	iii
LIST OF FIGURES	vii
NOMENCLATURE	ix
ACKNOWLEDGMENTS	x
Chapters	
1 INTRODUCTION	1
1.1 Colorectal Cancer	3
1.2 <i>Apc</i> Mouse Models	5
1.3 Conclusions	21
1.4 References	23
2 KRAS ACTIVATION FOLLOWING LOSS OF APC IS NECESSARY TO DIRECT β -CATENIN TO THE NUCLEUS	32
2.1 Introduction	32
2.2 Materials and Methods	36
2.3 Results	41
2.4 Discussion	59
2.5 References	70
3 DYSREGULATION OF CtBP1 MEDIATES INTESTINAL CELL FATE	75
3.1 Introduction	76
3.2 Materials and Methods	80
3.3 Results	95
3.4 Discussion	102
3.5 References	105
4 SUMMARY AND PERSPECTIVES	110
APPENDIX: QUANTIFICATION OF CELLS PER HIGH POWERED FIELD	120

Figure 2.6 Sample table of contents using chapters and a local numbering scheme for subheads. Note the spacing and that the word chapter is used only once. The margins have been cropped from this image. Adapted from Phelps, R. (2009). A two-step model of colon adenoma initiation and progressions that requires CtBP1 and KRAS following loss of APC, Doctoral Dissertation, the University of Utah, Salt Lake City.

TABLE OF CONTENTS	
ABSTRACT	iii
LIST OF FIGURES	vi
ACKNOWLEDGMENTS	vii
INTRODUCTION	1
THE INTELLECTUAL ORIGINS OF ISLAMIC FUNDAMENTALISM.....	5
Ibn Taymiyya	6
‘Abd al-Wahhab.....	15
Jamal al-Din al-Afghani and Muhammad ‘Abduh	19
Muhammed ‘Abduh and Rashid Rida.....	27
THE MUSLIM BROTHERHOOD IN EGYPT	34
The Early History of the Brotherhood	36
Militancy and World War II	40
The 1952 Egyptian Revolution	50
The Nasser Years	50
The Sadat Years	58
The Mubarak Years.....	67
THE MUSLIM BROTHERHOOD IN JORDAN	76
The Early History of Jordan	78
Independence and Statehood: The Palestinian Question.....	82
The PLO and Black September.....	87
Liberalization Under King Abdullah.....	101
Rollback of Democratic Liberalization.....	103
CONCLUSION.....	113
BIBLIOGRAPHY	118

Figure 2.7 Sample table of contents using main sections rather than chapters. Note the spacing. The margins have been cropped from this image. Adapted from Wessel, J. (2009). *The Muslim Brotherhood in Egypt and Jordan: A history of modern Islamic fundamentalism*, Master’s Thesis, the University of Utah, Salt Lake City.

TABLE OF CONTENTS	
ABSTRACT	iii
LIST OF FIGURES.....	vii
ACKNOWLEDGMENTS.....	x
I INTRODUCTION	1
Literature review	2
Preliminary work.....	9
II MATERIALS AND METHODS	12
Drug models.....	15
Sample chamber.....	19
Experimental procedure	24
Analysis.....	28
III RESULTS	32
Cell cultures	36
Staining	38
Imaging and quantification.....	43
IV DISCUSSION	57
Significance of findings	60
Limitations and future work	64
Conclusions and relevance to medicine	67
REFERENCES.....	74

Figure 2.8 Sample table of contents using main sections with Roman numerals. Note the spacing. The margins have been cropped from this image.

species, is strongly supported as sister to *S. heterodoxum* var. *novomexicanum* in the ITS only (85% BS, 0.98 PP), *woxy* only (87% BS, 1.0 PP) and combined analyses (89% BS, 1.0 PP), and, along with *S. citrullifolium* var. *knoblichii*, comprises a monophyletic group in the *woxy* only (100% BS, 1.0 PP) and combined analyses (65% BS, 1.0 PP), here termed the Glandulosa clade.

SPECIES- AND INTRASPECIFIC-LEVEL MONOPHYLY—Species-level monophyly was examined in a number of taxa with multiple accessions sequenced in the phylogeny. In the cases of *S. vstratum*, *S. grayi*, *S. johnstonii*, *S. daviesense*, *S. tribulosum*, and *S. tenuipes*, all accessions of the same species formed monophyletic groups with strong support in the combined trees. Furthermore, the multiple accessions sequenced of *S. citrullifolium* var. *citrullifolium* and *S. heterodoxum* var. *schlegelii* each emerged as monophyletic in all combined analyses, but *S. citrullifolium* var. *schlegelii* is paraphyletic in the combined MP strict consensus tree. However, *S. citrullifolium*, *S. heterodoxum*, and *S. grayi* var. *grandiflorum* were not supported as monophyletic, as multiple accessions of these taxa did not group together in the combined analyses.

CONSTRAINT ANALYSES—Constraining all of Whalen's series to be monophyletic resulted in trees significantly different than the most parsimonious tree from the combined dataset (Templeton's test $p = 0.0001$). When constraining sers *Androcera* and *Violacifolium* individually, the trees were also significantly different than the most parsimonious tree from the combined dataset ($p = 0.0455$ and 0.0477 , respectively). Trees constraining all of the yellow-flowered taxa (i.e. species of ser. *Androcera* minus *S. tribulosum*) to monophyly were not significantly different than nonconstrained trees (Templeton's test $p = 0.6698$).

DISCUSSION

Sectional Relationships and Monophyly of Section *Androcera*—Despite the various hypotheses regarding the sister group to sect. *Androcera*, our data support previous molecular studies in finding sect. *Crinium* as sister to sect. *Androcera* (Levin et al. 2006; Weese and Bohs 2007). These groups are morphologically distinctive and this relationship merits further study. *Solanum sisymbriifolium* is sister to a clade composed of sect. *Androcera* and sect. *Crinium* despite the fact that *S. sisymbriifolium* and sect. *Androcera* share highly divided leaves and strongly accrescent calyces, characters not found in sect. *Crinium*. Lester et al. (1999) also found the seeds of sects. *Androcera* and *Cryptocarpum*, to which *S. sisymbriifolium* belongs, to be remarkably similar. We were not able to sample other members of sect. *Cryptocarpum* but further sampling might possibly place this group sister to sect. *Androcera*.

All three data sets strongly support the monophyly of sect. *Androcera* as circumscribed by Whalen (1979a, 1984). This molecular evidence, combined with unique morphological traits found in the leaves, flowers, and fruits, its distinctive flavonoid chemistry, and geographical distribution, leave little doubt that *Solanum* sect. *Androcera* is a monophyletic group.

Character Evolution and Monophyly of Whalen's Series in sect. *Androcera*—Whalen's (1979a) three series within sect. *Androcera* were distinguished by trichome, flower, and seed morphology as well as flavonoid chemistry and geographical distribution (Table 1). Whalen (1979a) circumscribed these

series as natural phyletic groups; however, they were not defined in strict monophyletic terms (see paraphyly of sers *Androcera* and *Violacifolium* in Fig. 15 in Whalen 1979a). It is clear in examining his matrix of morphological characters (Table 6 and Fig. 15 in Whalen 1979a), that many are homoplasious or autapomorphic. Additionally, the assessment of ancestral and derived characters as well as coding of characters are based on the author's interpretations (see secondarily lost characters in Table 5 in Whalen 1979a) and could be differently interpreted by other taxonomists. Given this and the fact that our combined molecular dataset contains 340 parsimony informative characters, it is not surprising that the addition of the 14 characters from Whalen's (1979a) dataset does not change the topology or resolution of the phylogeny (results not shown). The few synapomorphic characters in Whalen's (1979a) character matrix show support for ser. *Pacificum*, the only one of the three series that emerges as a monophyletic group in our molecular trees. Characters unique to this series include white, deeply stellate corollas, radially wrinkled seeds, and a geographical center of distribution on the Pacific slope of the Sierra Madre Occidental on the west coast of Mexico. Apparently these characters arose once in the Pacificum clade, although confirmation of this awaits sampling of the third member of ser. *Pacificum*, *S. leucandrum*.

Neither ser. *Androcera* nor *Violacifolium* is supported as monophyletic in the molecular analyses. These series were paraphyletic in Whalen's (1979a) cladistic analysis and the nonmolecular characters that supported these groups are likely convergent. For instance, ser. *Androcera* was characterized by Whalen (1979a) as having stellate or multangulate cauline hairs and yellow corollas, lacking flavonoid compounds found in the other two series, and a distribution centered in the central Mexican highlands around Mexico City. These characters are found in species of the Rostratum clade (Fig. 2), but also in *S. johnstonii*, which does not form a part of this clade. Conversely, Whalen (1979a) placed *S. tribulosum* into ser. *Androcera* despite its pale blue or white corollas. Support and resolution along the backbone of the tree obtained here is weak or lacking, precluding firm conclusions about character evolution in sect. *Androcera* based on the most parsimonious trees. However, constraining all three series each to be monophyletic as well as constraining the taxa of Whalen's sers *Androcera* and *Violacifolium* individually to be monophyletic resulted in trees significantly different than the most parsimonious trees from the combined dataset. This further indicates that these two series are likely nonmonophyletic and that the characters that Whalen proposed to diagnose them have evolved multiple times. On the other hand, when all yellow-flowered taxa (i.e. species of ser. *Androcera* minus *S. tribulosum*) were constrained to monophyly, the constrained trees were not significantly different than nonconstrained trees. Therefore, the hypothesis of a single origin of yellow corollas within sect. *Androcera* cannot be rejected.

According to Whalen (1979a), nine of the species of sect. *Androcera* are taprooted annual herbs with wide edaphic tolerances. *Solanum johnstonii*, *S. tenuipes*, and *S. tribulosum*, however, are calciphilic herbaceous perennials. Judging from their widely separated positions on the molecular trees, it appears that the latter traits evolved independently in the three species.

Biogeographical Relationships—Based on his interpretation of cladistic relationships in sect. *Androcera*, Whalen

Figure 2.9 Sample of a page from a previously published article inserted as a chapter in the manuscript. Note the page number in the top right corner is consecutive with the document and the subheads, tables, figures in previously published articles will be listed in the table of contents, list of figures, list of tables as required.

Figure 2.10 Sample of the subheading scheme. Note the placement of the main headings, the consistent spacing **after** each main heading and **before** each subheading. Also, note **after** subheads there is only a double space and that when there is no intervening text between subheads they are separated by a double space. **This Figure also serves as an example of how to create a part-title page for a figure that takes up an entire page as well as treatment of figures that continue onto a second page.**

CHAPTER 1

CHAPTER TITLE GOES HERE

This is an example of body text placement when it comes directly after the chapter title. If you start the chapter with a subheading it starts in the same place as this body paragraph.

This Is a First-Level Subheading

This Is a Second-Level Subheading

This is another body paragraph example. It is going to move into a block quote:

Here is how a block quote would look. Note that though this example of a block quote is single-spaced your block quotes may be double spaced so long as the choice is consistent throughout the manuscript. Note that the heading space below the block quote is the same size as all other heading spaces.

This Is a Third-Level Subheading

You may skip levels if you prefer a different appearance scheme, as long as you skip them in order. For instance, you can start with the second-level subheading style but then you have to move to one of the lower subheading levels for your next level. You have to make these same choices for every chapter.

This Is a Fourth-Level Subheading**This Is a Fifth-Level Subheading**

This is a sixth-level subheading in sentence-style capitalization

A Paragraph-Level Subheading. Lower than the rest of the subheadings, you may have a paragraph subheading that is styled this way. The capitalization of this subheading can be headline style or sentence style.

Lower-level paragraph subheadings. In the rare case that you need another paragraph subheading level below your first paragraph subheading level, it looks like this. It also may also have headline-style or sentence-style capitalization.

Subheading Consistency

A subheading level must appear in the same form whenever it is used, and subheadings must always be used in descending order. Students should first determine the maximum number of subheadings required to establish the pattern of subheadings. Chapters or main sections do not need to use every level of subheading possible or even every level of subheading included in the manuscript as a whole. Lower levels of subheading may be omitted if they are not necessary for that chapter or main section.

Figure 2.10 continued

CHAPTER 3

DOCUMENTATION STYLE AND WRITING STYLE

Documentation Style

The textual style and documentation of the thesis or dissertation are the student's responsibility and must receive the approval of the student's supervisory committee, subject to the regulations of the Graduate Council. A comprehensive, alphabetical list of department-approved journals appears on the Thesis Office website. Following this list is a table of the most commonly used manuals of style, which have been approved by the dean of The Graduate School. Departmental additions to or deletions from this list must be proposed to the Thesis Office manager by the department chair or the director of graduate studies. Changes must be approved by the Thesis Office manager in consultation with the dean of The Graduate School.

The student should pattern citations, references, and other stylistic aspects of the thesis or dissertation after the latest edition of the chosen style manual or recent articles and author instructions from the chosen journal. This handbook, however, should be followed for margin requirements, spacing of text, quotation placement, and presentation of figures and tables. This handbook should be followed in case of any discrepancies.

If the student follows the style of a journal selected from the department-approved journals and manuals of style list and the Thesis Office does not already have materials

from this journal, the student may be asked to supply a recent article and/or author guide containing examples of a figure, a table, and a reference list.

Writing Style

Because the student writing a thesis or dissertation is presenting the results of research primarily for other scholars within the academic community, the style should be formal rather than colloquial. The tone of the thesis or dissertation should be serious; in general, a conversational writing style is not appropriate. Despite a lack of particular knowledge about a field, an intelligent reader of a thesis or dissertation should be able to understand terminology and the discussion of research. Jargon must be avoided because it obscures rather than clarifies the topic.

For hyphenation and spelling, the current editions of Webster's New Collegiate Dictionary and Webster's Third New International Dictionary are standard sources. Punctuation, capitalization, and the rules of grammar can be found in any basic grammar book. For matters of English usage, the best source is R.W. Burchfield's Fowler's Modern English Usage (2004).

CHAPTER 4

PREPARATION AND SUBMISSION OF THE MANUSCRIPT

Print Quality

A professional font in a size that is clear and easy to read must be used throughout the manuscript with the exception of computer programming languages, text within figures and tables, and previously published materials included within the appendices. Table 4.1 lists example fonts and sizes. Characters must be clear and sharp. Smudged, indistinct, or blurred letters are not acceptable. The official Word template provided by the Thesis Office uses Times New Roman 12 pt. If you want to use a different font you will need to make sure to change the font everywhere in the manuscript, including page numbers.

The right margin of the manuscript may be justified if the spacing between words is not unusually large, if words are properly hyphenated, and if the right margin is justified on every full line of text, including footnotes, references, figure captions, and table titles.

No prepackaged computer program completely adheres to the University of Utah Graduate School thesis guidelines. The Knowledge Commons in the Marriott Library is an excellent resource for computer questions (<http://www.lib.utah.edu/services/knowledge-commons/> 801-581-8558).

Color should be used only where necessary. Data within tables and figures may not be distinguished by color only, so as to make the information within accessible to people who have difficulty distinguishing colors.

Margins

All pages of the final manuscript must be within the following limits:

- left and right margins: 1 1/4 inches
- top and bottom margins: 1 inch
- main headings pages (title in ALL CAPS) top margin: 2 inches

Pages of text must be of consistent length, though the space above the bottom margin may vary depending upon a number of factors.

- **Only tables or figures appear on the page:** Pages with tables and figures will vary in length depending upon the amount of data displayed in the table or the size of the figure. Tables and figures should be placed so they appear balanced on the page and with a space larger than a double space between multiple figures or tables placed upon the same page.
- **Display equations:** Pages where a display equation ends the page may have a larger than normal bottom margin if there is not enough space for the next equation or next line of text above the bottom margin.
- **To avoid leaving a subheading at the bottom of a page:** Because freestanding subheadings must be followed by at least two lines of text, the bottom margin may vary slightly on pages with freestanding subheadings.

- **Footnotes:** Creating enough space for footnotes on a page may cause some variability in space at the bottom of a page.
- **Widow/orphan control:** Some word processing programs can also create variability in the space at the bottom of a page in order to create a widow or an orphan. However, occurrences of widows and orphans are acceptable within the manuscript according to the student's preference.
- **The end of the chapter:** Large white space is permitted at the end of the chapter. However, at least two lines of text must be placed on the last page of any section/chapter of the manuscript. If a chapter ends with only one line of text on a page, a line from the preceding page must be moved to the last page.

Accessibility in the PDF

Manuscripts uploaded to ProQuest for publication should be accessible to screen readers. Care should be used to preserve the formatting of headings, figure captions, and table titles within the converted PDF so that they can be parsed by screen-reading software and utilities. Make certain that you use accessibility tools while preparing the document and that the conversion tool you are using maintains the accessibility features.

Electronic Version Submitted for Thesis Release

After all corrections marked on the manuscript have been made and the Thesis Office issues a Format Approval, the student uploads the digital version according to ProQuest instructions. After the student receives notification the electronic thesis or

dissertation has been approved by the ProQuest administrator, the student may verify graduation status through the Campus Information System (CIS).

Distribution of Theses and Dissertations

Theses and dissertations are available in electronic and microform formats through traditional publishing with ProQuest. With the student's permission, they are also available openly through USpace, the University of Utah's institutional repository. Items in USpace are indexed by Google. Each document in USpace receives a unique URL for easy linking and sharing.

An abstract of each thesis or dissertation is filed according to department in University of Utah Abstracts of Theses and Dissertations, available in Special Collections in the Marriott Library.

Fees

There is no fee for traditional electronic publishing through ProQuest. The fee for registration of a claim for copyright through ProQuest is \$55.00. Open access publishing for University of Utah theses and dissertations is provided at no charge through USpace.

Table 4.1 Recommended fonts and print sizes. Each font is in the style indicated.

Font	Size
Arial	10 pt. or 11 pt.
Calibri	12 pt.
Century	11 pt. or 12 pt.
Garamond	12 pt.
Georgia	11 pt.
Microsoft Sans Serif	10 pt. or 11 pt.
Tahoma	10 pt.
Times New Roman	12 pt.
Trebuchet MS	10 pt. or 11 pt.
Verdana	10 pt.

APPENDIX A

ACCESSIBILITY

Alternate Text

It is required that you add alternate text for each figure, table, or any object that is not text in your document (e.g., schemes, examples, etc.). Word processing programs have a utility for adding alternate text to tables and figures. The alternate text should function as an explanation of what a person without impeded vision can observe that a person with impaired or absent vision cannot. For figures, do not repeat the information in the caption. Instead, provide cursory details about the very appearance of the image itself. See Figure A.1 for an example of appropriate alt text for a figure.

For tables, do not relay the exact contents in each cell. Screen-reading software is capable of reading the contents of most tables; however, this amount of information can be difficult to process without visual supplement. Instead, provide an overview of the table's purpose to your readers. The alternate text for a table goes beyond the information provided in the title or any supplementing text, outlining the goal for including it. In all cases, also avoid repeating any descriptors located within the body of the text. See Figure A.2 for an example of suitable alternate text for a table.

Color Contrast

When creating visual aids, take into account how colors appear next to other colors. Take care to use the best quality images possible for all content. When using images that are not user-created, there will be scenarios in which the color/contrast between color cannot be manually manipulated. As such, requirements for adequate color contrast applies mostly to charts and graphs as well as images with embedded text. There are two methods for analyzing color contrast for acceptability.

The first method involves changing the image to black and white/grayscale. When looking at the grayscale version of an image, each shade of gray should be easily perceptible from one another. Shades lacking in contrast will need to be changed in the color version of the image.

The second method is to use color contrast analyzing software such as Monsido's [Color Contrast Checker](#), [WAVE](#), or [Colour Contrast Analyser](#). This will provide a numerical value for the contrast determined between each color. Comparing the results to that program's listed acceptable contrast levels determines if changes need to be made to the colors used in the image.

Note that both of these methods are inexact. It may be beneficial to use both methods, as neither one is capable of taking into account the full range of possible color combinations. Figures A.3 – A.6 illustrate accessible and inaccessible color contrast for figures.

Accessibility Issues in Table Construction

Merging or splitting cells confuses screen reading software. Similarly, nesting a table within another table is not considered accessible. If necessary, create additional tables to separate out the information.

Rows or columns should not be left blank. Delete any extra rows or columns.



Figure 1. Scene from *Rear Window*. Raymond Burr and Irene Winston, scene still. Dir. Alfred Hitchcock. Paramount Pictures, 1954.

Suitable alternate text: L.B. Jefferies' view of the Thorwald apartment from his window. Lars can be seen from the larger living room window standing while his wife Anna is seen through the bedroom window to the left sitting up in bed. Both windows are open with the curtains and the blinds drawn. The two open windows are upon a brick building with signs of weathering indicative of the New York City setting. A drainpipe divides the space between the two, figuratively and literally placing a line between their respective spaces.

Figure A.1 Example of appropriate alternate text for a figure.

Table 1
Wood the Woodchucks Chucked in Experiment 1

Woodchuck	Wood chucked (in kg)	%
1	423.9	94.2
2	373.0	82.9
4	347.0	77.1
6	411.3	91.4

Note. Each virtual woodchuck received a 450-kg woodpile. Woodchucks 3 and 5 were removed from the analysis because they would not chuck wood.

Suitable alternate text: Table 1 details the amount of wood each of the woodchucks in the experiment chucked, ranging from 347.0 kg to 423.9 kg. It also translates the production to a numerical percentage, ranging from 77.1 to 94.2.

Figure A.2 Example of alternate text for a table.

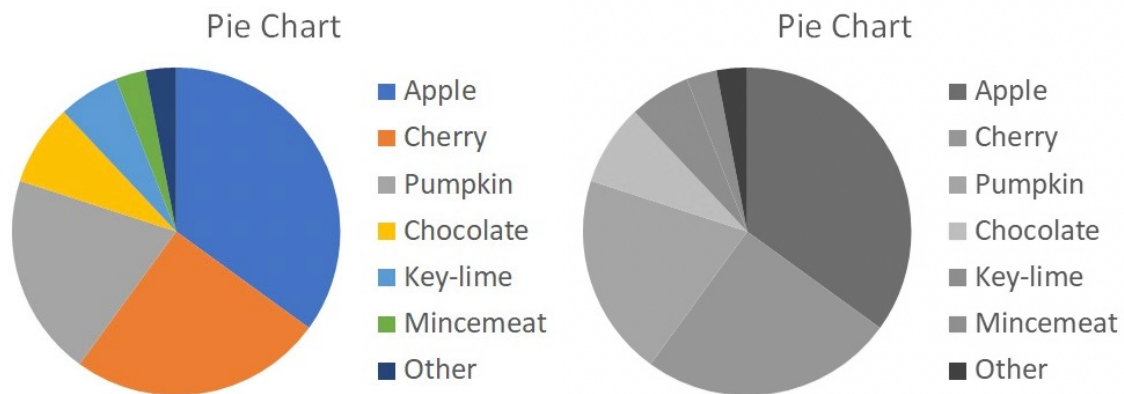


Figure A.3 Unacceptable contrast using the black & white/grayscale method.

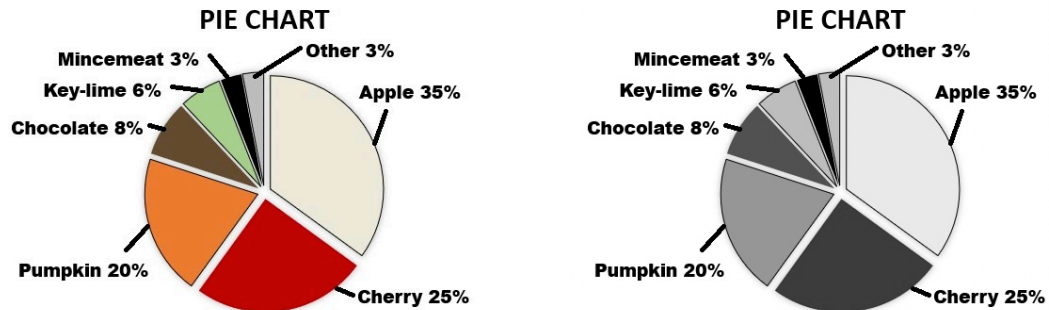


Figure A.4 The same information improved by using colors with more contrast, using borders between segments, and labeling each segment separately.

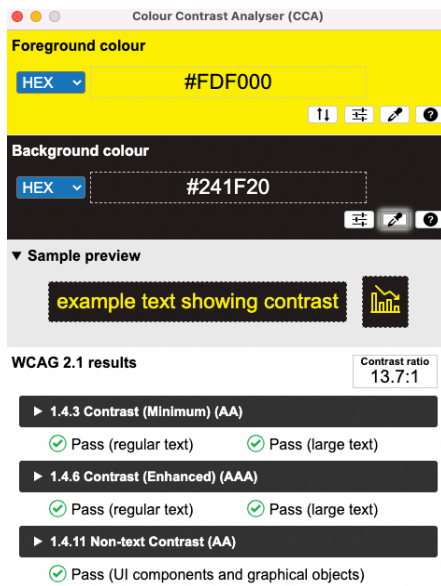


Figure A.5 Acceptable contrast displayed using Colour Contrast Analyser.

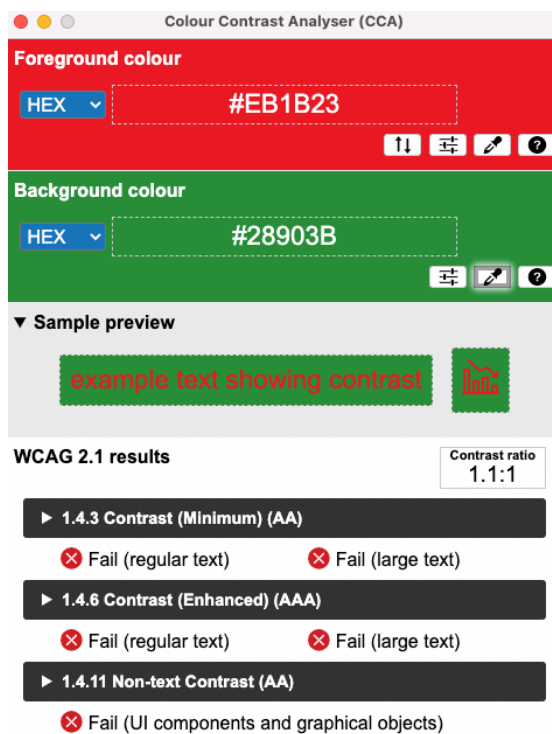


Figure A.6 Unacceptable contrast displayed using Colour Contrast Analyser.

APPENDIX B

COMPARISON OF SPACING REQUIREMENTS

Heading Space	Double Space	Single Space
<ul style="list-style-type: none"> • after main headings • before all freestanding subheadings • in the case where a figure or table has been placed on a page with body text, a heading space should separate the figure or table from the text on the rest of the page 	<ul style="list-style-type: none"> • between lines of text • after all freestanding subheadings • before paragraph subheadings • before and after single-spaced block quotes • between lines of subheadings when subheadings extend to more than one line • between entries in lists of tables and figures and in references • before and after main heading entries in the table of contents 	<ul style="list-style-type: none"> • within entries in lists of figures and tables • within entries in reference lists • between footnote or endnote entries (double spaces may be used if there are superscript or subscript numbers in the notes) • between subheads in table of contents • between lines in figure captions and table titles (double spaces may be used if there are super- or subscript numbers in caption or title)

APPENDIX C

USING PUBLISHED ARTICLES AS
DISSERTATION CHAPTERS

Previously Published, Accepted, and Submitted

Articles as Chapters of a Dissertation

In the case where students use a previously published, submitted, or accepted article as one or more chapters of their dissertation, the following rules apply.

Each previously published reprint and accepted or submitted article (or chapter as an article prepared for publication) is treated as a separate chapter. The dissertation must have a general abstract that covers all components. A general introduction and general conclusion are recommended. If a dissertation incorporating previously published articles as chapters is selected, references must be placed at the end of each chapter—not at the end of the manuscript. Each set of references may follow a different style guide, depending on the journal in which the chapter is published or will be published. Table titles and figure captions must be locally numbered.

Copyright issues frequently arise with previously published material. Students need to obtain permission to duplicate copyrighted material (and, possibly, multiple author releases). A full credit line (stating “Reprinted with permission from” followed by the source) must be placed on the part-title page preceding a reprint or as a footnote on the first page of a chapter that contains a previously published article that has been reformatted to the University of Utah’s format requirements outlined herein.

For all previously published chapters, permission to reuse or reprint or adapt must be provided by the student to the Thesis Office. Releases from coauthors must also be provided, even if the coauthors are members of the student’s committee or even if the student is the leading author.

Reprints

Reprints (published article pages inserted as images on the pages of the manuscript) are acceptable. However, some departments require that previously published articles be reformatted to match all other chapters. Check with your department and committee to see if they accept the use of reprints.

Reprints are preceded by a part-title page. The chapter title must match exactly the title of the journal article. The part-title page must include the attribution required by the publisher. The reprints are accepted as they are except that they must fit within the thesis margins and manuscript pages must be numbered consecutively with the rest of the text. All other chapters (whether accepted, submitted, or in preparation) must fit University of Utah guidelines, as specified in the handbook (margins, subheads, figure and table placement, etc.).

In the List of Figures and List of Tables, figures and tables from reprints are treated as if they are numbered with respect to the rest of the text. A local numbering scheme must be used. For example, in the List of Figures, the first figure in Chapter 5, which is a reprint, is listed as 5.1.

The requirement that all print be at least 2 mm does not apply to reprints. The text may be smaller than that as long as the words, figures, and tables are of sufficient resolution to remain crisp.

Students using reprints should check the accessibility of the document and make adjustments to the document to make sure that it is accessible to screen readers.

As for any other thesis or dissertation, students are urged to submit their manuscripts prior to the defense for a preliminary review.

APPENDIX D

ALTERNATE FIGURE / TABLE PLACEMENT

Tables and figures may be embedded within their chapters according to the following placement rules.

The easiest method of dealing with tables or figures embedded within the chapters is to place them on a separate page without text or, if the textual references for the figures occur together on the same page, to group two or more smaller items together on a page without text. If two or more items are placed on a page, they must be separated by a space larger than a double space. The page then appears immediately after the one on which the figures or tables have been mentioned in the text.

Tables or figures may appear on a page with text (see Figure C.1) if (a) they are first referenced in the text; (b) they begin or end the page; and (c) at least six consecutive lines of text accompany the table or figure. A figure or table is never placed in the middle of a page between two paragraphs. In addition, when a table or figure is placed on a page with text, it must be separated from the text by a heading space. The figure or table must be placed as close to the first mention as possible, making sure that it either begins or ends a page or is placed on a page without any body text immediately after the page where it was mentioned. If there is space at the bottom of the page where the figure or tables is mentioned, then place it there. If there is not room on that page, the table or figure appears at the top of the next page. A table or figure requiring more than one page may not be placed on a page with text. As with figures and tables placed at the ends of the chapters, when a table or figure continues to a second page, the number and the word “continued” are placed above the table or below the figure. On continued tables, column heads should also be repeated.

If these rules are not followed on the first submitted draft, your editor will require you to place tables and figures at the ends of their chapters/main sections.

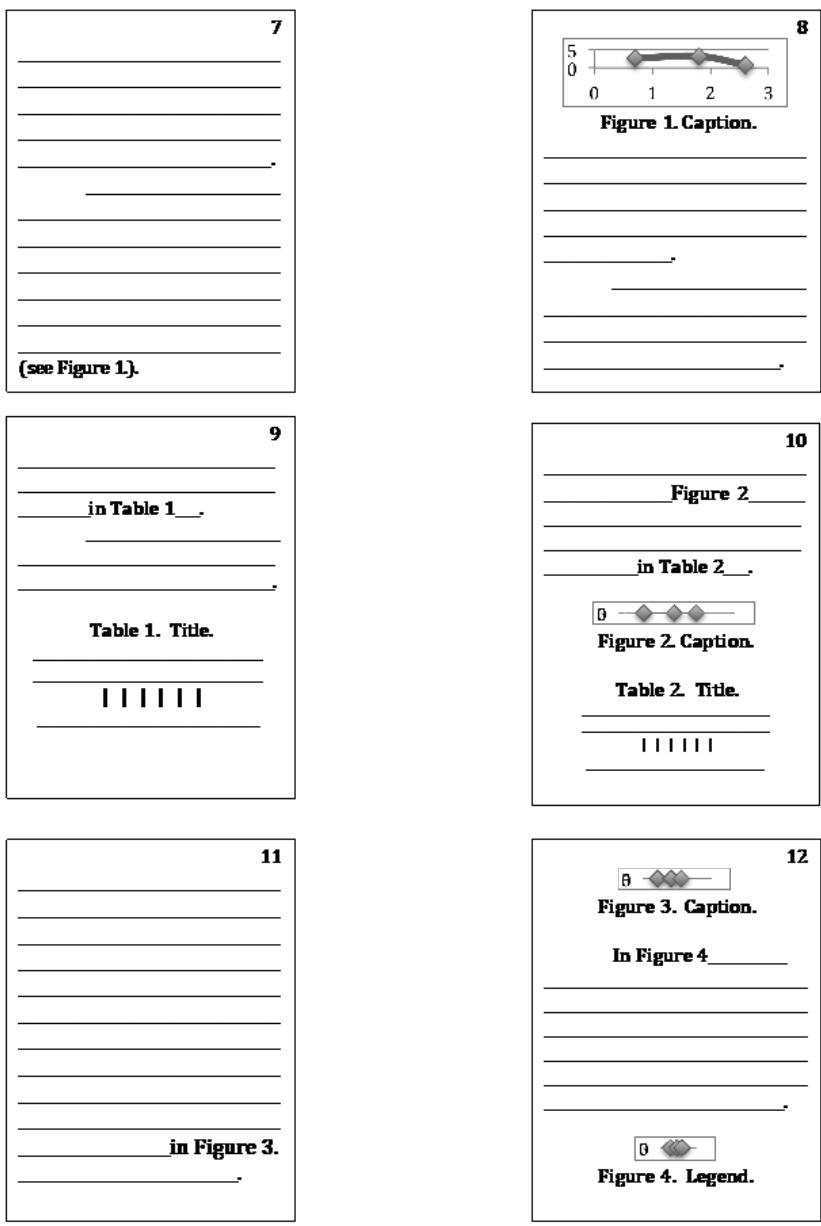


Figure D.1 Illustration of table/figure placement. Lines represent lines of text/sentences; note the page numbers in the top right corner. Tables/figures start or end pages as soon as possible after being mentioned (they are not sandwiched between text) and there are at least six of lines on the text with each table/figure.