

**DELAWARE STATE UNIVERSITY  
SCHOOL OF GRADUATE STUDIES AND RESEARCH**

**GUIDE FOR THE PREPARATION OF THESES AND DISSERTATION  
(Revised March 2017)**

**INTRODUCTION**

The detailed instructions in this handbook are intended to lend a uniform appearance to theses and dissertation projects at Delaware State University and must be followed by all disciplines. While it is recognized that documents from divergent areas of study will exhibit differences, certain requirements of format are necessary.

Students should begin preparing to write the Thesis/Dissertation early in their graduate program. It is the responsibility of the student to acquire the necessary skills to produce the Thesis/Dissertation documents that fall into compliance with the physical format requirements of the School of Graduate Studies. It is critical that the Thesis/Dissertation be prepared correctly in order to convert easily to a Portable Document Format (PDF).

Without exception, no thesis or dissertation is accepted by the School of Graduate Studies until it is in compliance with formatting requirements and the binding/archiving fee has been arranged.

**THESIS/DISSERTATION POLICIES AND PROCEDURES**

Each student who elects or is required to complete a Thesis or Dissertation in partial fulfillment of their graduate degree, must assemble and receive approval of a committee one semester prior to beginning work on the proposed project. More stringent program requirements should be adhered but minimally, the research project undertaken in partial fulfillment of the degree should begin no later than the end of two (2) semesters of full-time enrollment for master's students and four (4) semesters of full-time enrollment for doctoral students. The responsibility of this committee is to guide and support the research of the student to completion. As such, the selection of committee members is one of the most important decisions a student will make during their graduate matriculation and therefore should only be made after much deliberation with the primary advisor. Some programs may formalize this process by requiring students to perform laboratory rotations with Departmental faculty prior to selection of a project, development and defense of a research prospectus for a grade, or approval of a research proposal as a candidacy requirement. Whatever the process, once the research project and primary research advisor (henceforth referred to as the Committee Chairperson) are determined, committee members should be selected based upon the academic expertise of the faculty member and the project focus. Additionally, committee members should also be willing to participate fully in the process. Once selected, the committee is subject to the review and approval of the Department Chairperson or designee. This information is captured on the Delaware State University Appointment of an Advisory Committee for the Master's/Doctoral Degree form and should be submitted to the School of Graduate Studies as a part of the student's file adhering to the timelines as described. This and all graduate matriculation documents may be found at <https://sgsr.desu.edu>.

**Minimum Committee Requirements:**

It is not the intention of the School of Graduate Studies to supersede departmental or college committee requirements but rather provide guidelines for minimum committee composition. In cases where these requirements are more stringent, the School will defer but at a minimum all committees will meet the following standards. A thesis committee (MA or MS) shall consist of four (4) members at the rank of Assistant Professor or above, one of which is external to the department in which the work was completed. A dissertation (Ed.D. or Ph.D.) committee shall consist of five (5) members at the rank of Assistant Professor or above; one of which shall be external to the University. A doctoral student completing a case/project study may have (4) members at the rank of assistant professor or above; one of which shall be external to the University.

**Thesis/Dissertation Defense**

The oral defense, also known as the oral examination, shall be scheduled in adherence with the University's calendar (approximately 8 weeks before the end of the semester) and as noted at the School of Graduate Studies and Research's web-site: [www.sgsr.desu.edu](http://www.sgsr.desu.edu). The student is **required** to submit the final document to the committee for review at least one week (7 days) prior to the scheduled defense. The chair of the committee, however, should schedule periodic committee meetings to gauge the student's progress. It is also strongly recommended that the committee **require** periodic submissions of the document as it is developed and provide timely feedback. Thus, allowing the student adequate time to defend his/her research, make corrections following the defense, receive feedback and approval from committee members and the Dean of Graduate Studies and Research, as well as submission of the final document for binding; **all of which are graduation requirements.**

**Registration for Thesis/Dissertation Research Credit**

While the style manual selected for the thesis or dissertation is designated by the Department or College in which the program resides, page layouts and margin requirements as described by the School of Graduate Studies must be adhered to. Students must register for Thesis/Dissertation research credit while conducting the required research, and when ready to devote focused time to the writing **and completion** of their research document. In cases where programs have segmented the development of the thesis or dissertation across several courses, the student should follow this protocol. It is strongly recommended that the committee chair develop a timeline in consultation with the student and committee members in order to assist the student in meeting the required milestones for a successful outcome. Students must remain registered for Thesis/Dissertation sustaining credit while "active" work on their research documents continues or until the Thesis/Dissertation is approved by the Advisory Committee and School of Graduate Studies. Any student utilizing university resources while working on their Thesis/Dissertation including faculty assistance or university facilities are required to enroll for the Thesis/Dissertation course. A lapse of two or more semesters of continuous enrollment (not including summer) will require reapplication to the School of Graduate Studies and Research.

**Thesis/Dissertation Grades**

A grade of Q is submitted for the student while a thesis or dissertation research is in progress and proceeding satisfactorily. If the thesis or dissertation is not proceeding satisfactorily, a U grade

is submitted. If a U grade is submitted, the committee should monitor the student's progress very closely. If a second U grade is received, the committee should meet with the student regarding progress and submit a memorandum to the Graduate School summarizing the outcomes of the meeting:

- (1) Date and time the committee convened?
- (2) Can the project be revised or changed in scope?
- (3) Was there a recommendation to change committee members?
- (4) Was there a recommendation to change programs (MS to MA, Ph.D. to MS, thesis to non-thesis)?
- (5) Was the student dismissed from the program due to lack of progress?
- (6) Was the decision of the committee unanimous?

### **Binding Process and Specifications**

Upon completion of the oral defense, the Committee Chair should forward the defense outcomes to the School of Graduate Studies by the posted deadline. Additionally, the outcomes should precede submission of the final Thesis/Dissertation for approval. The final Thesis/Dissertation should be submitted to the School of Graduate Studies and Research following approval of the Advisory Committee by the posted deadline. This document should include all changes and/or updates resulting from the oral examination along with the appropriate approvals on the Thesis/Dissertation Approval Page. These corrections should be given to the student in writing preferably at the defense but no later than 5 business days following the defense. The finished document must be submitted on-line to ProQuest at [www. Etdadmin.com/desu](http://www.Etdadmin.com/desu). Prior to submission, all students will be required to view the ProQuest Submission Tutorial. The distribution of bound copies will be as follows at the expense of the student:

- One bound original (8.5' x 11.0") to the University Library;
- Personal copy(ies) at your discretion

The committee chair will submit the appropriate letter grade (A, B, C, D, F) following approval of the final document by the Dean, School of Graduate Studies and Research and submission to ProQuest. This grade will replace (the maximum allowed) previously received Thesis/Dissertation Q grades for the degree.

Copies of the Thesis/Dissertation must be reviewed according to the regulations outlined by the School of Graduate Studies. The Thesis/Dissertation binding process is required and will be provided by ProQuest after you have completed the following steps:

1. All formatting corrections have been made and approved by the Assistant Dean of the School of Graduate Studies and Research.
2. All forms and documents including the Defense Outcomes form and Signature Approval pages has been submitted and signed by the Dean, School of Graduate Studies and Research.
3. The required number of bound copies of your Thesis/Dissertation has been paid on-line via ProQuest.

## **USE OF COPYRIGHTED MATERIAL**

The law permits the limited use of extracts and quotations for purposes of illustration and criticism. This provision covers most quotations in theses and dissertations. In most instances, it is not necessary for candidates preparing Theses/Dissertations to obtain permission to quote from professional journals in their fields or from copyrighted books.

Copyrighted items, such as photographic copies of pictures and charts, tests, forms, and questionnaires, no matter how short, should never be reproduced without permission.

Graduate students are advised to receive permission, from the author or publisher, to quote any extensive information from copyrighted materials. In most cases, the author or publisher is willing to grant permission with the condition that acknowledgments are included in the document. If you choose to copyright your Thesis/Dissertation, copies of the written letters must accompany the copyright registration.

Students should consult with their Thesis/Dissertation committee chair and members concerning the desirability and the usefulness of copyrighting the document.

## **REPRODUCTION**

The Thesis/Dissertation may be duplicated or reproduced by photocopying, printing additional copies, or a comparable process. In all cases, the printing must be of high quality – completely free of smudges, gray cast, or any extraneous marks. It is recommended that a laser printer be used.

## **STYLE**

Style, footnotes, citations, and bibliographical form of the Thesis/Dissertation should conform to the conventions prescribed by a standard style manual appropriate to the student's major field. In some cases, the style employed in major research publications may be appropriate for use in a Thesis/Dissertation. Footnotes in the Thesis/Dissertation should be placed in the document according to the respective style manual.

Note: The student must select the latest edition of the style manual approved by his/her department, and must consistently conform to the instructions of that manual. However, in cases of conflict and when no specific guideline has been selected, this Thesis/Dissertation Handbook takes precedence. A word of caution-never use another Thesis/Dissertation as a model. Examples taken from another Thesis/Dissertation may be out of context, out of date, or incorrect. The existence of a particular style or usage in a previously approved Thesis/Dissertation does not establish a precedent for its continuation.

## FORMAT REQUIREMENTS

### **Typeface**

A Times New Roman, 12 point black font is the preferred type. Another font may be substituted if specified in the guidelines of the respective program. Word processing quality must be consistent throughout the document; nonstandard fonts are unacceptable. Features such as boldface, underline, and italics that improve the readability are acceptable; however, a quality printer must be used in black print, but may also include color print where appropriate. The manuscript must be neat and easily readable, with the same form used throughout. A student in doubt regarding acceptable fonts or prints should consult with the Graduate Student Support Specialist. The manuscript should be proofread, and corrected errors should not be detectable.

The following common errors must be avoided:

- Sentences ending a paragraph should not end as a partial line at the top of the next page.
- All chapters, sections, subheads, and table headings of more than one line should be single-spaced.
- All large material requiring the use of a landscape page orientation should face to the right.
- A period or a comma is placed inside quotation marks; colons and semicolons are placed outside quotation marks.
- If two words are omitted from a quotation, three spaced periods (called an ellipsis) are inserted at the beginning, middle, or end of the sentence to reflect the omission.
- Table titles should not be restated on continuous pages.
- All references cited in the text must be listed in the References section.

### **Margins**

The entire document should have uniform margins of 1 inch around all four sides of the paper.

### **Spacing**

The body of the thesis or dissertation must be double-spaced using only one side of the sheet. Long quotations, typed as block quotes should be single-spaced with triple space before and after. Tables and figures, captions as well as descriptions, footnotes, references, and bibliographic information may use single spacing.

The chapter title on the first page of each chapter also has specific spacing requirements. There shall be a double space between the chapter, the section title, and the text.

Footnotes, if any, shall be numbered consecutively throughout each chapter, indented for the first line, single spaced and separated from the text by a solid line of 18 spaces. A double space shall be left between footnotes.

### **Pagination**

The pages in the Preliminary material must be numbered consecutively with lower-case Roman numerals, centered at the bottom 1 inch margin. The title page has no page number typed on it, but it is understood to be page "i." If a copyright page is included, it is not counted in the numbering.

Arabic numbers (1, 2, 3) should be used for the remainder of the paper, including the reference materials. These numbers shall begin with page one of the text, which bears the number centered at the bottom of the page, with succeeding page numbers at the 1” centered at the bottom of the page. All pages are numbered in sequence, including the first pages of chapter, full-page tables or figures, and appendices. All Arabic numbers should be placed consistently throughout the document.

### **Paragraphs**

Each paragraph should be indented. A new paragraph should not begin at the bottom of the page unless there is adequate space for at least two lines.

## **ORGANIZATION OF THE TEXT**

In most cases, a Thesis/Dissertation consists of four major parts – abstract, preliminary materials, text, and the references/bibliography. Some documents may also include appendices. The following is a list of all the major and minor parts, in their usual order of placement.

### **Sequence of Parts of the Thesis or Dissertation**

The parts of the Thesis/Dissertation or project must be arranged in the following sequence:

- Front Flyleaf (blank page)
- Thesis/Dissertation Committee Approval Sheet
- Title page
- Copyright Page (if used)
- Dedication Page (optional)
- Acknowledgement Page (optional)
- Preface (if discipline requires it)
- Abstract (Required)
- Table of Contents (Required)
- List of Tables (recommended if tables are present)
- List of Figures or Illustrations
- List of Abbreviations (if used)
- Text (main body of Thesis/Dissertation beginning with introduction as first chapter)
- References
- Appendices
- Glossary (if used)
- Index (optional)
- Back Flyleaf (blank page)

**\*\*Please draw your attention to the examples provided at the back of this guide book\*\***

The parts to be included in any thesis or dissertation should be determined by mutual agreement between the student and his/her committee. Each part of the document is described below in detail.

**Front Flyleaf**

This a blank page required at the front of the thesis or dissertation.

**Thesis/Dissertation Approval Page**

A copy of “Thesis/Dissertation Approval” page must be fully completed with all signatures before submission to the Graduate School Dean. This sheet is filed immediately after the front flyleaf page in the thesis/dissertation.

**Title Page**

The title page should follow exactly the spacing and use of capitalization shown in the sample at the end of the guide. The top margin is 1 inch and the information is centered. The title can be typed in all capitals or the first letter of each word can be capitalized (with the exception of articles). If the title is more than one line in length, it is arranged in an inverted pyramid. The date on the title page should be the month and year the degree is to be granted. The name of the degree sought, and the major department or field of study, is included here. (See Sample at the end of Guide) The title page has no preliminary page number typed on it, but it is counted as preliminary page “i.” Following the date type all committee members whose names will appear on the top portion of the signed approval page (left justified). Begin the name with the title of the person as Dr. James Doe, followed by role on your committee (Committee Chairperson, Committee Co-Chairperson (if applicable), Committee Member, and External Committee Member), Department, and University. The approval page must also be submitted to the Graduate School with wet signatures for the final approval of the Graduate School Dean.

**Copyright Page (if used)**

If students elect to have the Thesis/Dissertation copyrighted, please review the ProQuest website at [www.Etdadmin.com/desu](http://www.Etdadmin.com/desu) for details with this process. For more information about copyright, visit the U.S. Copyright Office via the Library of Congress website at [www.copyright.gov](http://www.copyright.gov). Keep in mind that if you choose to copyright, you must include a copyright page in your document. The copyright page appears on the verso of the title page and legally protects the property of the author’s thesis or dissertation. There is an additional charge for copyrighting. If a copyright page is used, it is not counted in the numbering.

**Dedication (Optional)**

A dedication gives special tribute to a specific person(s). There is no heading on this page. Most dedications are short, beginning with the word, “To...” The dedication is typed alone on the page, usually centered. This page should have a 1 inch top margin, or the dedication may be typed in the middle of the page (top to bottom). The text of the dedication is double-spaced. The preliminary page number should be centered at the 1 inch bottom margin.

**Acknowledgments (Optional)**

When included, acknowledgments should be brief, simple and free of sentimentality or trivia. It is customary to recognize the assistance of the advisor and/or committee chair, all other members of the committee, and only those organizations and/or persons who actually added to the

research. If financial support was provided to make the study possible, credit for such assistance should be given.

The heading ACKNOWLEDGMENTS is typed in the center at the 1 inch top margin. The text is double spaced with the appropriate preliminary page number centered at the bottom margin.

### **Preface (Optional)**

A preface is a statement that either explains the author's reasons for pursuing this subject matter or provides a personal comment about the subject that would not otherwise be included in the document. The heading PREFACE is centered at the 1 inch top margin. The text is double-spaced with the appropriate preliminary page number(s) centered 1" at the bottom margin.

### **Abstract**

An abstract must be included with each thesis and dissertation submitted to the School of Graduate Studies. The abstract should be a brief summary of the paper, stating only the problem, procedures used, and the most significant result and conclusions. Explanations and opinions are omitted. The abstract must be approved by the student's committee chair.

The abstract margins are consistent with the text of the paper: 1 inch top; 1 inch left; and, 1 inch right and bottom.

Please note that the name and title used on the abstract should be the same as used on the title page. The faculty advisor or committee chairperson should follow the title and student name. (See sample at end of Guide)

The text of the abstract is typed double-spaced in paragraph form with the first paragraph of the text beginning one triple-space beneath the advisor/committee chairperson. The first word of each paragraph should be indented, consistent with the rest of the paper.

### **Table of Contents**

The table of contents is placed immediately after the acknowledgments or preface and contains a listing of all the items that follow. The table of contents lists only the items that follow it. *It does not include the pages that precede it.*

The heading TABLE OF CONTENTS is centered at the 1 inch top margin. One double-space down from the heading, the word "List of Tables" is typed flush with the right margin. Page numbers for each chapter title/heading and each subtitle/subheading are listed on the table of contents and should be right flush, beneath the word "List."

The contents begin at the left margin, one double-space below the title. Preliminary items, such as LIST OF TABLES, are typed flush with the left margin, followed by a series of dots, known as dot leaders, and the page number typed flush with the right margin. Please note that the title, copyright, Dedication, Acknowledgement, and Abstract pages page are not listed on the table of contents.



Following the preliminary items, the word CHAPTER stands alone on a line, centered. Chapter headings are numbered with Roman numerals, aligned by their decimals. The chapter titles are typed in capital letters and are worded exactly as they appear in the text.

When a title or subheading must exceed one line, the subsequent line(s) should be single-spaced and indented two spaces. Double-spacing is used between each chapter title. If there are subheadings included, these should be typed single-spaced with a double-space separating them from chapter titles above and below. All subheadings must include subheading numbers which must also be included in the text of all chapters preceding the subheading (See Sample at the end of the Guide).

#### **List of Tables (Recommended if tables are present)**

The list of tables follows the table of contents and begins on a separate page. The heading LIST OF TABLES is centered at the 1 inch top margin. The remainder of the page is set up basically the same as the table of contents, double-spaced, with the list of table numbers and titles. Each table title should be followed by dot leaders and the page numbers. All table titles must be listed in order using the exact title (as it appears on the actual table) and the appropriate page number. Tables should be numbered in the order they appear in the paper, using the numbering system provided in the style guide selected. Titles of more than one line are single-spaced with second and succeeding lines indented two spaces. Double-spacing is used between table titles. Only titles, not explanatory notes, should be included on the list of tables.

#### **Tables and Figures/Illustrations**

Statistical information is usually set up in tabular form. Tables may be placed on a page with text or on separate pages. Tables are numbered consecutively and table captions should be in accordance with the selected style guide. The table is then typed beginning one double space below the last line of the caption, either single or double-spaced.

Illustrative material such as graphs, diagrams, photographs, drawings and maps are referred to as figures. Some of these items may be best included as multimedia files. If the illustration is included in the text, it should be inserted as closely as possible to its first reference. Figures are numbered sequentially throughout the text in Arabic numbers. The placement of figure titles, either above or below the figure, must be consistent throughout the paper.

Nothing should be typed on a facing left-hand page. If the table or figure is landscape format, the top should be placed at the 1 inch left hand margin. Please note that the page numbers on the landscape pages must appear in the same position and direction as the page numbers on portrait pages. All tables and figures must conform to the specified margin requirements.

## CHAPTERS

The division of the main text of the paper should be appropriate to the character of the work and in accordance with the practices in the student's field of study. Normally, the text includes an introductory chapter, a documentation of previous work in the field, the specific problem to be investigated, a complete explanation of the methodology used, a discussion of the results and their significance, and a summary. Each major division, usually called a chapter, should begin on a new page. The first page of each chapter has a very specific format.

- One inch top margin
- The heading is centered, typed in all capital letters, and uses standard Arabic designations or Roman Numerals (ex: CHAPTER 1 or CHAPTER II).
- Double-space (the equivalent of three single-spaces)
- The chapter title is centered and typed in all capitals
- Triple-space (the equivalent of three single-spaces)
- First subheading or begin text  
(See Sample at end of guide)

### **Chapter 1: Introduction**

The introduction chapter of the thesis/dissertation is the first chapter and it sets the stage for what will be presented in the pages that follow it. The introduction chapter of your dissertation should include:

- 1) A statement of the problem,
- 2) A brief overview of the study,
- 3) A discussion about the significance of your study and
- 4) A description of the various dissertation chapters.

Most introductions include the statement of the problem, objectives, hypotheses, and assumptions/limitations of the study.

**Chapter 2: Review of the Literature** The important thing is to understand that your literature review should not simply be a summarized description of the works that others have published. It should take the form of a critical discussion, showing insight and an awareness of differing arguments, theories and approaches, linked at all times to your own purpose and rationale. The literature review is an assessment of a body of research that addresses a research question. The purpose of the literature review is to identify what is already known about an area of study. It may also identify questions a body of research does not answer or make a case for why further study of research questions is important.

**Chapter 3: Outline of Procedures** This section is commonly referred to as the "Research Design or Methodology. This section provides a detailed outline of how an investigation will take place. A research design will typically include how data is to be collected, what instruments will be employed, how the instruments will be used and the intended means for analyzing data collected.

**Chapter 4: Data and Results/Research Findings** (General conclusions, explanation of findings, recommendations for further study)

**Chapter 5: Conclusions and Future Recommendations** (Summary, conclusion, discussions, suggestions for future research)

## Quantitative Dissertation Outline

### Chapter 1: Introduction

- Background of the problem
- Statement of the problem
- Purpose of the Study
- Theoretical Framework
- Research Hypotheses
- Importance of the Study
- Scope of the Study
- Definition of Terms
- Limitations and Delimitations
- Summary

### Chapter 2: Review of Literature

### Chapter 3: Research Methods

- Research Design
- Participants
- Instrumentation
- Research Procedures and Pilot Testing
- Data Analysis
- Assumptions of the Study
- Summary

### Chapter 4: Research Findings

### Chapter 5: Conclusions

- Summary
- Final Conclusions
- Discussion
- Suggestions for Future Research

## Qualitative Dissertation Outline

### Chapter 1: Introduction

- Background of the Problem
- Statement of the Problem
- Purpose of the Study
- Research Questions
- Importance of the Study
- Scope of the Study
- Definition of Terms
- Limitations and Delimitations

Chapter 2: Review of the Literature (in qualitative studies, often reviewed after rather than before data collection)

### Chapter 3: Research Methods

- The Qualitative Paradigm
- Qualitative Methods
- The Researcher's Role
- Data Sources

- Data Collection
- Data Analysis
- Verification
- Ethical Considerations
- Plan for Narrative or Pilot Study Results

Chapter 4: Research Findings

Chapter 5: Conclusions

- Summary
- Final Conclusions
- Discussion
- Suggestions for Future Research

### **Post Chapter Submissions**

References or Bibliography

Appendices

Glossary

Index

### **Subheadings**

For complex theses, the use of multiple “levels” of subheadings may be necessary. The use and placement of subheadings should be consistent throughout the entire document. Each new “level” should be distinct from the others in placement and/or structure and numbered (in chapter 1 subheadings would include 1.1, 1.2, 1.3, etc.). Subheadings with numbers are listed in the table of contents and text of the thesis or dissertation under each chapter by which they are included.

### **Reference Materials (Required)**

The thesis and dissertation should contain the appropriate references to original literature relevant to the research presented in the paper. For specific formatting details, please refer to the style guide recommended by the Thesis/Dissertation committee.

All bibliographical references should clearly show the sources of the writer’s information. When primary sources are not available, reference to a source known only through a secondary reference must be noted so as to provide readers with the means to check original sources.

The bibliography must include **all references cited**. Useful references not cited in the text, but highly relevant to the investigation may also be listed in the bibliography.

The first page of the reference materials should immediately follow the last page of the text, paginated continuously with the page number placed in the same position as throughout the text. The first page of the reference material should contain the word REFERENCES centered at the page. All items must meet specified margin requirements and follow the format of specified style guide (i.e., MLA, APA, etc.).

**List of Abbreviations**

When abbreviations are used in the Thesis/Dissertation, a list of abbreviations is included to detail nonstandard acronyms.

**Glossary (if used)**

The glossary contains terms with definitions of unfamiliar or uncommon words, acronyms, phrases, or abbreviations used throughout the text. The terms and definitions provided allow the reader to gain deeper insight and clarity while reading the thesis or dissertation.

**Index (optional)**

An index is an alphabetical list of words, phrases, or subjects to where useful material relating to that heading can be found in a document. The index can be found near the end of the thesis or dissertation.

**Appendices (Optional, as needed)**

The appendices may contain tables of data that would interfere with the easy reading of the text, development of mathematical treatments, very long quotations, schedules, forms, interviews, inventories, samples of test items, surveys, illustrative materials, and any other supplementary material considered worthy of recording or too detailed to be included in the text. If diverse materials are included, they should be grouped into categories and each category labeled as a separate appendix (ex: Appendix A. Tables; Appendix B. Consent Forms; etc.) Each appendix should have a lettered heading and descriptive title typed on the actual appendix and listed in the table of contents.

The appendices follow the reference materials and are paginated continuously, with the page number placed in the same position as throughout the text. All items must meet the specified margin requirements.

**Back Fly Leaf**

This is a blank page required at the back of the thesis or dissertation.

**Proofreading and Editing**

After final approval by the committee chair, and final typing, the text should be proofread carefully by the student or other interested persons for editorial accuracy. Spelling, grammar, punctuation, and sentence structure should be consistent with the rules of formal Standard English, and the citation method should be consistent with the appropriate style guide.

## PHYSICAL REQUIREMENTS

### Margins

Each page of the document shall have the following margins:

Top:	1” for the first page of each chapter or division; 1” for all other pages
Bottom:	1”
Left:	1”
Right:	1”

The first page of Preliminaries and Chapters are to begin one (1) inch from the top and **numbers are centered one (1) inch from the bottom of the page.** Page numbers for succeeding pages are placed at the top right **within (inside)** the one inch margin. All page numbers must be **inside** the required margins. No numbers should fall outside the margins (i.e., the **numbers** will be placed one (1) inch from the bottom of each page requiring one (1) inch margins.)

### Paragraphs

Each paragraph should be indented. A new paragraph should not begin at the bottom of the page unless there is adequate space for at least two lines.

### Title Page

The title page should follow exactly the spacing and use of capitalization shown in the sample at the end of the guide. The top margin is 1 inch and the information is centered. The title can be typed in all capitals or the first letter of each word can be capitalized (with the exception of articles). If the title is more than one line in length, it is arranged in an inverted pyramid. The date on the title page should be the month and year the degree is to be granted. The name of the degree sought, and the major department or field of study, is included here. (See Sample at the end of Guide) The title page has no preliminary page number typed on it, but it is counted as preliminary page “i.” Following the date type all committee members whose names will appear on the top portion of the signed approval page (left justified). Begin the name with the title of the person as Dr. James Doe, followed by role on your committee (Committee Chairperson, Committee Co-Chairperson (if applicable), Committee Member, and External Committee Member), Department, and University. The approval page must also be submitted to the Graduate School with wet signatures for the final approval of the Graduate School Dean. (See sample at end of Guide)

### Preliminaries

The Acknowledgment, Dedication, Abstract, Table of Contents, List of Tables, List of Illustration, List of Figures, References (Bibliography), and Appendix shall be numbered at the bottom of the page and centered with Roman numerals. Double-space between page and title and text.

The Acknowledgments, Dedication, Abstract, Table of Contents, List of Tables, List of Illustrations, and List of Figures, shall begin one (1) inch from the top of the page and numbered bottom center. The remaining parts of the manuscript should be numbered at the top right margin.

Small Roman numerals (ii, iii, iv, etc.) shall be used for the preliminaries. **These numbers are placed bottom center, leaving the one inch margin below the number.** The numbering shall begin with “ii.” The title page counts as page i, but the number does not appear; Roman numeral ii will begin with the Dedication page, etc.

A page shall be used for a statement of the Table of Contents, giving the chapters in Roman numerals, the References (Bibliography), the Appendices, and Illustrations, if any, with the page number at which these divisions begin.

The word ABSTRACT (full caps) should be centered and printed one (1) inch from the top of the page. The abstract must contain, briefly: (a) statement of the problem; (b) the procedure or methods used; (c) the results; (d) the conclusions.

### **Body of Text**

The arrangement of the text shall follow department guidelines or those of the manual chosen if departmental guidelines have not been issued.

All chapter titles designated must be in Roman numerals or Arabic numerals, centered, and typed in full capital letters (ex: CHAPTER II or CHAPTER 2-select one format for all chapters). Each chapter should begin at the top of a new page with a top margin of 1 inch. The title of the section should be centered and typed in full capital letters. The first line of the text begins a double space below the section title.

### **Symbols**

Most symbols such as Greek letters or mathematical signs are available on the computer. In special cases, symbols may be drawn with black ink.

### **References (Bibliography)**

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ON BLUE CRAB (CALLINECTES SAPIDUS) AND FISH POPULATION  
DYNAMICS IN BLACKBIRD CREEK, DELAWARE

by

KRISTOPHER PAUL ROESKE

A THESIS

Submitted in partial fulfillment of the requirements  
for the degree of Master of Science in the  
Natural Resources Graduate Program  
of Delaware State University

DOVER, DELAWARE  
August 2013

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## **DEDICATION**

This thesis is dedicated to my parents Paul and Patty Roeske, who have fostered the development of a strong work ethic and supported my never-ending curiosity throughout my life. They have provided me with a loving family and framework, from both an educational and ethical standpoint, as well as a sense of adventure upon which I have been able to build my appreciation for the natural world. Without their persistent guidance, support, and advice, the successes I have achieved to date would never have come to fruition.

SAMPLE DEDICATION



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It is with utmost appreciation and humility that I write this acknowledgment to all of those who were an intricate part of my academic growth. I would first like to acknowledge my Lord and Savior from whom all blessings flow, for the strength, courage, and knowledge to take this huge step and the vision to do even greater things. I extend my most heartfelt gratitude and appreciation to the greatest research advisor one could ask for, Dr. Cherese Winstead, who has challenged me to always reach higher and to do better. She has helped me to expand my understanding of chemistry and become not only a greater scientist, but also a greater woman. You are an inspiration and I love you, Dr. Winstead.

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**Assessing the Impact of *Phragmites australis* Subspecies *australis* on Blue Crab (*Callinectes sapidus*) and Fish Population Dynamics in Blackbird Creek, Delaware**

**Kristopher P. Roeske**

**Faculty Advisor: Dr. Gulnihal Ozbay**

**ABSTRACT**

The Blue Crab (*Callinectes sapidus*) is a very distinctive and commercially important species found throughout the Delaware and Chesapeake bays. Blue crabs flourish in the structured mosaic of intertidal marsh vegetation where the leaves, roots, and stems of plants provide sources of food and shelter in an otherwise unstructured, muddy creek. The reigning paradigm broadly implicates low salinity tidal marsh creeks similar to my study site as being nurseries for juvenile fish and crabs in various regions throughout their native range (i.e. Nova Scotia to Argentina). Thus, these habitats and the fauna which utilize them represent important trophic links between the Delaware Bay and adjacent wetlands. The marsh surface vegetation in the downstream portions of Blackbird Creek has been subject to a loss of biodiversity over the past several decades due largely to the expansion of a non-native subspecies of the common reed (*Phragmites australis* subspecies *australis*) and may be considered a highly disturbed ecosystem due to the invasion of *Phragmites* and the intensive

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## LIST OF ABBREVIATIONS

Bp	Base pair
BAH	Bromo-adjacent homo domain
BCMV	Bean common mosaic virus
BLASTP	Basic local alignment search tool protein
CDs	Coding Sequence
ChIP-seq	Chromatin Immunoprecipitation sequencing
Chr	Chromo domain
CMT	Chromo-methyltransferase Family
CpG	Cytosine and Guanine
CpNpG	Cytosine, any nucleotide excluding G, Guanine
CpNpG	Cytosine, any nucleotide excluding G
DBI	Delaware Biotechnology Institute
Dnmt	DNA methyltransferase
Dnmt2	DNA methyltransferase 2 Family
DsRNA	Double stranded RNA
DRM	Domain-rearranged methyltransferase Family
HATs	Histone Acetyltransferases
HPLC	High-performance liquid chromatography
NCBI	National Center for Biotechnology Information
μ	Micro
MiRNA	MicroRNA

## CHAPTER I: INTRODUCTION

Common bean is the most important food legume, and was domesticated in Central and South America (Zhang *et al.*, 2012; Wortmann 2006). Common bean serves as the primary dietary staple in developing countries in Africa and some Spanish speaking countries where local farmers in these areas rely on this bean due to its long shelf life, high nutrient content and as a source of income. This crop provides approximately 15% of the total daily calorie intake and also accounts for up to 36% of the total daily protein intake (Schmutz *et. al.*, 2014). Common bean is rich in fiber content which helps regulate the digestive system as well as controls cholesterol level. Studies have shown that consumption of common bean helps to prevent the development of cancer (Adebamowo *et al.*, 2005). Aside from its nutritional and economic benefits, common bean can be used as a cover crop to assist in preventing soil erosion. In the presence of symbiotic bacteria called rhizobia, nodules form in the roots of this plant which fixes atmospheric nitrogen. This process can be used to reduce the use of fertilizers and herbicides for small local farmers in developing countries and in organic farming systems which is becoming increasingly popular in developed countries. According to the United States Department of Agriculture (USDA) annual crop summary report in 2014 approximately 1,753 pounds per acre of dry bean was harvested on at least 1.67 million hectares of land (USDA, 2015 ). Common bean is considered to be a warm season crop